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## TABLE OF CONTENTS (BY BRANCH GROUPS)

### A SOCIAL SCIENCES

<b>UNIVERSITIES OF THE THIRD AGE AS A CHANCE FOR SENIORS TO INTEGRATE INTO THE MULTICULTURAL SOCIETY</b> ŽANETA BALÁŽOVÁ	8
<b>DEVALUATION ACTS OF LEARNERS AGAINST TEACHERS AT SLOVAK SCHOOLS</b> BELLOVÁ SLAVOMÍRA, SIVÁKOVÁ GABRIELA, TIŠŤANOVÁ KATARÍNA	12
<b>ANTHROPONYMS OF OLD KIPCHAK LANGUAGE: A NEW VIEW</b> SANDYBAY BORANBAEV, LAZZAT USMANOVNA, NURGALI KASHKINBAEV	15
<b>DEVELOPMENT OF STUDENTS' KEY COMPETENCES AND KNOWLEDGE THROUGH INTERACTIVE WHITEBOARD</b> PETER BREČKA, MONIKA VALENTOVÁ, ALENA HAŠKOVÁ	19
<b>QUALITY OF CLOSE RELATIONS AND RISK BEHAVIOR OF ADOLESCENTS IN THE SYSTEM OF LOWER SECONDARY EDUCATION IN SLOVAKIA</b> MICHAL ČEREŠNÍK	29
<b>AWARENESS AND PERCEPTION OF MODERNIZED ELECTRONIC PUBLIC PROCUREMENT – CZECH CASE STUDY</b> RADKA MACGREGOR PELIKÁNOVÁ, EVA DANIELA CVIK	34
<b>OBJECT-SUBJECT SIMILARITY IN FACIAL ATTRACTIVENESS ASSESSMENT (FOCUSING ON EXTRAVERSION AND INTELLIGENCE)</b> SLÁVKA DÉMUTHOVÁ, ANDREJ DÉMUTH	41
<b>CURRENT STATE OF RISK AND PROBLEM BEHAVIOUR OF PUPILS AND ITS REFLECTION IN SCHOOL PLANS OF PREVENTION</b> INGRID EMMEROVÁ, TOMÁŠ JABLONSKÝ	45
<b>APPLYING OF STRATEGIES OF CRITICAL AND CREATIVE THINKING BY TEACHERS ACCORDING TO THE TEACHING SUBJECT AND DEGREE OF EDUCATION</b> JANA DUCHOVIČOVÁ, LÍVIA FENYVESIOVÁ	49
<b>EXPLANATORY VARIABLE SELECTION WITH BALANCED CLUSTERING IN CUSTOMER CHURN PREDICTION</b> MARTIN FRIDRICH	56
<b>MYTHOPOETICS OF THE MODERN RUSSIAN NOVEL (ON V. PELEVIN'S PROSE MATERIAL)</b> OLGA YU. OSMUKHINA, SVETLANA P. GUDKOVA, ELENA A. SHARONOVA, ELENA A. KAZEEVA	67
<b>SEX-BASED DIFFERENTIATION OF MENTAL REPRESENTATIONS OF STUDENTS'</b> NINA KOZÁROVÁ, DENISA GUNIŠOVÁ	73
<b>QUANTIFICATION OF EDUCATIONAL PROCESS PARAMETERS USING NEW TECHNOLOGIES</b> JANA CORONIČOVÁ HURAJOVÁ, ZUZANA HAJDUOVÁ, PAVOL ANDREJOVSKÝ	77
<b>TRILOGY OF EXISTENCE: A STUDY OF VIRGINIA WOOLF'S MRS. DALLOWAY</b> HAMID FARAHMANDIAN, SHAO LU	81
<b>APPROACHES TO EDUCATION IN THE FIELD OF MANAGEMENT, MARKETING AND ENVIRONMENTAL CONSULTING</b> EVA HANULÁKOVÁ, FERDINAND DAŇO, PETER DRÁBIK	84
<b>ASSESSMENT OF THE INNOVATED STATE EDUCATIONAL PROGRAM IMPACT ON TECHNOLOGY LITERACY OF LOWER SECONDARY EDUCATION PUPILS (ISCED 2)</b> ALENA HAŠKOVÁ, DANKA LUKÁČOVÁ	92
<b>ACTIVE AGEING AND ACTIVE OLD AGE IN THE EDUCATIONAL CONTEXT</b> CTIBOR HATÁR	97
<b>THE EFFECTIVENESS OF THE FORMATION OF THE COMMUNICATIVE SKILLS OF ELEMENTARY SCHOOL STUDENTS IN ENGLISH CLASSES</b> RAUZIYA ISMAGULOVA, AZIA ZHUMABAYEVA, AIMAN OZHIKENOVA, LAURA ANARBEEK, AINUR KULSHAYEVA	103
<b>AUTOMATION OF BUSINESS PROCESSES AT THE ENTERPRISE DURING A BRAND FORMATION</b> ALIYA KINTONOVA, YERKIN NESSIPBEKOV, ZULFIYA ARYNOVA, LAZZAT KUSSEPOVA, ANARA KARYMSAKOVA, ALIYA TAKUADINA, ALEXANDRA VERETENO, EVGENY KUSHKOV	107

<b>THE RISKS IN THE CASE OF CLUSTER COOPERATION AND WAYS OF THEIR PREVENTION: AS SEEN BY SMEs ENTREPRENEURS</b> KATARÍNA HAVIERNIKOVÁ, JOZEF KLUČKA	114
<b>THE ACTIVITY OF THE UNIVERSITY IN RELATION TO PASTORAL CARE OF UNIVERSITY STUDENTS</b> JÁN KNAPÍK, MARTINA KOSTURKOVÁ	120
<b>PERFORMANCE OF LIFE INSURANCE INTERMEDIARIES: CASE OF LITHUANIA</b> VYTAUTAS JUŠČIUS, EGLĖ LAURIŠONIENĖ, EVA KOIŠOVÁ	125
<b>ORGANISING OF EMPLOYEE TRAININGS RELATED TO DOCUMENTATION AND DATABASES</b> MARCIN KOMAŃDA	132
<b>THE SYNERGIES OF USA FOREIGN TRADE POLICY AGENDA CHALLENGES WITHIN THE INDUSTRY 4.0</b> MARCEL KORDOŠ	137
<b>EDUCATING CHILDREN UP TO THREE YEARS OF AGE IN THE NARRATIONS OF TODAY'S PARENTS</b> DUŠAN KOSTRUB, ŠTEFÁNIA FERKOVÁ, PETER OSTRADICKÝ, MARTINA TOMÁNKOVÁ	143
<b>INFLOW OF CHINESE INVESTMENT TO THE CZECH BUSINESS ENVIRONMENT</b> RENATA ČUHLOVÁ, SYLVIE KOTÍKOVÁ	149
<b>EXPRESSIVITY IN HIDDEN AGGRESSIVE BEHAVIOURS OF CHILDREN IN PRE-CHILDREN AGE</b> BARBORA KOVÁČOVÁ, STANISLAV BENČIČ, DANIELA VALACHOVÁ	153
<b>QUANTITATIVE RESEARCH OF BUILDING AMENITIES IN PANEL BLOCK BUILDINGS IN THE CZECH REPUBLIC</b> DAGMAR KUTÁ	157
<b>RITUAL ROUND WALK "LADIES" (<i>PAŇIČKE</i>) AS A SPECIFIC EXPRESSION OF IDENTITY OF SLOVAKS IN VOJVODINA (SERBIA)</b> SILVIA LETAVAJOVÁ, JAROSLAV ČUKAN, BORIS MICHALÍK, VIKTOR ĎURAKOV	162
<b>THE IMPACT OF THE PEDAGOGICAL AND PERSONAL HISTORY OF THE TEACHER ON ITS CURRENT TEACHING STYLE</b> MONIKA MÁČAJOVÁ, ZUZANA ZAJACOVÁ, ADELA MELIŠEKOVÁ DOJČANOVÁ	167
<b>DEVELOPMENT OF ADULT EDUCATION IN INTERWAR SLOVAKIA (1918 – 1938)</b> EDUARD LUKÁČ, KATARÍNA MAYER, MARTINA LENHARDTOVÁ	173
<b>CHOSEN ASPECTS OF THE PARENTAL ROLE FROM THE POINT OF VIEW OF THREE GENERATIONS</b> ELEONÓRA MENDELOVÁ	181
<b>APPROACHES AND RELATIONSHIP TO HEALTH AND HEALTHY LIFESTYLE OF UNIVERSITY FEMALE STUDENTS</b> MARIÁN MERICA, RÓBERT OSAĐAN, LILLA KOREŇOVÁ, JÁN GUNČAGA	186
<b>THE RELATIONSHIP OF TRUST AND COMMUNICATION IN ADOLESCENTS TOWARDS PARENTS IN A POST-DIVORCE FAMILY ARRANGEMENT</b> MIČKOVÁ ZUZANA	191
<b>IMPLEMENTATION OF INDUSTRY 4.0 IN ENGINEERING COMPANIES</b> KAREL KUBA, FRANTIŠEK MILICHOVSKÝ	197
<b>RELATIONSHIP BETWEEN CHANGES IN BUSINESS ENVIRONMENT AND INTRODUCING NEW METHODS, TOOLS AND PROCEDURES OF CONTROL(-LING)</b> JURAJ MIŠÚN, PAULÍNA PAPRSKÁROVÁ, IVANA MIŠÚNOVÁ-HUDÁKOVÁ	203
<b>INTEGRATION OF EDUCATIONAL PROGRAMS OF PEDAGOGICAL SPECIALTIES WITHIN THE FRAMEWORK OF CONTINUING EDUCATION</b> MARIYAM MUKATOVA, ANAR TASTANOVA, ZAURE ZHUMAGULOVA	208
<b>ANXIETY MANAGEMENT IN SPEAKING IN A FOREIGN LANGUAGE IN THE CONTEXT OF COGNITIVE AND BEHAVIORAL METHODS</b> MARIANNA MÜLLER DE MORAIS, EVA ŠKORVAGOVÁ, ZDENA KRÁLOVÁ	214
<b>ENTREPRENEURSHIP INTERNATIONALIZATION – CASE OF SLOVAK FAMILY BUSINESSES</b> LADISLAV MURA	222
<b>SCHOOL CULTURE AND THE RELATED ISSUES</b> ERICH PETLÁK	227
<b>SELF-CARE OF WOMEN WITH DUAL ROLE OVERLOAD</b> BEÁTA RÁCZOVÁ	234

<b>A BOOK'S PICTURE AS A VISUAL STIMULUS FOR INTERPRETATION IN THE FRAMEWORK OF DEVELOPING CREATIVE AND CRITICAL THINKING</b> ADRIANA RÉCKA	239
<b>APPLICATION OF MODERN INFORMATION TECHNOLOGY IN INNOVATION OF BUSINESS LOGISTICS PROCESSES</b> ANITA ROMANOVÁ, PATRIK RICHNÁK, KLAUDIA PORUBANOVÁ, VLADIMÍR BOLEK	245
<b>ENJOYMENT OF PHYSICAL ACTIVITY AND PERCEPTION OF SUCCESS IN SPORTS HIGH SCHOOL STUDENTS</b> MARTINA ROMANOVÁ, TOMÁŠ SOLLÁR	249
<b>ANALYSIS OF THE CONSUMPTION ON THE GOODS AND SERVICES MARKET IN THE CYBERNETIC MODEL OF THE 15 OLDER EU MEMBER STATES</b> PAVEL ROUSEK, MAREK VOCHOZKA, MARIANNA PSÁRSKA	252
<b>ART THERAPY AS A TOOL OF PERSONAL DEVELOPMENT IN UNIVERSITY EDUCATION – FRIDA KAHLO IN THE STUDENTS' WRITTEN AND VISUAL REFLECTIONS</b> JANKA SATKOVÁ	255
<b>CULTURAL AND LITERARY CONCRETIZATIONS OF LANGUAGE SPECIFICS FROM THE NATIONAL MINORITY ASPECT</b> PATRIK ŠENKÁR	259
<b>FACILITIES PROVIDING EARLY CHILDHOOD EDUCATION AND CHILDCARE UP TO THREE YEARS OF AGE FROM THE POINT OF VIEW OF ERUDITE EMPLOYEES</b> DUŠAN KOSTRUB, EVA SEVERINI, PETER OSTRADICKÝ	263
<b>CONTINUITY IN EDUCATION: DEFINITION, ESSENCE AND ANALYSIS OF THE PROBLEM</b> SHOLPAN SHUINSHINA, ZHANAT KOPEYEV, YESSENKELDY TUYAKOV, AKAN MUBARAKOV	271
<b>TOURISM FACILITIES ACCESSIBILITY IN CONTEXT OF SOCIAL TOURISM SUPPORT: EVIDENCE FROM THE CZECH REPUBLIC</b> IVICA LINDEROVÁ, PETR SCHOLZ	279
<b>THE LONELINESS OF ADOLESCENTS FROM SOCIALLY DISADVANTAGED BACKGROUND</b> KATARÍNA ŠIŇANSKÁ	284
<b>VALUATION OF INTANGIBLE ASSETS DEPOSIT INTO CAPITAL COMPANY IN CASE OF SPECIFIC TRANSACTION</b> VOJTĚCH STEHEL, ZUZANA ROWLAND, JAN MAREČEK	287
<b>LOGISTIC SYSTEMS IN CLUSTERS: BIOMASS CASE STUDY</b> MANTAS SVAZAS, VALENTINAS NAVICKAS, EVA IVANOVA	292
<b>CAN MOTIVATION FOR CHOOSING TEACHING AS A PROFESSION PREDICT ACADEMIC ACHIEVEMENT? THE ROLE OF GENDER, SECONDARY SCHOOL TYPE AND STUDY PROGRAMME</b> ROBERT TOMŠÍK	299
<b>TEACHER AND A FUTURE TEACHER AS A RESEACHER</b> VIERA KURINCOVÁ, TOMÁŠ TURZÁK, JANA TURŽÁKOVÁ	305
<b>CREATING AND EVALUATING THE IDENTIFICATION OF CHILDREN AND YOUTH TALENT FOR FINE ART</b> DANIELA VALACHOVÁ, STANISLAV BENČIČ, BARBORA KOVÁČOVÁ	310
<b>RECEPTIVE MULTILINGUALISM IN TERTIARY EDUCATION: ENHANCING READING COMPREHENSION SKILLS AND TRAINING MULTILINGUAL READERS</b> KATARÍNA CHOVANCOVÁ, DARINA VEVRKOVÁ, MAREK LUPTÁK	314
<b>A REVIEW OF THE REPORT ON RELATIONS BETWEEN THE CONTROLLING AND CONTROLLED PARTY AND BETWEEN THE CONTROLLED PARTY AND PARTIES CONTROLLED BY THE SAME CONTROLLING PARTY</b> MAREK VOCHOZKA, VOJTĚCH STEHEL, ZUZANA ROWLAND, TOMÁŠ KRULICKÝ	321
<b>ECONOMIC CONVERGENCE OF CZECH REGIONS IN TERMS OF GDP AND UNEMPLOYMENT RATE IN RESPONSE TO FDI FLOWS: DO BUSINESSES AND REGIONS FLOURISH?</b> SIMONA HAŠKOVÁ, PETR VOLF, VERONIKA MACHOVÁ	326
<b>DETERMINING THE MARKET RENT OF A MEDICAL FACILITY ON A SPECIFIC EXAMPLE</b> JAROMÍR VRBKA, VERONIKA MACHOVÁ, JAN MAREČEK, JAKUB HORÁK	330

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## D EARTH SCIENCES

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- BALNEOLOGICAL CLASSIFICATION OF THERMOMINERAL, THERMAL AND MINERAL WATERS AT THE REGION OF ILIDZA- SARAJEVO AND ITS IMPACT ON TOURISM** 336  
LEJLA ŽUNIĆ, AIDA BIDŽAN-GEKIĆ, HARIS GEKIĆ

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## I INFORMATICS

---

- SYSTEMATIC LITERATURE REVIEW: PROGRAMMING OF MICRO-ROBOTS ON THE BASIS OF ARDUINO** 344  
ZHANAT NURBEKOVA, TALANT TOLGANBAIULY, BAHYT NURBEKOV, KALIMA TUENBAEVA

---

## J INDUSTRY

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- DEVELOPMENT OF SMALL AND MEDIUM-SIZED ENTREPRENEURIAL BUSINESSES IN THE ENERGY SECTOR: FEATURES OF HIGHLY INTELLIGENT PROJECTS' EVOLUTION** 352  
ALEXANDER GURINOVICH, ILYA AFANASIEV, VLADIMIR CHURIN, VALERIA PEREKRESTOVA, OLEG TOLMACHEV
- THE MODEL OF UNIVERSITY TRAINING OF PROFESSIONALS FOR THE IRON AND STEEL INDUSTRY** 360  
ALEXANDER KOZHEVNIKOV

## A SOCIAL SCIENCES

AA	PHILOSOPHY AND RELIGION
AB	HISTORY
AC	ARCHAEOLOGY, ANTHROPOLOGY, ETHNOLOGY
AD	POLITICAL SCIENCES
AE	MANAGEMENT, ADMINISTRATION AND CLERICAL WORK
AF	DOCUMENTATION, LIBRARIANSHIP, WORK WITH INFORMATION
AG	LEGAL SCIENCES
AH	ECONOMICS
AI	LINGUISTICS
AJ	LITERATURE, MASS MEDIA, AUDIO-VISUAL ACTIVITIES
AK	SPORT AND LEISURE TIME ACTIVITIES
AL	ART, ARCHITECTURE, CULTURAL HERITAGE
AM	PEDAGOGY AND EDUCATION
AN	PSYCHOLOGY
AO	SOCIOLOGY, DEMOGRAPHY
AP	MUNICIPAL, REGIONAL AND TRANSPORTATION PLANNING
AQ	SAFETY AND HEALTH PROTECTION, SAFETY IN OPERATING MACHINERY

# UNIVERSITIES OF THE THIRD AGE AS A CHANCE FOR SENIORS TO INTEGRATE INTO THE MULTICULTURAL SOCIETY

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**Abstract:** International cooperation, visiting new countries, meeting new people from all over the world are typical features of these days. The Universities of the Third Age as institutions focused on senior education and their opportunities to help people of older age familiarize with new cultures, it means to integrate into the multicultural society are presented in the paper. The European Union, especially the Erasmus+ program offers chances to students of all ages as well as seniors to enhance the knowledge and skills abroad, to make friends and to improve communication skills in English language.

**Keywords:** senior, University of the Third Age, ERASMUS+ program, culture, international project

## 1 Introduction

At the present time, everything that people do, speak or think about, i.e. extensive set of phenomena including knowledge, language, ethics, law, art, culture, education and action, everything used by people to find direction in the world and at the same time, to create the world can be understood as culture. Human perception and understanding is mediated by culture or various cultures. What is perceived as beautiful, tasty, true is determined by members of other cultures differently, within the context of the culture they grew up. A socio-cultural system consists of dominant culture, subcultures (set of specific features of a culture typical for social groups in specific society), and contra cultures (holding values opposite the dominant culture) as well as art, folk and mass culture (Petrušek, 2002, p. 36). Coexistence of different cultures able to develop and enrich mutually is a key feature of full-blown Europe, thus the multicultural principles in education must be followed. Development of the ability to tolerate other cultures, or respect the existence of other cultures means the ability to look at the world through the eyes of other cultures or to respect heterogeneity (Zelenická, 2006, p. 267). Process of globalization and entry to the European Union provide the opportunity for meeting members of various cultures. Respecting cultural and language heterogeneity is an essential principle of running the EU successfully. It is closely connected with foreign language acquisition – trend leading to the tolerance of otherness.

## 2 Senior as a target group of education

An increase in the number of older people in population is one of the impacts of demographic ageing. The term of senior is used to determine this group of people by Rychtaříková (2002, p. 45). This term is frequently used not only in demography but also in other scientific branches (e.g. is sociology, education or economics) to define a person at older age. There are various definitions of a senior in literature. According to Jarošová (2006, p. 21), senior is a person with physical, mental and social changes due to the process of ageing. Čornaničová (2007, p. 52) prefers the opinion that the meaning of a term of a senior is neutral. She also mentions that this term covers and replaces definitions in other branches to define an older person. In other scientific branches, there are still preferred terms such as a geront in gerontology or senescent in psychology (Balogová, 2009). However, both terms used in everyday situations can evoke a person who is old, ill or dependent. In this case, it can be understood improperly or in wrong way. The term retiree or pensioner is associated with social status and with receiving an old age pension.

Boundary line to determine this group of people is not set clearly. People over the age of 65 are considered seniors – older

people by the United Nations. In the 1960s, experts of the World Health Organisation made a suggestion to divide middle and old age into following categories:

- middle age 45 – 59 years,
- early old age or young-old age 60-74 years (presenium)
- old - oldest old age, senior age 75-89 years (senium),
- longevity 90 years and more.

Čornaničová (in Balogová, 2009) prefers to use the term of seniors in the case of people 60+ and also the term senium for the stage of life connected with the mentioned age. At the same time, the heterogeneity of the group of older people is highlighted and older people are divided into the categories:

- older person – at the age of 60 to 74, they are considered younger seniors,
- old person – at the age of 75 – 89, they are considered older seniors,
- long-lived person – at the age of 90 and more, they are considered very old seniors.

Economic activity must be taken into consideration when the boundary line is determined. Until recently, the post-productive age of men and women was not the same – in Slovakia, it was 60 or 55 and more. This limitation is the most often used boundary limit of seniority (Vohráliková, Rabušic, 2004). Differences in terminology in society and various laws results also from the different purposes. Therefore, the approach to various issues focused on older people is not uniform. On the other hand, diversity in the social relations of older people, their roles and statuses is pointed out this way. They cannot be perceived as a homogenous group primarily determined by the age. The term senior started to be used in education spontaneously as a term with neutral meaning. Ageing and an old age are important stages of an individual and they are a natural part of life.

## 3 System of senior education

The activity “to want, know and can” direct the personality to self-development is considered an important phenomenon in today's society. According to Barták (2007, p. 16), to want – it can be understood as personal willingness, energizing presented by development of human potential aimed at person's individual as well as team goals. To know – it means the knowledge, what to do, why to do, abilities and skills how to do it as well as experience. To can – it is a category relating to subject as well as object. It depends not only on the subject – persons themselves but especially on the environment where persons can/cannot use their ambitions, needs, interests and the potential.

Adult education is a lifelong process allowing people to keep up with changes in economy, culture and social life. The art of learning is considered a set of skills enhanced by people through their lives (Vacinová, 2013, p. 106). The Universities of the Third Age present the environment where seniors are able to meet their needs, interests and develop their human potential not only through education as their main activity but also through international activities allowing the seniors – older people to integrate into multicultural Europe. Education is not connected with future job but with personal development in the society of other people (Beneš, 2009, p. 26).

Variety of senior formal and informal education provided in the Slovak Republic is quite wide. The focus and the level of formality of individual institutions differ from each other a bit. Universities and Academies of the Third Age are the most popular institutions among seniors. However, other educational activities and programmes offered to seniors not only by these institutions must be mentioned as well.

### 3.1 Universities of the Third Age

Sources of knowledge acquisition of a person through the life are various. Number of information acquired indirectly is growing constantly. They are assorted and selected according to the value ladder of each person. The form of education is evaluated in the same way. The more they meet the interests, personal needs, the more positively they are perceived. Successful adult education must respect the uniqueness of every individual and follow their strengths (Barták, 2008, p.17)

The Universities of the Third Age (hereafter U3A) are the most popular educational opportunity for seniors. At the same time, the way of senior education provided by them can be considered the most difficult. The First U3A was founded by Pierre Vellas in French town of Toulouse in the year 1973. In the system of lifelong education, the Universities of the Third Age are focused on old population. From their early beginning, they were aimed at the education relating with the hobbies and free time activities of older generation. They are accredited; it means they are official institutions providing education at the highest possible level. Various study branches are designated for the senior population. Completed secondary education with final exam passed and the age of 45+ are the only conditions to participate in the education at the U3A.

In the 1970s, the term of the U3A presented a new idea in the social policy focused on seniors. Thus, the requirements of the third generation to enable them to stay in contact with education and with other members of society was met. This term is also used to determine other forms of senior education carried out at the universities (institutions providing higher education) or in close cooperation with them. In the past, as well as nowadays, the term of the University of the Third Age is superior to other terms associated with educational activities specified for seniors (Čornaničová, 2007, p. 85).

The focus and the approach of the Universities of the Third Age in the countries all around the world differ. Swindell (2006, p. 430) defines two basic models of the U3A – French and English. University of the Third Age as a part of the university or other institution providing higher education, the use of university premises, as well as services are the conditions of the French model. Content and the form of courses is different but in general, education is provided in a form of lectures, excursions, workshops corresponding with the specialisation of the university. Humanities and art are preferred. Differences can be seen also in a system of financing of the U3A. Some of them are funded by the finances of the university, in some cases the funds consist of combination of fees, presents or direct donations. In Great Britain, French model of the U3A was transformed and new English model was founded. Specialists in various scientific branches go into retirement and subsequently they can stay active and become not only students but also lecturers at the U3A. English model is successfully run not only in Great Britain but also in Australia or New Zealand. The lowest tuition fees charged, lectures held in public or private spaces, libraries or schools, flexible timetables are the biggest advantages of the English model. The choice of courses is wide from scientific lectures to workshops of handicraft or physical activity. Each University of the Third Age is independent managed by elected management consisting of their members. At the present time, all Universities of the Third Age around the world identify with one of the mentioned models or they create so-called hybrid form based on both English and French model.

In respect to preparing the educational programmes for seniors, two concepts are used world-wide. Segregation concept of senior education is the first one. It is based on the separation of full time students and senior students, there is no connection between the two groups of students. This concept is focused on education associated with hobbies without any chances to get better qualification. Integration concept is the second one. Full-time students are integrated with senior students. Connection of generations and exchange of experience is considered the biggest advantage of the concept (Veteška, 2009, p. 167).

Following the mentioned facts, it is clear that the Universities of the Third Age vary in their structure. Čornaničová (2007, p. 85) describes the concept used at the U3A in Slovakia most often. The study at the U3A consists of two- or three-year-long courses associated with various scientific branches at different faculties. From the beginning of the U3A, improving the quality of life of seniors through educational activities was its basic mission. Recently, the dialogue between generations based on exchange of experience has been the main aim of the U3A (Mühlpachr, 2004, p. 82).

Universities of the Third Age are institutions focused on senior education relating with hobbies, interests in accordance with the concept of lifelong learning following the UNESCO program (Veteška, 2009, p. 168).

Universities of the Third Age include the social, educational, health, economic, psychological, scientific, philosophical function indicating the quality of life of seniors. If students – seniors are asked the question about the impact of the study on their lives, besides new knowledge, skills, they mention also new contacts, friends with same interests able to support them in difficult periods of their personal life.

### 3.2 Other educational opportunities for seniors

Universities, as well as academies of the Third Age are the well-known and at the same time, the most attended institutions focused on senior education. Furthermore, there are programs for seniors carried out by private or non-profit organizations. Following opportunities for seniors are described by Čornaničová (2007, p. 135):

- summer university courses for seniors in the USA, Canada and Germany – specific educational opportunities provided by the universities and their parts,
- university study – chances for senior students to attend universities together with full-time students,
- professionally oriented educational programs for 50+ – they started to be run in companies to enhance professional knowledge,
- programs to support social engagement of seniors – seniors are engaged in public life and acquire the knowledge associated with actual issues like ecology or social policy,
- educational activity of public libraries – team and individual educational activities aimed at meeting cultural, educational and creative requirements,
- excursion tours for seniors – organized by institutions in cooperation with universities at home and abroad,
- managed self-education programs for seniors – focused on personal development following personal needs,
- programs aimed at activities of active ageing – tasks connected with health and ageing carried out in cooperation with geriatric medicine,
- memory trainings provided by social facilities,
- consulting services for seniors – in the area of psychology and law provided by consulting firms,
- programs of physical education for seniors – to prevent premature ageing,
- adaptation programs in the retirement homes – individual programs to adapt easily to new environment a style of life,
- educational and rehabilitation programs carried out by social facilities.

Knowledge acquired in the study can help seniors solve problems of everyday life, uncover new values to live by, new philosophy of life and support their social activity (Hrapková, 2004). Place of living and financial demands play an essential role in the selecting from opportunities offered. In general, fees charged by the U3A are not so high but they are mostly located in bigger cities. At the senior age, commuting can be a significant obstacle. On the other hand, opportunities provided by private organizations are not affordable by most seniors.

#### 4 ERASMUS+ program

Erasmus+ program is an example of activity of the European Union in terms of education, professional preparation of young people and sport in the years 2014-2020. All previous programs of the EU including lifelong learning programs (Erasmus, Leonardo da Vinci, Comenius, Grundtvig), the program The Youth in Action and five programs of international cooperation (Erasmus Mundus, Tempus, Alfa, Edulink and program for cooperation with industrialized countries) are joined together. Erasmus+ allow more than four million European citizens to apply for studying abroad, for professional internship or volunteering abroad. It is a program supporting global partnerships between institutions aimed at education, and sport in order to improve cooperation and link education with the needs of job market to reduce lack of skills so common in Europe. Within the program, domestic measures to update education systems are supported.

Education of adults and improving its quality all around Europe is also in the center of attention of ERASMUS+ program. Professionals, employees associated with the adult education have a chance to build strategic partnerships aimed at exchanging the teaching experience. Participants deal with common issues such as accepting the skills gained away from formal education system. Adult education and its availability can help European citizens improve their professional skills through Erasmus+ program. Strategic partnerships provide the opportunity for institutions operating in the education, professional preparation, as well as companies, public bodies, social facilities to cooperate in the process of introducing innovations. Improvement in the quality of education, trainings, internships, work with young generation and modernization as well as social innovation can be considered the result of them. Due to the goals and composition of the strategic partnership, project can be divided into two types:

- strategic partnership supporting innovations focused on developing innovative ideas and/or taking part in activities dealing with spreading and using products and ideas which have already existed or are new. They can be applied in all areas of education, professional preparation.
- strategic partnership supporting changes in proved processes in order to enable organizations to develop and strengthen networks, increase their capacity. Moreover, they are aimed at operating globally, sharing ideas and comparing thoughts, methods and procedures.

At least three institutions from three different countries must participate in the project of strategic partnership. Institutions from so-called partner countries can take part in the project only under specific conditions, their participation must lead to special added value. The number of organizations is not limited, but the budget for managing the project fit for the number of ten participants. Goals, as well as project activities are the most significant factor for selecting the partners.

The world changes very quickly, therefore education system must be updated and new methods of teaching using new opportunities must be implemented. Education, professional preparation and informal learning are key steps in enhancing the competitiveness of Europe. Erasmus+ program can contribute to deal with these challenges significantly.

##### 4.1 International project *My Passion, Happiness – Add to Favorites*

The University of the Third Age at the Technical University in Zvolen is an institution which besides providing education is looking for other opportunities how to use the acquired knowledge in practical situations. Active participation in the projects within the Erasmus+ program make the environment for exchanging the experience in the international cooperation. International activity *My Passion, Happiness – Add to Favorites* is an example of cooperation of six institutions focusing their activities on seniors in Poland, Portugal, Lithuania, Turkey,

Romania and Slovakia. The main aim of the project was mutual inspiration of participants through creative activities, meetings and arising the interest in individual countries, making friends and fun also at the older age. Development of language and computer skills using innovative methods was one of the large number of activities including in the international meetings within the project. Knowledge of English language, the most often used language in projects, make communication and making friends easier, as well as meeting the project goals. Computer skills and modern technologies shorten the distances, remove the borders and subsequently, provide the chances to create social connections helping seniors stop feeling alone. An effort to join as many participants as it was possible from all partner countries was a positive aspect of the project. International meetings taking 5 days during two years from September 2013 to June 2015 were held in all partner countries. Cultural, sport and social activities were done during meetings in order to introduce the country, customs, traditions, cuisine as well as language of each country.

The project *My Passion, Happiness – Add to Favorites* showed that intercultural competences must and can be developed at each age. Organizations participating in the project were from countries with different cultures. This was the chance for all participants to familiarize with features typical for each partner country and specially to visit places which the country and its citizens are proud of and which are not mentioned in any tourist guidebooks. Enthusiasm, happiness, and natural curiosity were observed during all activities prepared for participants. In terms of communication, the goal of the project was to encourage seniors to use English language in mutual communication without hesitation. Perfect knowledge of English does not play a significant role in understanding and making friends especially at the older age. Respect for cultural values and cultural identity of individual countries could be seen during the project meeting.

The projects focused on the target group at the older age are of great importance not only for seniors but also for society. Like a prototype of a new person that is aware of their possibilities trying to live the fullest is created.

#### 5 Conclusion

Social and economic reality especially in the European Union is connected with the higher intensity of international relationships in all areas of social life. Changes are reflected in education at all levels. Senior education is in the center of attention at all Universities of the Third Age. At the present time, their activity started to orient to international cooperation with institutions focused on education of the older generation. In the paper, the possibility of the U3A to participate in the international projects – strategic partnerships funded by the European Union within the Erasmus+ program are presented. Mentioned projects create the environment for exchanging experience and knowledge between institutions resulting in more effective way with this age group. Moreover, the main impact of these projects can be seen in the chance for seniors to familiarize with new nations, cultures and history and this way, they can improve their intercultural competence and can become a part of multicultural society. They can improve the ability to perceive, tolerate and accept diversity and otherness which is around us and become the part of our everyday life. Meeting people at the same age from other countries allow them to make new friends, international contacts which, on one hand, are important in terms of social life and, on the other hand, can help seniors to improve the speaking competence and they can communicate in English better.

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**Primary Paper Section: A**

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## DEVALUATION ACTS OF LEARNERS AGAINST TEACHERS AT SLOVAK SCHOOLS

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The paper is a partial result of the project KEGA no. 007KU-4/2017 entitled „Devaluation acts of learners against teachers – manifestations, reasons, prevention”.

**Abstract:** The contribution deals with the issue of devaluation behaviour of pupils towards teachers. It maps the factors stimulating the onset of bullying teachers by pupils, manifestations of bullying and of aggressive behaviour and it introduces individual selected researches that were implemented within the field of bullying, aggression, undesirable behaviour of pupils towards teachers.

**Keywords:** Teacher. Pupil. Devaluation of a Teacher. Bullying.

### 1 Introduction

Nowadays many acts of disrespect against teachers are visible at schools as well as undesirable behaviour of learners not only to their fellows, but also to teachers. This has become an everyday reality and part of dealing with pedagogical situations. The most frequently occurring phenomena are bullying and cyberbullying, aggressiveness, drug addiction, verbal and non-verbal attacks (psychical and physical) on both sides of pedagogical communication. There may be several reasons for this, connected, for example, with the authority of the teacher, unsuitable interaction relations between teachers and learners which may even result into devaluation acts of learners against teachers, etc. As G. Siváková (2016, p. 9) has it, the loosening of school discipline that has occurred in recent years has also contributed to the increase of violence among learners, aggressivity and bullying, which often target teachers as well.

#### 1.1 Devaluation as a social pathological phenomena in schools

As teachers, we may describe such acts, or can characterise them, but it must be clearly said that they are not systematically elaborated. The fact is that educators and psychologists have begun to pay a more systematic attention to this area only in recent years. The impulses for the elaboration of the area in our country can be found in the work of such authors as, for example, J. Hroncová (2016), I. Emmerová (2011, 2016), C. Határ (2007), in the Czech Republic Z. Martinek (2015).

It is the so-called devaluation actions from the side of learners, under which one may understand, for example, the disruption of educational process by various undesirable activities of the learners, including the devaluation attitudes and acts towards the teacher.

The concept of devaluation means, in a wider sense of the word, the depreciation. In educational reality it is more suitable to think about the concept of social devaluation, pedagogical devaluation, school devaluation, depreciation, expressing disrespect towards the participant of the educational process. The devaluation is the decreasing of self-confidence, a measure of disrespect towards a human being, humiliation. It affects the core of our personality and, therefore, it is perceived more painfully than whatever else. Its opposite is evaluation, which is announcing to oneself that one has certain measure, level of respect and reputability, or respectability.

Under the concept of devaluation at school may fall any undesirable behaviour which in any way depreciates pedagogical reality. The devaluation issues will therefore include any risky behaviour of an individual, various manifestations of unfriendly behaviour, psychical torture, interfering with an activity, offending, humiliating, failing to observe required rules, anger,

aggressiveness, aggression, bullying, cyberbullying, a whole set of various social-pathological phenomena, etc. As devaluation acts may be considered any acts related to the devaluation of a personality. If such, or similar acts occur in educational process, they may have extremely negative impact on its performance and results. Practically, it happens that teachers, especially women, often leave teaching profession especially because of such and similar undesirable acts of pupils.

#### 1.2 Research of bullying, aggression, undesirable behaviour of pupils towards teachers

In 2018, the Department of Education and Special Pedagogy, Faculty of Education of the Catholic University in Ružomberok conducted a research focused on the devaluation behaviour of learners towards teachers in the Slovak Republic. The research sample was made up by 401 teachers, of which 82.78 % were women and 17.2 % men. Relatively balanced was the representation of teachers regarding the type of school they work at. 50.4 % respondents taught at elementary schools and 49.6 % at secondary schools. The research sample of teachers came from all regions of the Slovak Republic. Of the respondents who taught at elementary schools, 50.5 % were from the elementary schools, 49.5 % from the secondary schools. Of the secondary school teachers, 27.2 % taught at secondary grammar schools, 39.0 % at secondary vocational schools – study fields. At secondary vocational schools – study fields 6.7 % and 27.2 % at music conservatory. The respondents filled in a questionnaire with 22 examples of improper behaviour, having the Likert Scale with the following options: never, rarely, at times, often, very often. Table no. 1 “The most frequent acts of aggressive behaviour of learners toward teachers” shows the rotated factor matrix consisting of individual items related to improper behaviour. The KMO test result was 0.845 and the Barlett’s Sphericity test was statistically significant ( $\chi^2=3628.312$ ,  $p<0.000$ ).

Three relevant factors were identified: factor 1 which was because of the nature of the associated items named verbal aggression, such as improper loud comments, ignoring, making fun, threatening, etc., factor 2 which was called social aggression (cyberbullying), as, for example, spreading humiliating, ridiculing or embarrassing videos, photos, sound recordings, blackmailing through the internet, etc., and factor 3 which was named physical aggression, as physical assaults, threatening by physical assault or an attempt for a physical assault. Together all the factors explain 45.076% of the whole variants.

Tab. no. 1 The most frequent acts of aggressive behaviour of learners toward teachers

	Factors aggression:		
	Verbal	Social	Physical
Improper comments towards myself	.805		
Ignoring	.774		
Humiliating	.768		
Ridiculing	.764		
Verbal abuses, invectives or vulgarisms	.747		
Demonstrative rejection of an answer or a set task (writing, reading, and so on.)	.724		
Slandering	.682		
Threatening to destroy personal property	.536		
Threatening to use influential acquaintances	.462		
Spreading humiliating, ridiculing or embarrassing videos		.790	
Spreading humiliating, ridiculing or embarrassing photos		.787	
Spreading humiliating, ridiculing or embarrassing sound recordings		.730	
Verbal assaults through		.635	

mobile phone and/or internet			
Threats or intimidations through mobile telephone and/or internet		.598	
Hacking an electronic account (e-mail, social net accounts, etc.)		.549	
Creation of the teacher's fake profile on a social network		.532	
Blackmailing through internet or mobile telephone		.351	
Physical assault			.896
Attempt at a physical assault			.872
Threatening to use physical violence			.734

The research showed that, on average, the teachers most often come into contact with an improper behaviour related to the learners' demonstrative rejection to answer or to do a set task, ignoring, slandering and improper loud comments towards themselves. Less frequently also with verbal insults/abuses/vulgarisms, ridiculing. Least frequently there occur molestation, internet or mobile phone blackmailing, or hacking into an electronic account.

Furthermore, we were interested in finding out whether there is a relation between individual types of improper behaviour and the length of the teacher's practice. From the length of the teacher's practice was expected a better orientation in important areas related to, for example, identification – helping a learner to identify the aim of improper behaviour; stopping learner's improper behaviour; searching for ways of encouraging the learner; how to preserve the teacher's natural authority, and so on. A significant relation was recorded only between the age/length of practice and the demonstrative refusal to answer, or to do the required task. It is a weak, negative relation, which means that the older the teacher is, or the longer practice he/she has, the lesser he/she is confronted with this improper behaviour. Then a significant relationship was identified with the variable of purposeful damaging of personal property at school, reported more by older teachers, or teachers with longer practice. It is also a weak, positive relation. The last significant relation was identified with sexual harassment, the older the teacher is, or the longer practice he/she has, the lesser occurrence the phenomenon has. It is a weak, negative relation.

Subsequently, we focused on the comparison of such acts of improper behaviour as verbal aggression, cyberbullying and physical aggression on the teacher's sex. This fact was verified by the Mann-Whitney U-test for two independent selections and its result is given in Table 2. Based on the significance value ( $p > 0.05$ ), it is possible to claim that there is no statistically significant difference in the factors of improper behaviour between men and women. Men and women are similarly confronted with individual factors.

Tab. no. 2 Improper behaviour with regard to the teacher's sex

sex		N	Average order	U-test	p-value
Verbal aggression	Woman	332	203.13	10415.500	0.313
	Man	68	187.67		
Cyber-bullying	Woman	332	199.12	10828.500	0.471
	Man	68	207.26		
Physical aggression	Woman	332	199.35	10907.500	0.405
	Man	68	206.10		

Then we focused on the difference in the factors of improper behaviour according to the type of school. We verified it by Mann-Whitney U-test for two independent selections and its result is given in Table 3. Based on the value of significance, it may be stated that a statistically significant difference ( $p < 0.05$ ) is only in the factor of cyberbullying. There is no statistically significant difference ( $p > 0.05$ ) in case of verbal aggression and physical aggression. From the data about average order and the

average may result that there is more cyberbullying at secondary schools.

Tab. no. 3 Improper behaviour according to the type of school

sex		N	Average order	U-test	p-value
Verbal aggression	ES	92	85.86	3621.500	0.142
	SS	90	97.26		
Cyberbullying	ES	92	90.41	4040.000	0.671
	SS	90	92.61		
Physical aggression	ES	92	96.04	3722.000	0.034

## 2 Pedagogical and didactic aspects of teacher work related to devaluation pedagogical issues

According to M. Vágnerová (2004), the problems in the area of behaviour must be solved as soon as possible and it is necessary for the teachers to be able to assess the essence and reason of improper acts, to try to manage them through usual pedagogical means, best in cooperation with parents, and if their procedure were not sufficiently effective, to know whom to ask for consultations or help. The teacher should become aware that his/her opinion of the problematic behaviour of a certain child does not always have to be absolutely objective, since he/she is personally involved in the situation, a learner harasses and enervates him/her, therefore the teacher may not be able to keep a sufficient distance. The teacher should know that it is a normal, natural response, which does not mean that he/she failed professionally.

B. Kováčová (2014) claims that the occurrence of bullying and aggressive acts in various forms points to the introduction of systematic changes and measures. If they are not observed, it is evident that the system with newly created rules will collapse. It must be taken into account that not the rules, but their strict observing may lead to the required changes in the environment where the bullying takes place. According to K. Tišťanová (2012), the school is responsible if bullying occurs in the school environment. It is necessary to approach the class teacher as the first person, potentially the guidance counsellor, or the headmaster, who must deal with the problem and solve it. Solving the problems between the teacher and the learner may not be done only through orders, prohibitions or directions. What is much more effective is to analyse the problems with learners, to look for solutions and eliminate them. "A good teacher will let students learn from the problem, so that they can avoid it in the future, and will not allow to do the pointless devaluation practices in class" (Petlák, E., 2006, p. 89).

It must be said, however, that not every act of offensive behaviour, invectives, or fights, may be qualified as aggressive behaviour and acting of the child, requiring a professional interference. It is generally known that the aggression is given to a human being internally (instinctively), and it depends on several factors whether it develops in him/her to a form of undesirable behaviour, or to such behaviour which may be, medically, qualified as a health problem (Hanuliaková, J. et al., 2015, p. 32). T. Jablonský (2006) claims that through the development of cooperative skills a natural overcoming of aggressive behaviour may be achieved. The strategies and methods of cooperative learning lead the learners to the development of the empathic behaviour of learners, sensitivity, mutual understanding, development of friendly relations, to the overcoming of interpersonal barriers.

Many incentives on how to optimise the education and relations between teachers and learners can be found also in the T. Gordon's publication (2015). He depicts in it "the education without the defeated at school". The essence of this education is searching for an acceptable solution for both parties, i.e. for

teachers as well as learners. It is a method in which “no one can lose”. This method teaches that cooperation, not competition, contribute to the most effective solution of problems. The solution of the problem requires a multicycle process. According to T. Gordon (2015), a good teacher should observe the following four principles:

1. to learn to listen to and try to understand what is heard,
2. to learn when it is necessary to speak with learners,
3. when addressing the problems, no one must feel to be defeated,
4. it is necessary to create and keep open dialogue with learners.

Researches into the aggressivity of learners against teachers mention not only, generally, aggressivity against teachers, but also focus on why some learners afford more to some teachers and less to other ones”. The essence of these differences lies in several factors, or in the style of the work of the teacher with learners.

In 2017, S. Bellová (2018) also conducted a research focused on the aggressive behaviour of learners against teachers in the region of Orava in the Slovak Republic. From the research, which included 154 respondents (teachers), resulted the most frequent reasons of the aggressive behaviour of learners against teachers, namely, shortages in education and internal defects of learners.

## 2.1 Legislative framework of bullying in Slovakia

The framework for the solution of the problems of bullying in the school environment as well as certain starting point in the solution in Slovakia is provided by the document issued by the Ministry of Education of the SR Directive no. 36/2018 on the prevention and resolution of bullying of children and pupils in schools and school facilities, which regulates basic features, forms and acts of bullying the children and learners, possibilities of prevention and methods of addressing the bullying of learners following the responsibility of the school and school establishment according to the articles of the School Act. This directive became effective on 1 September 2018. This aim of this methodological guidance is, with regard to the seriousness of bullying, to provide basic information to the staff participating in the educational process about the forms of its acts, proposal for solutions, ways of its preventive impact, and the need of cooperation with learners' parents, and particular institutions. The document is published on the website of the Ministry of Education, Science, Research and Sport of the Slovak Republic.

The present, even though it is not directly alarming, requires our pedagogical-psychological attention. Each teacher should have knowledge about certain defensive strategies and ways how to manage conflictual situations occurring at school. Relevant are the questions of prevention and a possibility to forestall such acts of students. What is very important is the first, introductory meeting of the teacher with learners, e. g. at the beginning of the school year. These moments are often underestimated, but we assume that they are crucially important for the creation of the authority of the teacher in class and for the building of good, positive and safe climate in class. M. Sirotová (In <http://www.sikana.org/pdf/sirotova.pdf>, online) maintains “that the problem of bullying must be dealt with already during the university training of future teachers.”

## 2.2 Conclusion

However, it is always accepted that the question of prevention remains most important one. There has been much discussion about this issue, and its sporadic application at schools often lacks effect. Teachers should be becoming aware of the need to create at school a safe space through the building of positive and pleasant climate in class, apply new and partner approaches to learners, new open, non-violent communication, use effective forms of cooperation. To teach learners to constructively deal

with problems and conflicts, stress situations, to develop social and communicational competences of learners.

## Literature:

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## ANTHROPONYMS OF OLD KIPCHAK LANGUAGE: A NEW VIEW

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**Abstract:** Outlook, the traditions, beliefs, household way, cliff a written heritage medieval Kipchak are a most valuable source for the definition of etymology many anthroponyms of modern Kazakh language. Therefore, the basic purpose of the given project is the decision of problems, anthroponymy, ethnonymy, and Kazakh onomastics by means of definition of etymologies of system old Kipchak of language. The idea of cultural and language continuity old Kipchak of the names in Kazakh onomastics to the system now is urgent. The proof of deep historical continuity of language ethnomis increases the importance of the put forward project. In this connection expansion of representations about Kipchak of middle ages by comparative researches of laws of development Kipchak and modern Turkic of languages requires the weighed approach to a century history of the Kazakh language. In research work, the historical methods, and also scientific induction and deduction used in etymological researches are applied history-etymological analysis and comparatively. The definition of the etymology of ancient Kipchak anthroponyms and ethnonyms is a key to a solution of a history ethnos of the language of medieval Kazakhstan, that in turn helps to decide some questions ethnology and Turkic. The study of the etymology of ancient Kipchak of names and names ethnos will help to define the language attitudes between medieval Kipchak, ethnogenesis of communication (connection) with the modern Kazakhs, will enable of the restoration of historical continuity.

**Keywords:** etymology, Kipchak language, Turkic languages, anthroponymy.

### 1 Introduction

The outlook, traditions, beliefs, household way, the petroglyphic written heritage of medieval Kipchak are the most valuable source for the definition of the etymology of many anthroponyms of modern Kazakh language. In this article, we raise a question of the solution of the problems concerning anthroponym, ethnonyms, and ethnotoponyms of the Kazakh onomastics by means of definition of the etymology of onomastics system of old Kipchak language.

Now the idea of cultural and language continuity old Kipchak names in the Kazakh onomastic system is actual and proving deep historical continuity of language ethnogenetics, we think that came to expand time of representation about the Kipchak of the Middle Ages as comparative researches of regularities of development of Kipchak and modern Turkic languages demand the weighed approach to century history of the Kazakh language.

During the research, anthroponyms, ethnonyms, and ethnotoponym are at the forefront, it is necessary to set the historical and Etymology analysis and comparative - historical methods, as well as scientific induction and deduction, traditionally used in the etymological research. Determination of the etymology of the ancient Kipchak anthroponyms and ethnonyms is the key to unraveling the history of ethnogenesis language of medieval Kazakhstan, which in turn helps to solve some of the issues of Ethnology and Turkic. Historical and comparative research approach of the language of medieval Kipchak written monuments and studying the etymology of old Kipchak names and names of ethnic groups will help to determine the linguistic relations between the medieval Kipchaks and ethnogenetic connection with modern Kazakhs and will give an opportunity to recover the historical continuity.

At the same time at research of anthroponym of old Kipchak language is the main attention should be paid to the review of history of research of anthroponym of old Kipchak language where it is necessary to enter comparison of model types of anthroponym of East Desht-i-Kipchak and the Polovtsian names, the names which developed on the basis of ethnonyms, nicknames, and names of totems, thus showing that anthroponym of Polovets were closely connected with their title, the related, political, social, economic relations by clarification

of their etymology and at the same time proving that the revealed of ancient Kipchaks anthroponyms were a basis of formation of the Kazakh names. Thus, demonstrating that Polovtsian anthroponymy were closely related to their title and relative, political, social, economic relationships by clarifying their etymology and at the same time proving that identified old Kipchak anthroponyms were the basis of the formation of the Kazakh names. Here it is important to note that, the elucidation of the formation ways of ethnonyms and nicknames of old Kipchak language by the division of Polovtsian names on lexical-semantic groups, based on scientific studies about language sources should be made on the verbal basis - the main grammatical difference between these anthroponyms from names of other Turkic languages.

### 2 Materials and Methods

The etymology of the Kumano-Polovtsian anthroponyms was thoroughly studied by the Soviet Türkologists, while the topic about names of the East Dasht-i-Kipchak still not affected. Therefore, the penetration of the social basis of personal names, the study of linguistic roots of Kipchak names of East Dasht-i-Kipchak and medieval Khorezm state is today's actual problem and has an acute need for research.

Inadequate study of ancient monuments of our people has led to a merger with the "newly created written" people and it became a historical fact. The root cause of this situation was the union ideology, the political purpose to repayment the national identity.

Hostage of this ideology is a generation who, deeply indifferent with their history and culture. This indifference bitterly noted Nursultan Nazarbayev, (1) "The influence of alien ethnic cultures has led to the marginalization of some of our Kazakh people, who have absolutely no idea of their true history."

It is impossible to plan the future, without researching the past history of the nation. The history of the nation is not only in the cultural material sources, but also extant national, cultural and spiritual terminology of that period, which have been preserved in the language sources. In this regard, the history of the appearance of Old Kipchak language anthroponyms, which are comprehensively considered in the onomastic and etymological aspect, in comparison with the Kazakh language, makes it possible to draw conclusions about the origin of many personal names and ethnonyms, where the roots of them lie on the names of totems. Ethnicity, who was the head of state and called Turkic Khanate, as part of the Middle Ages Kipchaks were called "bori totemdi Taipa" or "elbori" and reached predominating tribe. (2)

The results of this huge work will help to solve a number of problems of the ethnogenesis of the medieval history of Kazakhstan, which in turn play a role in Ethnology and Turkic studies. They can also be used for reading special courses on general onomastics and etymology, lectures, in the preparation of anthropological and etymological dictionaries and textbooks.

There is no doubt that today's subject of increased interest in national and world history is the formation of Turkic personal names. Also, their definition will be a significant contribution to the Turkic onomastics. It is not a secret that, up to this day studies on personal names were the prerogative of foreign scientists. However, from the point of view of understanding of national features, traditions, language problems ideas of Turkic language carrier scientists, undoubtedly, more conclusive, since they are based on the scientifically accepted undeniable fact that exactly the Kazakh nation is the spiritual heir and linguistic Kipchaks who lived in the Middle Ages.

Before defining the historical roots of Old Kipchak names origin, take a look at the research historiography. The first "pioneer" in this list became Dictionary M. Kashgari "Diuani lugat-at-Turk". In this dictionary, there are 73 names. Some of

the names, according to Kashgar are just male names, while others are the names of the Khans, true warriors and known poets. In his work, he also explains the meaning of the names of days of a week. (3)

Since the XIX century, the etymology of anthroponyms of Kumano-Polovtsian was studied by famous Russian Turkologists and Orientalists such as L.Z. Budagov, B.B. Radlov, I. Dobrodomov, K. Gronbich, N. Baskakov, S. Pletneva, and others. Also, in the late twentieth beginning of the XXI century, Kazakhstan Turkologists such as B. Makhpirov, M.E. Alimbayev, and others researched too.

In his "Comparative dictionary Turkish-Tatar adverbs" L.Z. Budagov (4) gave a scientific explanation of the history of several names of Kumano-Polovtsian origin. However, he gave only linguistic comments on the name "Aydar" and on the history of the origin of names "Alak, Barak, Kobyak-Kobek".

One of the first researchers of the original history of the Polovtsian names Turkologist V.V. Radlov (5) in his 4-languid work "The experience of a dictionary of Turkic dialects" gives several Polovtsian names such as Emyak, Coban, Samogur, Tugortak-Tugorkan, with an explanation of their meaning. According to other Turkic researchers, V. V. Radlov gave the best scientific and reliable explanation to above names without referring stories of Polovtsian names. Soviet Turkologists considered Kipchak onomastics without a relationship with ideology, ethnopsychology, and mental characteristics. This inevitably led to one-sided conclusions. The realities of today require to look at the history of occurrence of the Polovtsian names in the context of ethnogenesis. In our opinion, this will lead us to the continuity of Old Kipchak and modern Kazakh names. It cannot be determined only by lexical-semantic analysis and systematization; you must pay close attention to social factors - ethnic groups and social groups of the Polovtsian community. Considering this effect, we will be able to more accurately find out the origin of the Polovtsian names in the etymology where ethnonyms, nicknames, names of totems are present. (6-7)

Comparing Polovtsian names etymology, it is possible to reconstruct the history of occurrence and characteristics of the Polovtsian anthroponyms in the later Turkic period, reasonable reliance on the social factor.

Examining the language of the ancestors, we define the degree of closeness of the relationship between material and spiritual aspects of their lives. In this regard, Professor K. Musaeu (8) said, "When we say that language is a storehouse of the history of the people - its carrier primarily refers to the lexicon, which directly responds to all changes in the lives of the nation. Neither the phonetics or grammar cannot show us the living conditions of the people, as the vocabulary".

The study of names that exist in Kazakhstan has a long history, during which the richest factual material was introduced into scientific circulation, which received a detailed structural and systemic description from the standpoint of the origin, semantics, and functioning of anthroponyms of various types in different types of discourse. The choice of a name is one of the components of the construction of personality, during which the limitations of the biological sex are overcome; ethnicity also does not necessarily manifest itself through the name. In our opinion, the personality of a person and his name are identical to each other. Expanding the theory of identity, we would like to note that in the Turkic ethnops a personal name carries an additional burden. (9) The Turkic people believe that when choosing a personal name, the parents lodge in their child an energy program, which lays down the requirements and wishes that determine their future. The identity of the name and destiny of a person, and not only his personality, is the fundamental thesis in the Turkic picture of the world. A proper name contains a huge amount of cultural information, being a reflector of ethnic and aesthetic attitudes that are established in a particular society. (10) It is associated with different periods of socio-cultural life, characterized by stereotypical ideas about the function of a name

in society, which reflects the events of the political or spiritual life of the country. The principle of anthropocentrism is preserved in the linguistic picture of the world even when a person in itself does not mean anything when other value reference points are chosen. A person's own name is so widely considered in various fields that further study of it is possible only with the help of data accumulated by linguistics, philosophy, sociology, and cultural studies. The ancient composition of the Turkic groups in the ancient period with the ancient Türkic, ancient Kipchak ethnic groups, the Oguz-Kipchak tribes, the Ugrians, and later their close contacts with the Volga Tatars, Bashkirs, Bukharians, and Kazakhs, who significantly influenced their onomasticon. (11-12) The earliest components are the ancient Türkic and Kipchak, Bulgarian-Kipchak tribes. At the next stage of the evolution of anthroponymy, the nations that were part of the Eastern association such as the Tuvans, Yakuts, Khakas, and Mongols had a great influence.

The presence of anthroponyms of Mongolian origin is historically determined, since already at the beginning of the 17th century considerable masses of the western Mongols occupied the territories along the banks of the Ob and Irtysh. Culture is the name of the naming in a Turkic family characterized by the preservation of traditions peculiar to the Turks of the late XIX century. Modern anthroponymy is the result of long-term linguistic and cultural activities of people. That is why it is necessary to consider their complex nature of anthroponymic research and a number of additional linguistic and extralinguistic factors. The anthroponym is a component of the lexical-semantic system of a language both by itself and as a part of a unit interacting with a common vocabulary, often retaining in its composition the foundations of the already lost appellations. Anthroponymy provides a rich and unique material for the study of relic word-formation models, ethnic history. (13) The current approach to the study of language is so complex and serious that it unites the efforts of linguists, psychologists, and sociologists. The relevance of the study is matched with the undying interest of people in names. As a link to all aspects of the complex consideration of the place of a name in the structure of the self-consciousness of the individual and the evolution of the anthroponymy, we put forward the principle of the dialogue of the name. Thus, the relevance of the study is determined by the fact that the focus is on the person as the "creator of names" (the term of Yu.N. Karaulov). Appeal to the anthroponymic system from the standpoint of human consciousness, considering the connection of the person's speech and thinking activity with its extra-linguistic environment will allow revealing the underlying processes of the dynamics of the anthroponymic of Turkic peoples. National anthroponymy is a complex system that unites a number of subsystems that are built on the basis of a word-building, semantic or communicative principle. It distinguishes such subsystems that are composed of names united by the similarity or opposite of the values of their bases. In their development, certain mental and linguistic patterns of a general nature are manifested.

The ideal of all onomastic research is to present the entire anthroponymic system completely, "in all its movement from the beginnings to the perspectives. It is completely impracticable, but it can be approached, on the one hand, by imposing synchronous sections on one another, and on the other, by linking the diachronically traceable changes in certain anthroponymic phenomena." Indeed, having different research subjects within the same object, synchronous and diachronic analyzes "complement each other and open up the opportunity to see both the "momentary" life of a language and its life in time". Fundamental is the comment of V.A. Nikonov, "Only in the perspective of time and space is the dynamics of names visible: some tendencies are general, decisive, others are secondary and subordinate, and some are directed against the flow." (14) New in the onomasticon of the people is not only the appearance of names that were not there before but a change in the frequency of the former names. Analysis of historical data contributes to a better understanding of the anthroponymic system since it is the result of long-term development. The presence of the historically

formed and continuing to develop anthroponym corps, on the one hand, and the ability to reflect on the name, choose it for the newborn, and then vary its naming, on the other, determine the angle of viewing anthroponyms as existing “outside of a man” and “inside of a man”. But only in recent years have anthroponyms been considered from the point of view of identifying the actual perception of the name of a member of a particular linguocultural community. Naming semantics is almost independent of language differences. At the moment, many of the mentioned anthroponyms function in the names of the Turkic peoples, which is explained either by the genetic affinity of the ancient tribes or by prolonged contacting, which, perhaps, determines the common anthroponymic vocabulary. (15)

Having studied their anthroponymic systems, one can distinguish three layers of anthroponyms. The first layer is the names inherited from the ancient Türkic and medieval Kipchak ethnonyms and anthroponyms. The second stratum is the names of the Islamic period, which were developed in the New Turkic era. The third layer of names is the names borrowed from the anthroponymicon of the nations which contacted with each other. At different stages of the evolution of society, its own anthroponymic system functioned. Names are created based on a language. So, on the basis of the ancient Türkic language, there existed an ancient Türkic, ancient Kipchak anthroponymic system. The formation and development of the anthroponymic system are associated with the cultural traditions of the Turks, Kipchaks, Bulgarians, Ugurs, Karlucs. Tribal names, ethno-anthroponyms of the Turks allowed determining the language-basis of anthroponymic systems. In the Middle Turkic period (10th – 15th centuries), tribes and clans merged, leading to the formation of a single spiritual and material culture and what caused the functioning in the nominal of Turkic anthroponyms of various origins. The Turkification and the adoption of Islam by the Golden Horde also greatly influenced the anthroponymic system of the Turks. The Middle Turkic period can be divided into three chronological stages: the Bulgarian stage (X – XIII centuries) as the pre-Golden Horde period, the Golden Horde stage (XIII – XV centuries) and the Late Golden Horde stage or the Tatar-Khan period (middle XV – XVI centuries). The names of the Turks in this period is characterized by the presence of anthroponyms of common Turk and Arab origin. The penetration of Muslim names occurred for several centuries. The reason for this is the confrontation of the local paganism of the new religion. (16)

### 3 Results and Discussion

Regarding the etymologies of the Turkic names mentioned in the annals, there are significant developments of P. Goldan, N. Baskakov, and O. Pritsak. Among the names of the most famous Kipchaks were Sharukan, Otrók (Slavicization of Turk. Äträk), Könčäk, Köpek), Kurya (Slavicization of Turk. Kürä, Kür er), Boniak (Slavicization of Turk. Bögnäk), Beđlük, Köten, Bashkord, Hzak or Koza (Slavicization, Turkic variants Qoza, Qozy), Urusoba, Altunopa, Tugorkan (in the Byzantine chronicles Tugortaq, Turk. Togri-Tarxan, Tugar-tegin), Aena, Akym (Aq-quš), Koban (latinization Guban, Turk. Kopan, Qaban). The name Köten (Lat. Kuthen, Turk. Kötän) was distributed as a name in the Mahmud al-Kashgari dictionary and there is also a reason to derive the etymology of the name from the ancient Türkic verb Quta. Urus-opa, Altun-opa, Arslan-opa, Qitan-opa, Jenger-oba/Čengir-apa/Čenegir-apa/Čengir-pa, Qay-opa, It-ödi, Itlär, Qitan were names and ethnonyms. In general, there were twenty-eight Kipchak ethnonyms.

The names of the Otrók and Boniak (this form is close to the Uyghur name Bögnäk) were also among the Oguzes, and Kurya (Kürä, Kür er) was also the name of the Pechenegs. The etymology of this name was also in Mahmud al-Kashgari. Regarding the origin of the name Sharukan, the researchers attributed to him the Proto-Mongolic (Širaqan), Bulgarian (Šarakan), Turkic (Sazađan) or Alanian (Šarađan) occurrence. Such names as Sugur, Samur, Taš, Bilge-tegin, Bašqurt, Saqal

had common Turkic etymologies. The name Sdwak generally had an Iranian etymology (Sädäwäk).

Among other Kipchak leaders there were Azyöly, Aqysapa, Aqlan, Baraq, Bildüz, Bakmiš/Baxmyš, Boluš, Berkapa, Girgin/Kirgin/Kürgen, Jaksyn/Jyksyn, Eltut, Köksüz, Qoldač, Tatur, Turundaj, Čuđa, Qorqut, Qunuj, Kičik, Koräs, Kündädžik, Osuluq, Sütemir, Santüz, Sawuk, Sarysan, Sürmār/ Sürbär, Taz, Taryq.

Hungarian chronicles and documents, as well as Kypchak anthroponymy in Hungary, contain rich material for research. The code of Kipchak names and ethnonyms was summarized in L. Rashonyi's essay on Kypchak anthroponymy. The names are mentioned in the chronicles such as Aquš (Aq-Quš), Bortz (Borč), Memborch (Men-Borč), Kuthen (Turk. Kötän), Uzur, Alpra (Turk. Alpar, Albugra), Kemeneche (Turk. Kämänče), Oldamur (Turk. Altimir), Zeyhan, Keyran, Parabuch, Buthemer. Among the names of lesser-known Kipchaks are Aboska (Turk. Abušqa), Atlabarz (Altı-bars), Backholda (Turk. Badžqoldı), Baramuk (Baramuq), Beke (Beki), Biter, Buzkan (Buzđan), Chybuk (Turk. Čilbuk), Chakan (тюрк. Чаган), Kachman (Qačman), Kaplan, Koncha (Turk. Qončı), Michi, Menk, Mordar (тюрк. Murdar), Aydua (Turk. Ay Dođa), Kopulch, Kupchech, Tastra (Turk. Taš-Tura), Tolon (Turk. Tolun), Tarzuk (Turk. Torsuk), Turtule (Turk. Tört-el), Manthula, Kumcheg (Küncheg). Turtule (Tört-el) and Kumcheg (Kunchech); these are names and ethnonyms. For the names, Zeyhan, Uzur, Mantula, Parabuch, Buthemer, Menk, Michi, Kopulch no reliable Turkic etymologies were found. For many names, L. Rashonyi found etymologies in “Codex Cumanicus”.

Excerpts of the Kipchak language were recorded in the Mahmud al-Kashgari Dictionary “Vault of the Turkic Language”. The same is characteristic of the Oguz language of the 10th – 11th centuries, for which the only source is the information of Mahmud al-Kashgari. This scientist, when presenting language material, compared Oguz and Kipchak languages with Karakhanid language. It was indicated how to pronounce the word Oguz, and how to pronounce in the Kipchak language. Anna Komnina also pointed to the ethnic affinity between the Pechenegs and Kipchaks. She reported that Kipchaks and Pechenegs spoke in the same language. Mikhail Syriisky considered the Kipchaks one of the three parts of the Turks who settled in the 10th – 11th centuries. The same Mahmud al-Kashgari noted that the languages of the Bulgars, Suvars, Badjanak (Pechenegs) are Türkic, but different from those of the Kypchaks and Oguzes. Paying attention to these data, we should note that in order to understand, the Kipchaks should have spoken in the Oguz language (well, of course, they also owned their own). This assumption is not improbable, since the Pechenegs and Oguzes have been neighbors for several centuries, and the Pechenegs should have known their language. (17)

According to Mahmud al-Kashgari, the languages of Yagma and Tukhsi were close to Oguz. That is, the Kipchaks and Oguzes had a lot in common with the peoples of the era of the ancient Turkic kaganats (the royal family of yagma came from Tokuz-Oguz, and the Tukhs are descendants of Turgeshes. Turgeshes were also called decadal Turks, referring to their continuity from the Western Turkic Kaganate). It is possible to assume that for Central Asia, the Oguz language was a kind of lingua franca. It should be noted that during the Kipchak conquest, the Kipchaks conquered many Oguz tribes and included them in their composition.

Thus, we concluded that the language of the Kipchaks of the pre-Mongol period was closer to the Oguz language than the modern Kipchak languages. These languages can be considered ancient Turkic. The Kipchak language was more archaic than the Turkic “Codex Cumanicus”. The dictionary of Mahmud al-Kashgari is almost the only monument where the Kipchak vocabulary of the XI century is recorded. In addition, the monuments of the Kipchak language are the names of the Kipchak leaders, which are recorded in narrative sources from different countries. (18) This study is one of the studies that ground the analysis of the

historical development of the Kipchak language. We are moving away from the scheme of Turkic languages offered by N. Baskakov and suppose that in the 11th – 13th centuries. Oguz and Kipchak languages could be closer to each other than later Oguz and Kypchak groups of Turkic languages. Many names of Kipchak leaders have parallels in other Turkic languages, in particular, Oguz, Karakhanid, Uigur, and Turkic “Codex Cumanicus”. Mahmud al-Kashgari in his dictionary pointed to the common Oguz-Kipchak and Karakhanid-Oguz-Kipchak vocabulary. Common onomastics and vocabulary convince us of the proximity of Oguz and Kipchak languages. (19-20) This study allows researchers to look at the historical development of the language not only from the point of view of the modern linguistic classification of the Turkic languages but also from the point of view of those who knew the Kipchaks directly and could competently judge their language.

#### 4 Conclusion

From generation to generation passing the public and social experience, spiritual wealth as a national heritage, people create a material and spiritual culture of society. Rethinking the facts of human history, learning and absorbing the invaluable experience of generations, new members of the community have the opportunity to further develop at a higher level. (21) Traditional ways of the people, positive character traits, especially the national worldview, aesthetic perception, and psychology - all periods of national development can be found in the language of the written heritage. Old Kipchak language, during its former prosperity Turkic language, was spoken in the community, was office language and the language of international communication. Already at that time “Kipchak language” had a wide area of distribution and experienced many historical and social upheaval. There is no it is classified as a dead language, but Kipchak language is the foundation of Kipchak language groups such as Kazakh, Karakalpak, Nogai, Tatar, Bashkir, Kumyk, Karachay, which are currently raised to the level of independent national languages. (22-23)

It is also indisputable that the linguistic point of view on anthroponymy used in the Middle Ages, has played a significant role in the Turkology, as a science in identifying ways of formation and development of the literary language history, areas constituting the history of language - historical phonetics, historical grammar, syntax, historical, historical lexicology. It seems to us, the study this character, based on comparative work with anthroponyms, though raises doubts among Turkologists of Eurasian continent, yet it could be solved. Anthroponymy related Kipchak languages should be investigated by the comparative-historical method, combined with modern Kipchak language materials, capturing the ancient Turkic language examples, examples of the modern language of Turkic languages, through synchronous description, as well as historical and diachronic aspect.

For theoretical and methodological foundations of the study should be used monographs and articles of domestic and foreign scientists in the field of Turkic studies, recent theoretical and methodological achievements in modern Turkic philology, which will expand the topic more fully clarifying the ethnolinguistic and etymological continuity of language formation relating to the Kipchak group. (24)

A distant scientific value of this work we see in consideration of the close relationship of historical grammar and historical lexicology of the Kazakh language, coupled with the problems of Turkic studies. The additional use of materials from groups related to Kipchak languages and linguistic comments made at comparative aspect, meet the requirements of traditional Turkic studies, but modern, unconventional approach prejudice the relevance of the new vision at the present stage of development of science.

In the study it is necessary to make an attempt change the angle of view of the peculiarities of language development related Turkic peoples, to reassess the structure, the cognitive value of the remaining pearls of the word, making full use of the

comparative method study philosophy, culture, way of life, the spiritual riches of the Turks, to reveal the nature of linguistic phenomena by studying anthroponyms in the languages of kindred peoples of the Kipchak group, considering account differences in the historical development of ethnic groups.

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## DEVELOPMENT OF STUDENTS' KEY COMPETENCES AND KNOWLEDGE THROUGH INTERACTIVE WHITEBOARD

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This contribution was created in connection with the project KEGA 021UKF-4/2018: Development of teaching materials supporting pupil's orientation for technical study programs.

**Abstract:** The topic of the study is the issue of students' key competence development in relation to the use of digital technologies as supportive means in teaching processes. In particular the attention is paid to the possibilities to develop students' key competences in teaching Technology, a compulsory subject at lower secondary schools (ISCED 2) in Slovakia, based on the use of IWB in teaching/learning activities. The objective of the research, presented in the article, was creation, application and partial verification of an educational model aimed at key competences and knowledge development through IWB in the subject of Technology. The authors describe partial results of the created model verification with a research sample of students of the 6th and 8th grade (aged 12 and 14 years). The results show that the educational model contributes to the key competence development - especially interpersonal competences and class interactions, stimulates mutual communication and teamwork of students which are among the most demanded competences.

**Keywords:** Key competences, Lower Secondary Education, Technology, Interactive Whiteboard (IWB).

### 1 Introduction

The life we are living today can be characterized very well as the age of continuous information and communication technology (ICT) development. These means have become a common part of our everyday lives and they play a very significant role in every sphere of the society – i.e. in education, too. Digital technologies are implemented more and more into the educational processes on every level of education, from pre-school to higher education institutions (Brečka, 2014; Ormanci et al., 2015; Drigas, Papanastasiou, 2014; Serow, Callingham, 2011). To ensure the best learning achievements of the broad scope of students and through the achieved education to ensure adaptability of young people to both their common life in the society and the labour market requirements, development of so-called key competences is becoming more and more emphasized in most of the European countries (Pepper, 2011). That is why currently education and teaching processes in many EU and OECD member states, Slovakia not excluding, are trying to follow the key competences development (Hutmacher, 1997; Papak et al., 2015). Based on the employer survey aimed at the primary key competences in the 21st century in 500 most successful organisations worldwide, the most significant (by the employer most required) key competences, arranged in order of their priority, are these ones (Longworth, Davies, 1996): team work, problem solving skills, interpersonal skills, communication skills, listening skills, personal and professional growth, creative thinking, leadership, defining goals and motivation, writing and organization development. These skills are not specific in relation to some particular science field or school subject, they can be understood as cross-curricular, i.e. as skills which should be developed in frame of each of the school subjects. A question for educators is how to develop these skills (key competences), through which means and what activities (within a particular school subject). One of the possibilities how to support the key competence development is to use interactive whiteboards in teaching processes for this purpose. Hereinafter we present results of a research aimed at the possibilities of the key competence development by the use of these means in teaching school subject Technology.

### 2 Background of the research

#### 2.1 Teaching Technology at lower level of secondary schools

Technology is a compulsory school subject taught in Slovakia at the lower level of secondary education (ISCED 2, in Slovak conditions grades 5 – 9 of a basic school) with a time allocation of 1 lesson per week in each of the grades 6 – 9). According to the State Education Program (2015) the purpose of the school subject is to form practical work habits of students, i.e. to complete their general education with a component necessary for one's integration into the real practical life and the labour market, too. Through practice oriented activities students acquire safe work habits and learn to assess risk when working with various materials and tools. Furthermore, students acquire basic administrative and commercial skills such as time and resource management.

The main objectives of education in this subject is the development of:

- technical creativity, which Hand (1985) defines as the activity of students related to technology, characterized by the full concentration of students on the technological object of education;
- technological literacy, which has been defined by several authors including Dyrenfurth, Zoller and Toldsepp, according to whom it is the technical education minimum that should be acquired by each individual (Dyrenfurth, 1991);
- technical thinking (complex of thought operations, particularly the thought analysis of the work result expectations, retaining and activating previously acquired knowledge, skills and experiences, which may be used to solve a particular given problem, in construction, production process, and the synthesis of all the matters by means of which the solver reaches the project design, in other words the construction solution and processing of a product (Škára, 1993);
- spatial imagination, i.e. the ability to imagine/visualise features of three-dimensional objects – their shape, position, size, location (Tomková, 2014);
- knowledge and skills related to technology, technical materials and tools for their processing.

To teach Technology requests a great effort of Technology teachers to ensure appropriate conditions mainly for the practical activities of students. The teachers point out as the most frequent problems related to teaching this subject insufficient technical and material equipment to carry out inquire learning and practical oriented activities of students, non-functional didactic technology, out-of-date teaching aids including working tools and measurement devices and absence/lack of specialized classrooms (workrooms) for Technology teaching at schools (Hašková, Bánesz, 2015; Pavelka, 2013). The mentioned is not problem only for Slovakia, as there is evidence of this problem also in other countries (Mellingsæter, Bungum, 2015; Öz, Hüseyin, 2014; Tatli, Kilic, 2015; Redman, Vincent, 2015; Sahin et al., 2010).

On the other hand the level of ICT equipment - school ratio has been now-a-days quite satisfactory. But in this point we distinguish between the ICT equipment of schools by such "general" didactic technology means as are computers, dataprojectors, interactive whiteboards or tablets and technical equipment of schools in particular for teaching Technology (technical means and teaching aids as saws, bench planes, grippers, electronic and robotics kits etc.). So on the one hand teachers are right when they point out the problem of insufficient technical and material equipment to teach the school subject Technology but on the other hand we are witnesses of the fact that as to the equipment of schools by the ICT didactic

technology, the situation is by no means so bad. But what is many times insufficient in this context, is preparedness of teachers to work with these means, i.e. their didactic technological competence. As different authors state, amount and level of ICT equipment at schools has outrun the level of the relevant professional competences of teachers' (Higgins, Beauchamp, Miller, 2007; Smith, Hardman, Higgins, 2006; Tureková, Depešová, 2014). However, as the results of Pigová's research show (2005), the key problem also here is that the teachers (in general, independently on the subject they teach) miss electronic teaching materials and teaching aids (relevant to their subject teaching). In particular they miss such materials which would enable them to bring into practice education changes following development of students' key competences. Despite the lack of these materials we may see effort to implement at least interactive whiteboards in education and to use these means to support students' personalities development, although the way in which this is done is not always an appropriate one (Pigová, 2005; Brečka, 2013).

Similarly, Moss et al. (2007) state that the use of interactive whiteboards at schools is considerable diverse. While most teachers use interactive whiteboards as an additional supporting factor to their prevailing teaching styles, others use interactive technology as a basis for innovation and improving their teaching methods. Moss et al. also point out that the impact of the use of interactive whiteboards varies from one subject to another one what might be caused by the uneven availability of materials for different subjects.

The presented matters evoked our intention to create a model of the key competence development and to it related materials applicable in teaching the subject Technology. To use just the interactive whiteboards as a means of the support of the key competence development resulted from the fact that interactive whiteboards allow one to create a variety of activities in which

students respond to stimuli of different kinds, e.g. audio or video records, animations, simulations, playful activities etc.

## 2.2 Model of the Key Competence Development

To define the notion of the key competences is very difficult, as they present an intersection of multiple determining units and scientific fields. Definitions stated by various authors differ, but in general they agree the fact that key competences can be defined as the knowledge, skills and approaches which we, as individuals, need not only for social inclusion and employment but also for our personal development and contentment (OECD, 2005). It is evident that each person has a good command of a wide range of key competences in order to adapt to the fast changing world that comes with globalisation (Kudryashova, Gerasimov, 2012).

Based on the results of the available analyses (Filipe, 2006; Harlow et al., 2010; Dostál, 2009; Erbas et al., 2015; Kennewell, 2006; Liang et al., 2012; Moss et al., 2007; Pigová, 2005; Türel, Johnson, 2012) we selected key competences and skills which are on the one hand compatible with the system of competences in EU and OECD member states but which are on the other hand also in compliance with the goals and content of the subject Technology (Table 1). The model of the development of these key competences within the subject Technology is presented in a graphical form in Figure 1. The applied educational model was constructed with the intention to help students to acquire knowledge (subject matter) during the lesson (to meet the objectives of the lesson at the demanded level) and especially, to create situations and activities which support development of the selected students' key competences.

Table 1. Overview of the Selected Key Competences

Categories of Key Competences	Selected Key Competence, Skill	Behaviour	
<b>Interpersonal</b>	Team Work (Int.-TW)	No communication, no help	Communication, advising in pairs
	Harmonic Relationships (Int.-HR)	No communication, no mutual help	Signs of teamwork – compliancy; mutual help in work with IWB
	Efficient Work (Int.-EW)	No cooperation whilst resolving tasks, no communication, solitary work	reading information and then task resolution through communication, task division
<b>Communicative</b>	Reading Comprehension (Com.-RC)	Reading of the text without will to comprehend and resolve the task	Reading of the text and trying to analyse, comprehend and resolve the task.
	Speaking Skills (Com.-SS)	Abrupt expression	No problems with expression
	Writing Skills (Com.-WS)	Written expression is unclear, wrong and uncomely.	Writing down right resolutions comely
<b>Personal</b>	Control over Behaviour – Self-control (Per.-SC)	Partial self-control (some instances of distraction (disturbing, impatience, disorder)	Full focus on the teacher and the team – no disorder
	Honesty and Responsibility (Per.-HR)	Insecurity, turning around, seeking other classmates	Solitary, confident task resolution
<b>Learning</b>	Self-motivation and Motivation of Others (L.-M)	Solitary task resolution – offers no encouragement to solving or acquiring information	Mutual encouragement to task resolution and acquiring information.
	Problem-solving (L.-PS)	Cannot identify a problem, unable to draw on solutions and conclusions, no seeking other possible solutions	Can identify, analyse problems, seeks multiple solutions
	Active Participation in Task Resolving (L.-AP)	Losing interest in task resolution	Expression of excitement for task resolution
<b>Cognitive</b>	Critical Thinking and Evaluation (Cog.-CT)	No acceptance of information, no logical thinking	Critical evaluation of information, successful solitary work logical thinking



Figure 1. Model of the Key Competence Development

The scheme in Figure 1 presents the educational model which consists of the basic attributes of the teaching/learning activities of both subject (teacher) as well as object (student) of these activities, based on the work with interactive whiteboards (IWB). In relation to the application of IWB aimed at the development of the mentioned competences, we specified following key factors of our model:

*Sharing information* on IWB is a prerequisite for effective use of information, motivation, maintaining students' attention and activity. As a result of the information sharing, students discover new, often hidden dependences, which help them to seek and create new original forms of the problem solving.

A subsequent factor for student interaction is the *use of oral and written communication* in the teaching/learning activities supported by the IWB applications. Students are given a possibility to write, fill in, draw, circle the answers and at the same time they express their opinions, lead discussions and evaluate results of their work.

Another advantage of the work with IWB is that these means enable *object manipulation*. Due to different activities at which the students practically turn the objects in a plane, order different geometric (2D) figures in the given area, change their mutual positions the students learn to manipulate with the objects. They acquire the relevant abilities and at the same time through them they develop also their spatial imagination, visual-motor coordination, shape perception and the ability to recognize objects in general. In addition to these skills and abilities the students also develop their technical imagination and become familiarized and accustomed to the use of technical terminology. Notion visualisation (as well as notion imagination) plays an important role in the process of the notion fixation. Consequently students' technical (technology) thinking is developed in practical tasks (learning activities) in solution of which the students apply the acquired knowledge.

The most dominant factor of the model is the factor of the *multimedia support* related to the teaching and learning activities. At the work with IWB this factor means mainly possibilities of interaction and influence of students in a multi-sensory way (acquiring of information repeatedly through different sense-organs, e.g. a student at first hears the information and then s/he reads it). This multi-sensory repetition of the information is typical for multimedia, the application of which increases the possibility of catching, understanding and long-lasting retaining of the information (Oblinger, 1991; Bohony, 2003).

Further factor of the model is the *dynamics of the interactive environment* of the IWB. This dynamics enables to present different movements and developments of the investigated phenomena. The dynamics changes the static attitude towards the presented matters to a dynamic response possibility. A teacher's objective, when working with an interactive system, should be an active participation of students in the ongoing activities. Particular activities within the model of the key competences development are designed to enable the students to process and select information, formulate answers and construct meanings. Students remain active throughout the whole teaching process due to various different activities such as reading, writing, discussion, desire for success, self-evaluation etc.

Despite the above-mentioned factors of the presented model, in the process of the key competence development the *teacher* still plays the most important role. As a guide and organizer, preferring open communication with the students, the teacher helps the students to be independent and active, helps them to seek new available information, to use and apply the acquired knowledge and supports their activity, responsibility and self-assessment. The teacher's task is to manage the teaching process with a maximal use of the IWB and teaching materials developed and elaborated with the respect to the designed model.

### 2.3 Implementation of the designed Model of the Key Competence Development

Investigation of the possibilities to implement the designed model of the key competence development into the lower level of secondary education and verification of the possibilities to develop the students' key competences by the means of the use of the IWB within teaching school subjects of STEM (natural sciences, technology, engineering and maths) became the intent of a national research project carried out with a financial support of the Cultural and Educational Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic during the period of the years 2013 – 2015. At the project experts from three Slovak universities were involved in. One of the expert teams was from Constantine the Philosopher University in Nitra (Faculty of Education) and its responsibility was to verify the possibilities to develop the students' key competences by the means of the use of the IWB just within the school subject Technology. The other two expert teams were from University of Prešov (Faculty of Humanities and Natural Sciences) and Matej Bel University in Banská Bystrica (Faculty of Natural Sciences). These expert teams were responsible for verification of the created model in relation to the school subject physics and mathematics.

So the task of our expert team (Constantine the philosopher University in Nitra) was to develop a teaching strategy model aimed at the development of the key competences of students within the school subject Technology through IWB and to verify whether the proposed model and teaching strategy applied in certain topics of the subject Technology in selected grades of the lower secondary schools will create conditions which will contribute to the development of the key competences of the students. The main objective of the research was to confirm the suitability of the teaching materials designed and elaborated with respect to the constructed model for teaching Technology, to verify the draft of the teaching model using the IWB means and to observe possible impact of the relevant teaching/learning activities based on the use of IWB means on the development of the students' key competences.

## 3 Methodology of the Research

### 3.1 Description of the designed teaching materials

The first step of the research was development and elaboration of the teaching/learning materials for Technology teaching with respect to the created model of the key competence development. The relevant materials were elaborated in focus on the (curricula) topics and consisted of IWB presentations, methodological guide (workbook) for the teacher, worksheets for

students and observation sheets. Below the materials to the (curricula) topic Wood, Its Significance, Properties and Use is presented.

The IWB presentation consists of three parts and includes in all 12 slides:

- Introduction part – presents information on the topic, objectives and lesson organization.
- Main part – contains subject matter of the given topic processed within particular teaching/learning tasks (activities). The number of the tasks is irrelevant. The kinds of the tasks vary (choosing the right answer, completion – writing, drawing). It is important that each presentation presents such situations which enable the students to develop their knowledge and key competences.
- Conclusion – serves the teacher as information on resources.

Slide 1: contains the name of the taught topic and a motivational picture relevant to the presented topic.

Slide 2: contains information on the lesson goals, use of the IWB in the subject matter acquisition and on the work of the students, their work in couples using the worksheets.

Slide 3: contains the first task (T1) in which the students are asked to divide trees into the right categories.

Slide 4: informs the students about the macroscopic composition of wood and presents the second task (T2) in which the students have to put the right name to each part of the cross-cut wood.

Slide 5: informs the students about various shapes of wood cores and presents the third task (T3) asking the students to make right pairs out of the pictures, shape of the wood-core + tree, on the IWB.

Slide 6: informs the students about ligniperdous insect and presents the fourth task (T4) asking the students to put the right insect name to the pictures.

Slide 7: informs the students about woodworking tools and the students are given a task (the fifth one T5) to indicate the right answer.

Slide 8: gives the student the sixth task (T6) to write the right names of the presented woodworking tools below their pictures.

Slide 9: contains a revision exercise (the seventh task T7) asking the students to choose and mark a picture of a chisel.

Slide 10: contains a video by means of which the teacher provides further information about wood and woodworking.

Slide 11: contains information (mainly for the teacher) about resources used for the presentation.

Slide 12: is the final slide, which contains acknowledgement addressed to the students for their work and gives them instructions how to calculate in a team work the gained scores (achieved number of points) for the tasks they solved.

To each of the presentations a workbook for the teacher was worked out. The workbook serves as a methodological guide according to which the teachers manage the lesson course. It contains information on all organizational and material requirements put on the given topic teaching. It specifies total number of the lessons devoted to the particular topic, grade in which the (curricula) topic is taught, the lesson content relevant to the taught (curricula) topic, lesson objectives and learning outcomes, and mainly students' key competences which should be acquired or developed during the lesson by means of the IWB and solving the particular tasks involved in the (to the given topic) relevant presentation. The workbook informs the teachers also about the time intervals necessary/recommended for solving each of the tasks involved in the presentation and about the number of points which the students can obtain for their correct solutions.

Students' worksheets contains the task assignments and relevant instructions for their solving on the IWB. Students solve the tasks by the means of IWB and consequently they check correctness of their solutions in the given worksheet. In term of the key competence development, the IWB provides variable multimedia visualisation elements (Fig. 1). And it makes much easier to incorporate a wide use of multimedia resources in

lessons such as text, pictures, video, sound, diagram, and online websites (Johnson, 2002). This means that solving the given tasks on the IWB was the crucial matter with reference to the carried out research.

All the designed teaching/learning materials were consulted with in-service teachers at schools where their verification was going to be observed (i.e. their drafts, to enable to make contingent modification before their application into the teaching practice).

### **3.2 Verification of the designed teaching materials and their possible contribution to the students' key competence development**

The second step of the research was verification of the draft of the teaching model using the IWB means and confirmation of the designed teaching materials' suitability for the created model application to Technology teaching with respect to the possible impact of the relevant teaching/learning activities based on the use of IWB means on the development of the students' key competences (i.e. verification of the educational model and its applicability and contribution to the specified students' key competence development through the created methodological materials).

The verification was done at schools located in Nitra and Trnava region, namely in five classes of the 6th grade and one class of 8th grade. The total number of the students engaged in the research sample was 85.

Lessons, during which the materials were verified, in all of the schools and grades included in the research sample consisted of the same standard structure (motivational part, exposition part, fixation part and diagnostic part) apart from the fact that they were focused on the work with IWB means as the teaching process supporting element.

In the introduction parts of the lessons the teachers informed students about the objectives, arrangement and methods going to be used during the lesson. The main part of each of the lessons was focused on the use of IWB and the relevant teaching/learning activities based on their use (solving the relevant tasks), given in the particular presentation, both on the board and in the worksheets. Prior to solving each of the tasks the teachers motivated the students through a short discussion aimed at the appropriate issue. Consequently the teachers called a pair of the students to the IWB to solve the task. The rest of the pairs solved the task in their worksheets. During the solution of the particular tasks the pairs of students took turns step by step at the IWB. The students checked correctness and accuracy of their solutions in the worksheets and noted down the number of the points they gained. At the end of the lessons, the students counted their total scores achieved in the worksheet and the teacher evaluated the lesson.

Verification of the designed teaching materials and their possible contribution to the students' key competence development was based on observation. For the purpose of the presented research there was used direct short-term structured observation (6 lessons) done by a trained observer. There was also an intention to record videos of the lessons to increase exactness of the research data records but most of the schools rejected to provide an agreement on this possibility.

The observer's task was to note down the occurrences of the situations in which the students manifested use of some of the relevant key competences in the performed learning process. The observer took a place in the classroom before the start of the lesson in a position from which he could flawlessly see the selected observed pairs of the students (each time only two pairs were observed, see below). To record the data he had an observation sheet at disposal. The structure of the observation sheets was similar to the students' worksheets. The similarity of the structures of these two kinds of sheets ensured the observer's orientation in the progress of the lesson, what eliminated appearances of his possible mistakes. The observer recorded the occurrence of the

observed phenomena into the observation sheet by means of “yes” or a vertical line, for each task separately. He recorded each time occurrence of the manifestation of the students’ key competences always only for two randomly selected pairs of the students to ensure maximal objectiveness and accuracy of the research data he recorded to the observed phenomena. The teaching pedagogue was asked in advance to call to the board to solve the tasks predominantly the students of the selected focus groups. At the end of the observation sheet, in a summary table the observer counted the overall key competence occurrence rate.

For statistical processing of the obtained research data methodologies of several authors (Stranovská et al., 2013; Kapusta et al., 2010; Záhorec et al., 2010) were used. Within the data processing the main attention was paid to:

- identification of possible interrelations between the results (scores) reached by the students and occurrence of manifestation of the key competences.
- comparison of the results achieved at the given tasks in the particular classes,
- comparison of results achieved at the particular tasks solutions in dependence on the grade of the observed students,

and two working hypotheses H0 were tested:

- H0: The obtained scores are not dependent on the selected key competence occurrence.
- H0: There is no significant difference in the achieved scores of the tasks among the students of the particular classes, i.e. the score is not dependent on the class.

To test these hypotheses the nonparametric correlation - Kendall's Tau coefficient and the nonparametric Kruskal-Wallis test were used.

In addition to the verification of the educational model and its applicability and contribution to the specified students’ key competence development through the created methodological materials there was tested also a working hypothesis:

H0: There is no significant difference in the achieved scores between the students of the 6th and 8th grade, i.e. the score is not dependent on the grade.

To test this hypothesis the nonparametric Mann-Whitney U test for testing was used (Table 9) and multiple comparisons was used to prove the statistically significant differences between the particular (6th and 8th) grades.

## 4 Main Results of the Research

### 4.1 Identification of the Relationships between the Obtained Scores and the Key Competence Occurrence

In this part of the research the working hypothesis H0: The obtained scores are not dependent on the selected key competence occurrence was tested. Also here the stated hypothesis represents four particular hypotheses. This means that the hypothesis was tested repeatedly, each time for another of the given key competences, which in particular were:

- interpersonal competences,
- learning competences,
- communication competences,
- personal and cognitive competences – critical thinking.

The results are presented thereafter again for one after another.

Figure 2 shows the matrix diagrams of the relationships between the obtained scores and the occurrence of the interpersonal competences (frequency of their occurrence). In each of them a direct proportional of the observed two variables was identified. As the diagrams show anomalies, consequently Kendall's Tau coefficient (nonparametric correlation) was used to estimate the strength of their relationship (Table 2).

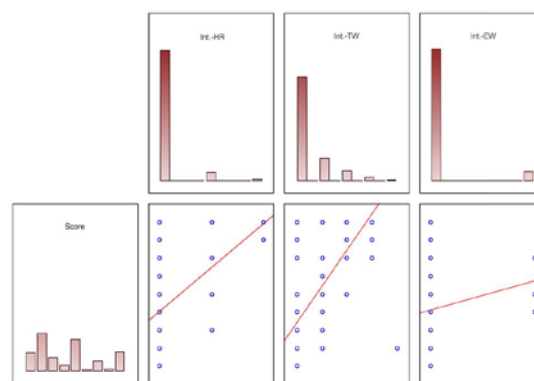


Figure 2. Matrix diagram of the relationships between the obtained scores and occurrence of the interpersonal competences

Table 2. Correlations of the obtained scores and the interpersonal competence occurrence

Pairs of Variables	Valid N	Kendall Tau	Z	p-value
Score & Int.-HR	168	0.239513	4.60862	0.000004
Score & Int.-TW	168	0.528026	10.16008	0.000000
Score & Int.-EW	168	0.162817	3.13287	0.001731

As it is clear from the presented data, the hypothesis H0 was rejected at the 1 % significance level. A small degree of correlation with the achieved scores was identified in terms of harmonic relations and work efficiency. This could arise from the fact that whilst the overall atmosphere in the classroom was pleasant, the students have worked inefficiently and have often cheated, what resulted in low values of the achieved scores. In many cases, at the 8th grade students (mainly boys) no harmonic relations among the students were recorded. Therefore also no efficient work was recorded in these cases.

Opposite to harmonic relations, in case of the interpersonal competence of the team work, the relationship of them with the values of the obtained scores was estimated on a strong level. This is supposed to be just due to the efficient team work of the students and their effort to achieve a good common result (to obtain a high score).

Figure 3 and Table 3 show the relationship between the obtained scores and the learning competence occurrence. In all cases with the exception of the case of problem-solving competence a direct proportionality was identified.

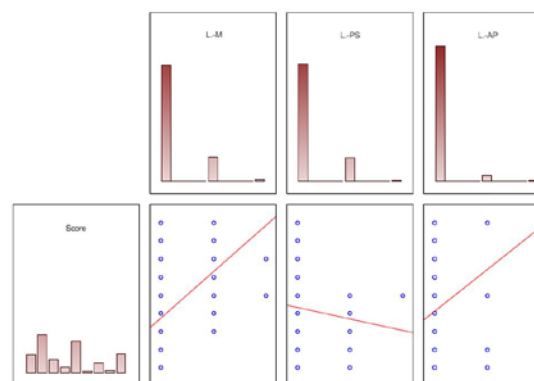


Figure 3. Matrix diagram of relationships between the obtained scores and occurrence of the learning competences

Table 3. Correlations of the obtained scores and the learning competences occurrence

Pairs of Variables	Valid N	Kendall Tau	Z	p-value
Score & L.-M	168	0.380429	7.32007	0.000000
Score & L.-PS	168	-0.032152	-0.618655	0.536144
Score & L.-AP	168	0.142876	2.749168	0.005975

The hypothesis H0 was rejected at the 1 % significance level in case of the obtained score and the skill of self-motivation as well as in case of the score and learning competence – active participation in task solving. Between the obtained scores and motivation competences a medium correlation was recorded, and between the score and learning competence active participation in task solving there was recorded at least a low correlation.

The hypothesis was proved for the skill to solve problems. The relationship between the obtained score and this competence was trivial and inversely proportional. The fact that the relationship was identified as a trivial one means, that the relationship between the two observed variables was not proved. This can be explained by the fact that an active participation in a problem solving does not ensure (bring) an effective problem solution (i.e. need not to contribute to it). On the contrary, in classes where mutual motivation of the students was observed, there was recorded also a directly proportional relationship in terms of the obtained scores.

Figure 4 and Table 4 show the relationship between the obtained scores and the communication competence occurrence. There was identified a directly proportional relationship at each of the three observed communication competences.

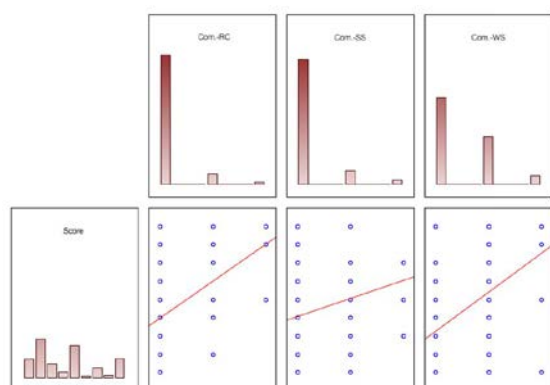


Figure 4. Matrix diagram of relationships between the obtained scores and occurrence of the communication competences

Table 4. Correlations of the obtained scores and the communication competence occurrence

Pairs of Variables	Valid N	Kendall Tau	Z	p-value
Score & Com.-RC	168	0.221888	4.26949	0.000020
Score & Com.-SS	168	0.170632	3.283229	0.001026
Score & Com.-WS	168	0.414741	7.980299	0.000000

The hypothesis H0 was rejected at the 1 % significance level. However the correlation between the obtained score and the communication competences, such as reading with understanding (reading comprehension) or speaking, was only at a weak level. This is because although the students of all classes communicated and read with comprehension (analysed pictures, adduced reason for equipment functions, parts of wood, etc.) only some of them reached the maximum score. From the results

of the observation we can state that in this area there was an eminent lack of knowledge because the objective of many tasks was to indicate the right answer amongst others, and despite that, the students could not answer. In terms of the obtained scores and writing competence there was a medium relationship observed. This arises from the fact that the students of both grades, however, particularly the students of the 8th grade, have not only better but also more willingly expressed themselves orally.

Figure 5 and Table 5 show the relationships between the obtained scores and occurrence of the personal and cognitive competences – critical thinking. With the exception of the personal competence self-control in all other cases the indirect relationship between the obtained score and the observed particular competence was identified. In case of the self-control its relationship with the obtained score was not proved.

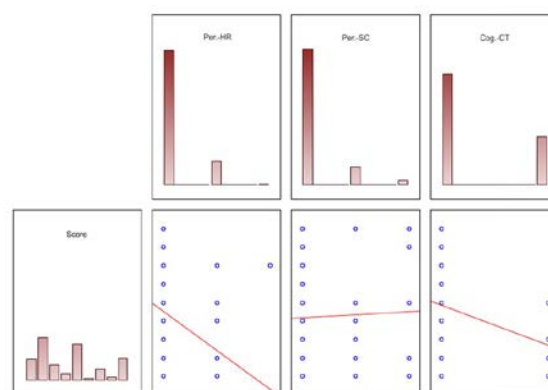


Figure 5. Matrix diagram of relationships between the obtained scores and occurrence of personal and cognitive competences – critical thinking

Table 5. Correlations of the obtained scores and the personal and cognitive competences – critical thinking occurrence

Pairs of Variables	Valid N	Kendall Tau	Z	p-value
Score & Per.-HR	168	-0.353012	-6.79253	0.000000
Score & Per.-SC	168	0.038108	0.73326	0.463402
Score & Cog.-CT	168	-0.294216	-5.66119	0.000000

The hypothesis H0 was rejected at the 1 % significance level in case of the personal competence honesty and responsibility, where a moderate correlation was identified. Figure 5 shows that this correlation matches inverse proportional relationship, i.e. the higher scores the students obtained, the lower range of the given competences they manifested (in terms of the competence occurrence frequency). This inverse proportion can be deduced from the observation results based on the fact that in the effort to obtain high scores mostly the students of the 6th grade copied often wrong answers from classmates.

The hypothesis was proved in case of the personal competence – self-control, where the relationship is trivial. The behaviour of the students, mainly those of the 8th grade, during the task solving was often affected by outside influences which have led to disturbance, impatience, lack of discipline. By the end of the lesson there was observed even a higher degree of the lack of self-control as well as dishonesty - copying answers or complete dismissing of the tasks.

In case of the relationship between the obtained scores and cognitive competence of critical thinking the hypothesis H0 was rejected. The relationship was identified as low and inverse proportional, i.e. the higher scores the students achieved the lower occurrence of the given competence was recorded. It is

probable, that this fact has arisen from the students' fear of obtaining low scores what can be connected also with the above-mentioned honesty and responsibility.

#### 4.2 Comparison of the results of the given tasks achieved by the students in the particular classes

Verification of the working hypothesis H0: There is no significant difference in the achieved scores of the tasks among the students of the particular classes, i.e. the score is not dependent on the class.

Meant to test the hypothesis H0 seven times, each time for a different task, i.e. each time to test the hypothesis for one of the seven given tasks T1 – T7. The results are presented thereafter for one after another.

At the task 1, based on the Kruskal-Wallis test ( $H(5, N = 85) = 5.912252, p = 0.3149$ ) the hypothesis H0 was accepted, what means that there are no statistically significant differences among the students of the concerned classes grades. All the classes obtained a similar value of the task 1 score.

Similarly, no statistically significant differences among the scores were found in case of the tasks 5, 6 and 7, i.e. the hypothesis was confirmed also for these tasks.

We suppose that statistically insignificant differences arise from the fact that the content of the tasks 1, 5, 6, and 7 was based on the compulsory curricular topics of the subject Technology, incorporated in the theme Wood, Its Importance and Use, which the students of the 6th grade as well as of the 8th grade had been familiarized already several times during their previous school attendance. Another reason can be a low difficulty of the tasks, because most of them demanded no more than one answer which the students have chosen from several alternatives.

As to the task 2, following the results of the Kruskal-Wallis test ( $H(5, N = 85) = 14.83204, p = 0.0111$ ) the hypothesis was rejected. The multiple comparison (Table 6) proved significant differences among the concerned particular classes. These differences were identified in case of the classes number 5 and 6 (Figure 6) which were the weakest class of the 6th grade and one class of the 8th grade. This task demanded from the students to apply higher cognitive processes and this might be a reason of a higher fruitfulness of the 8th grade students. In case of the 6th grade students a lack of the competence to read with understanding was recorded but as it was found out later, this was in consequence of a bad quality of the used picture (low readability of the picture resulted into the cases in which the students did not understand the assignment or they did not complete the task solution).

Table 6. Multiple comparisons of the scores obtained by the particular classes at the task 2

T2	1	2	3	4	5	6
	R:34.036	R:41.538	R:54.536	R:44.071	R:28.938	R:56.786
1		1.00000	0.41973	1.00000	1.00000	0.22108
2	1.00000		1.00000	1.00000	1.00000	1.00000
3	0.41973	1.00000		1.00000	0.06894	1.00000
4	1.00000	1.00000	1.00000		1.00000	1.00000
5	1.00000	1.00000	0.06894	1.00000		0.03072
6	0.22108	1.00000	1.00000	1.00000	0.03072	

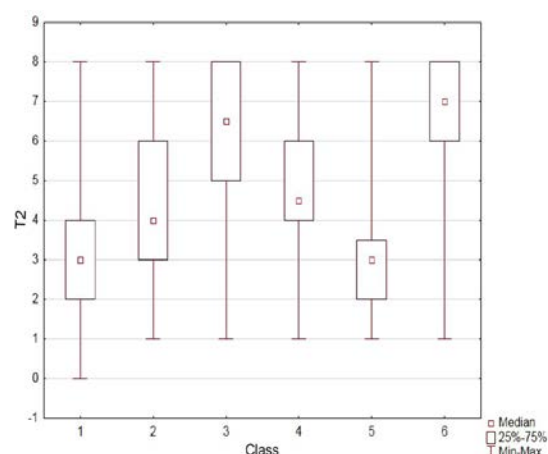


Figure 6. Interquartile range of the task 2 scores obtained by the particular classes

On the basis of the Kruskal-Wallis test results ( $H(5, N = 85) = 23.41024, p = 0.0003$ ) and multiple comparison results (Table 7) the hypotheses H0 for the third task (T3) at the 1 % significance level was rejected, i.e. there are statistically significant differences among the compared observed classes (Figure 7). In particular significant differences were proved between the class number 1 and number 2, and between the class number 1 and number 6.

Table 7. Multiple comparisons of the scores obtained by the particular classes at the task 3

T3	1	2	3	4	5	6
	R:24.071	R:59.077	R:49.464	R:38.571	R:33.688	R:55.607
1		0.00346	0.09732	1.00000	1.00000	0.01085
2	0.00346		1.00000	0.46505	0.08804	1.00000
3	0.09732	1.00000		1.00000	1.00000	1.00000
4	1.00000	0.46505	1.00000		1.00000	1.00000
5	1.00000	0.08804	1.00000	1.00000		0.22850
6	0.01085	1.00000	1.00000	1.00000	0.22850	

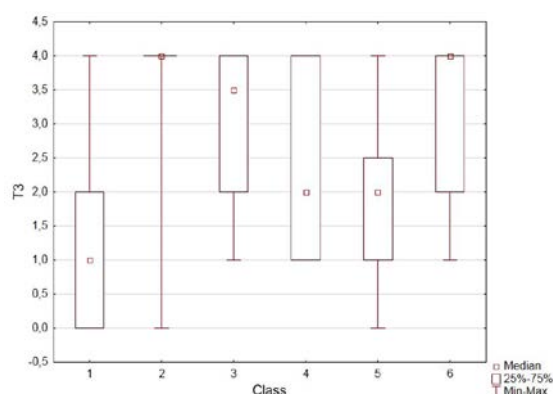


Figure 7. Interquartile range of the task 3 scores obtained by the particular classes

Figure 7 also shows the scores obtained in particular classes in task 3. In this task, students were supposed to connect the shape of pith to a proper tree. The comparison of the class number 1 and number 2 (6th grade students) clearly shows a respectful fruitfulness of the class number 2, due to a higher level of team work and communication in this class.

At the task 4 the most diversified scores were recorded (mutual comparison of the particular classes' results). Following the results of the Kruskal-Wallis test ( $H(5, N = 85) = 33.54325$   $p = 0.0000$ ) and multiple comparisons (Table 8) the hypothesis  $H_0$  for this task was rejected at the 1 % significance level.

Table 8. Multiple comparisons of the scores obtained by the particular classes at the task 4

T4	1	2	3	4	5	6
	R:23.071	R:55.692	R:47.893	R:55.036	R:22.813	R:57.286
1		0.00900	0.11694	0.00917	1.00000	0.00367
2	0.00900		1.00000	1.00000	0.00540	1.00000
3	0.11694	1.00000		1.00000	0.08237	1.00000
4	0.00917	1.00000	1.00000		0.00540	1.00000
5	1.00000	0.00540	0.08237	0.00540		0.00203
6	0.00367	1.00000	1.00000	1.00000	0.00203	

Figure 8 shows that statistically considerable differences occurred more times, in particular between the class number 1 and 2, number 1 and 4, number 1 and 6, number 2 and 5, number 4 and 5 and number 5 and 6.

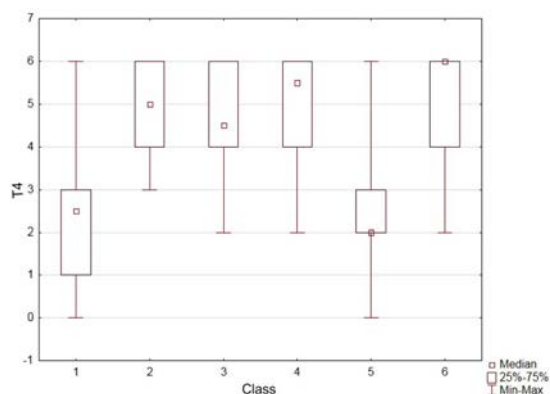


Figure 8. Interquartile range of the task 4 scores obtained by the particular classes

Task 4 was aimed at distinguishing wood-destroying insects which the students were supposed to name. Similarly to task 3, also the results of this task show a difference between the obtained scores by the students of the class number 1 and 2, what we have connected with a low degree of team work and communication among the class members. The most successful solution of the task 4 was recorded again in case of the class number 4 (due to a higher degree of team work and communication skills). As regards this class, also a higher degree of mutual motivation of the students, which arose from the feeling of previous success, was recorded. The differences between the classes number 1 and 6 first have been discussed in frame of the results of the tasks 2 and 3, although a higher motivation was observed in case of the students of the class number 1.

Significant differences were proved also among the results (task 4) of the class number 2 and 5, too. In the class number 2 a higher degree of interpersonal competence occurrence was recorded, particularly team work and mutual motivation.

Further significant differences occurred between the class number 4 and five, the class number 5 was less successful. Similarly to previous comparisons, it was observed that the students of the class number 5 lacked teamwork. Also a very low degree of mutual motivation was observed, opposed to class number 4, where the degree of motivation was the highest (and most frequent).

Interesting findings arose from the comparison of the classes number 5 (6th grade students) and 6 (8th grade students). In terms of scores, the class number 5 repeatedly proved itself to be the weakest one, however, in terms of comparison of the key competence frequency a better (more successful) class was just this one (to compare with the class number 6).

Following the obtained findings, it can be stated that 6th grade students in comparison with the 8th grade students are more open to new forms of learning, like to participate actively in interesting and dynamic activities, what results in a higher work efficiency than students of the 8th grade. Students of this age (6th grade) are more open to team activities (team work, working in pairs etc.), by contrast of the students of the 8th grade who demonstrated not only a low level of the relevant competences (team work and team communication) but even troubles they have with this kind of work. However a higher degree of communication competences, in particular speaking skills, in the 6th grade was recorded not due to the teamwork, but due to the effort of the students to find the right solution of the given task.

#### 4.3 Comparison of the particular tasks success rates achieved by the students in the 6th and 8th grade

As it is above-mentioned there was formulated and consequently tested a working hypothesis  $H_0$ .

$H_0$ : There is no significant difference in the achieved scores between the students of the 6th and 8th grade, i.e. the score is not dependent on the grade.

We have used the nonparametric Mann-Whitney U test for testing  $H_0$ . Results of its testing are presented in Table 9.

Table 9. Success rates of the 6th and 8th grades at particular tasks

Tasks	Rank Sum Group 1	Rank Sum Group 2	U	Z	p-value
T1	2955.000	700.0000	399.0000	-1.1551	0.248014
T2	2860.000	795.0000	304.0000	-2.2807	0.022564
T3	2876.500	778.5000	320.5000	-2.0852	0.037046
T4	2853.000	802.0000	297.0000	-2.3636	0.018094
T5	2920.500	734.5000	364.5000	-1.5639	0.117831
T6	2882.000	773.0000	326.0000	-2.0201	0.043374
T7	2948.000	707.0000	392.0000	-1.2381	0.215671

In case of the tasks 2, 3, 4 and 6 the hypothesis was rejected at the 5 % significance level. At these tasks occurrence of statistically significant differences between the obtained scores of the 6th grade and 8th grade students was approved. We suppose that the concerned tasks were more difficult for the 6th grade students than for the 8th grade students, because in some cases they called for several solutions or correct answers, what resulted in varied numbers of points acquired by the students of the particular grades.

At the tasks 1, 5 and 7 the students of the 8th grade obtained the maximum score in both cases, whilst the median of students of the 6th grade occurs on the same level as of the students of the 8th grade what confirms the statistically insignificant differences. This confirms our hypothesis for these tasks. Majority of the tasks called for cooperation of the students. We suppose that this resulted in successful solution of the tasks by most of the students of the 6th grade classes. Based on the carried out observation it is possible to state that the cooperation among the 8th graders absented, but despite that, they were equally successful in solution of the given tasks. This can be result of fact that the students of the 8th grade showed a higher level of their cognitive (critical) thinking what resulted in a more

effective processing of the acquired information (mainly in case of boys) used for the task solution (analysing, deduction).

## 5 Conclusion

Successful application of the created model into the practice brings a more effective IWB use and, as it was proved in frame of the presented research, development of interpersonal competence of teamwork at lower secondary education. We consider this finding as a very important one as this competence is understood as the key one in relation to adaptability of young people to the life in society and to the increase of their employment as it has been mentioned in the introduction of this study (The Definition and Selection of Key Competencies, 2005).

Based on the results of the carried out observations, we can claim that through the created educational model application the students of the observed classes developed their skills of working in a team, learning with others, creating progressive relationships, cooperation, tolerance, responsible behaviour towards others, etc. Among the students who have improved their interpersonal competences, we have observed improvement also in terms of communication and group integration, what resulted in better and more effective results of their work (observed in the worksheets). Some similar as well as other examples of improved social relations, tolerance and mutual communication can be found in research results of Harlow, Taylor, Forret (2011), according whom the teachers were very surprised by positive social changes observed in the research sample of the students educated using IWB (i.e. through IWB supported teaching). To the key aspects of the work with IWB, which corresponds with the issue of our research, was the fact that the IWB ensured a whole-class interaction and kept the attention of the students paid to the given task solution even when the teacher occurred himself elsewhere. Based also on our findings, we agree with the mentioned authors that sharing information on IWB creates a number of advantages for teamwork and group discussion (Harlow, Taylor, Forret, 2011), enables teamwork (Somekh, Haldane, 2007), knowledge sharing (Hannessy et al., 2007) and joining the whole-class discussion.

It is obvious that some competences might be developed through traditional conventional means such as pen and paper (workbooks), however, through the IWB teaching materials were more easily shared and modified within the whole class, what increased also the overall motivation to learn. Similarly to Warwick, Mercer (2010), also in our research the assumption, that IWB support different kinds of interactions which help to create common, dynamic dialogue (mainly by multimedia means, which affect on several senses at once), was proved. Based on this we deduce that by means of the teaching strategy (model) created by us, it is possible to achieve both personal as well as cognitive development of the students. The tasks used in the worksheets led the students of each focus group to a close cooperation, as a result of which new skills appeared, what was confirmed by the teachers.

Considering that the presented research was an initial one of the concerned focus, the achieved results, i.e. their validity, cannot be generalized. The intention of the research was to point at the practicality of the educational model, and validity of its results can be taken as proved only at the level of the research sample. The issue of the development of the key competences of students at lower secondary education in the area of technical subjects is a relatively new area, which requires further deeper analysis in the future.

In our opinion teachers should create models of teaching supported by the IWB, aimed at problem-solving using learning within a group, self-evaluation of students, discussions with students, self-expression of the students and exercises containing certain game elements (as it has been done in case of the teaching model created by us) in order to develop key competences of the students from the all society point of view.

The partial results of the pilot research aimed at the development of the key competences of lower secondary school students through IWB in the subject Technology show that active use of this teaching model and implementation of the relevant teaching materials focused on the work with IWB are well founded within the methodology of the school subject Technology (technical subject methodology). The stated follows from the fact that these tasks definitely contribute to the development of the given key competences and skills of the students. The tasks encouraged mainly the development of interpersonal and communication competences, and on a certain level (a lower one) also the development of personal and learning competences. So it can be deduced that this model of teaching can ensure complex development of personality of the student, in terms of cognition, psychomotorics and socio affective aspects (Sahin et al., 2010).

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#### Primary Paper Section: A

#### Secondary Paper Section: AM

## QUALITY OF CLOSE RELATIONS AND RISK BEHAVIOR OF ADOLESCENTS IN THE SYSTEM OF LOWER SECONDARY EDUCATION IN SLOVAKIA

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Paper is published within the frame of the project Vega 1/0122/17 Risk behavior and attachment of the adolescents aged from 10 to 15.

**Abstract:** In the paper we present the conclusions of the research about the close relations represented by parents and peers and risk behavior production in adolescent age at Slovak state schools. We introduce the problem on the base of our previous research results, Jessor's concept of syndrome of risk behavior in adolescence and theories of attachment. Research sample consists of 1011 adolescents in the age 10 - 15 from all regions of Slovakia. As the research methods we used QRB (Questionnaire of Risk Behaviour; Čerešník, 2016) and IPPA-R (Inventory of Parent and Peer Attachment – Revised; Greenberg, Armsden, 1987). We assumed that the weak close relations will increase the risk behavior production. The results showed the assumption can be supported, especially in the relation to mother and father.

**Keywords:** adolescence, close relations, attachment, risk behavior.

### 1 Introduction

The risk behavior in the adolescence is the actual problem of the education and also the health. The adolescence is the period in our lifetime in which we are the most often endangered by the risk of the sudden death because of the unwilling activities (WHO, 1993). We also know the more than half of the adolescence population behaves risky at least one time in their life (Smart et al., 2004).

It is not easy to define the risk behavior. It is very dynamic concept changing in the time. It has many categories as truancy, addictive behavior, premature sexual activities, bullying, delinquent behavior, xenophobia, low level physical activities, squatting etc. (e.g. Miovský, Zapletalová, 2006; Dolejš, 2010; Širůčková, 2012; Nielsen Sobotková et al., 2014). In many sources these expressions of the risk behavior are considered for the psychopathy or sociopathy. We don't agree with this categorizations. We consider the risk behavior as the inherent part of the adolescent development which doesn't have to be pathological (according to our estimations only 1 % is truly pathological). We prefer the theory of Jessor (e.g. Jessor, 1991) who defined the concept of the syndrome of the risk behavior in adolescence (SRB-A) according which the adolescent can behave risky only in concrete area of life and in other areas they behave adequately. It means that the adolescent tests the boundaries of this world to discover what are the rules of willing and unwilling behavior.

But not all of the adolescents are endangered by the threats represented by the risk behavior and the testing of the boundaries of the world. Jessor and his colleagues (e.g. Jessor et al., 2003; Costa, Jessor, Turbin, 2005; Vaszonyi et al., 2008) identified the protective factors divided into individual, family and society groups which can help to avoid the risk behavior in the large amount. Especially we would like to refer to family factors. The authors wrote that the conditions of the middle class, good communication, family support, warm relations, common values leads the behavior which decreases probability of the risk behavior production in adolescence. If we want to simplify this conclusion we can say that the good relations among the adolescent and his/her parents protect the adolescent. They lead to non-risk behavior of the adolescent (e.g. Tomšík, Verešová, 2019). It is in the concordance with the theory of Bowlby or Ainsworth (Bowlby, 1969/2010; Ainsworth et al., 1978) about the attachment.

Some of the newest researches (e.g. Mayerová, 2013; Ďuricová, Hašková, 2016; Čerešníková, Čerešník 2018) show that the quality of relations among the adolescents and their parents are problematic. Their conclusions refer to negative relations and

weak or missing guidance in the upbringing of many (more than 2/3) families in Slovakia. It is totally opposite conditions in the comparison of the willing protective factors mentioned in the text above. The child/adolescent needs the positive relation (parental love) and the marking of the boundaries for the health development. Because the lack of the close positive relations may leads to problems with the responsibility taking, the helplessness, the negative emotionality, the ineffective social strategies, the low self-control and low prosocial orientation (e.g. O'Connor, Zeanah, 2003; Čerešníková, 2015; Tomšík, 2018).

The appearance of the risk behavior significantly increases in the age of approximately 12 years (e.g. Čerešník, Gatíal, 2014; Čerešník, Dolejš, 2015). It is also the time where the relations with the parents are perceived by the adolescents as declining and the relations with the peers are perceived as reinforcing (Čerešník, 2019). Hereby we can assume that the weakening of the close relations perceived as important for the adolescents can be the factor which can influence the level of the risk behavior.

### 2 Research sample

The research data were acquired from 1011 lower secondary education pupils in Slovakia, 470 boys and 500 girls in the age from 10 to 15 (41 of them don't present the data about the sex). Their average age was 12,75 years (standard deviation 1,483). We obtained data in all regions of Slovakia. The representation of the grades was approximately equivalent. The parent population was 203172 pupils visiting the 5<sup>th</sup>-9<sup>th</sup> grade of the elementary state school in the school year 2017/2018 (ÚIAP, 2018).

### 3 Methods

In our research we used two methods. Questionnaire of Risk Behavior (QRB) is the method developed by Čerešník (2016). The form we used is modified. It consists of 38 items which are derived from the clinical indicators of the risk behavior. They are divided into seven subscales: (1) family relations and rituals, (2) school and friendship, (3) addictive behavior, (4) delinquent behavior, (5) bullying, (6) eating habits and activities. There is also the possibility to calculate the total score of the risk behavior. Participants evaluate the items through Likert scale with various possibilities of the answers.

IPPA-R (Inventory of Parent and Peer Attachment – Revised) is a method originally developed by Greenberg & Armsden (1987). In present revised version it consists of 75 items. They are divided into three scales of 25 items. They map the level of attachment to the mother, the father and the peers. The task of the participants is to evaluate the items through the five degree Likert scale from "never true" to "always true" answers. Each scale (attachment to mother, attachment to father, attachment to peers) has three subscales which characterise the level of the trust, communication and alienation

We formulated following statistical hypotheses:

- H1: We assume that the adolescents with strong attachment to mother will behave fewer risky in the area of the family relations and rituals.
- H2: We assume that the adolescents with strong attachment to mother will behave fewer risky in the area of the school and friendship.
- H3: We assume that the adolescents with strong attachment to mother will behave fewer risky in the area of the addictive behavior.
- H4: We assume that the adolescents with strong attachment to mother will behave fewer risky in the area of the delinquent behavior.
- H5: We assume that the adolescents with strong attachment to mother will behave fewer risky in the area of the bullying.

H6: We assume that the adolescents with strong attachment to mother will behave fewer risky in the area of the eating habits and activities.

H7: We assume that the adolescents with strong attachment to mother will produce lower level of the risk behavior.

H8: We assume that the adolescents with strong attachment to father will behave fewer risky in the area of the family relations and rituals.

H9: We assume that the adolescents with strong attachment to father will behave fewer risky in the area of the school and friendship.

H10: We assume that the adolescents with strong attachment to father will behave fewer risky in the area of the addictive behavior.

H11: We assume that the adolescents with strong attachment to father will behave fewer risky in the area of the delinquent behavior.

H12: We assume that the adolescents with strong attachment to father will behave fewer risky in the area of the bullying.

H13: We assume that the adolescents with strong attachment to father will behave fewer risky in the area of the eating habits and activities.

H14: We assume that the adolescents with strong attachment to father will produce lower level of the risk behavior.

H15: We assume that the adolescents with strong attachment to peers will behave fewer risky in the area of the family relations and rituals.

H16: We assume that the adolescents with strong attachment to peers will behave fewer risky in the area of the school and friendship.

H17: We assume that the adolescents with strong attachment to peers will behave fewer risky in the area of the addictive behavior.

H18: We assume that the adolescents with strong attachment to peers will behave fewer risky in the area of the delinquent behavior.

H19: We assume that the adolescents with strong attachment to peers will behave fewer risky in the area of the bullying.

H20: We assume that the adolescents with strong attachment to peers will behave fewer risky in the area of the eating habits and activities.

H21: We assume that the adolescents with strong attachment to peers will produce lower level of the risk behavior.

#### 4 Results

The obtained data were analysed in the SPSS 20.0 programme. We used the ANOVA test to compare the research subgroups. The standard level of significance ( $\alpha \leq 0.05$ ) was accepted.

We compared three research subgroups: (1) subgroup with weak attachment, (2) subgroup with average attachment, (3) subgroup with strong attachment. These three subgroups were created on the base of the descriptive values of the attachment score obtained by IPPA-R. We used the average mean and standard deviation to create these subgroups. We used the following formula:  $AM \pm SD$ . The first subgroup scored below the value  $AM - SD$ . The second subgroup scored between the value  $AM - SD$  and  $AM + SD$ . The third subgroup scored over the value  $AM + SD$ . This procedure was realized separately for the mother, the father and the peers.

The results of the analysis are presented in the tables 1-3 and figures 1-4.

Table 1 Comparison of risk behavior according to level of the attachment to mother

attachment_to mother		FRR	SF	AB	DB	BUL	EHA	RB
weak	N	123	130	124	130	130	126	109
	M	7,06	4,46	8,27	5,95	6,69	10,60	42,39
	SEM	,264	,140	,456	,460	,481	,315	1,400
	SD	2,929	1,595	5,082	5,249	5,480	3,535	14,612
average	N	654	674	634	671	664	663	552
	M	4,45	3,67	6,48	3,31	3,97	8,88	30,50
	SEM	,106	,056	,173	,142	,177	,138	,556
	SD	2,716	1,449	4,353	3,679	4,569	3,545	13,068
strong	N	69	72	66	72	72	72	62
	M	2,61	2,93	5,14	1,28	2,49	7,56	21,97
	SEM	,234	,172	,463	,197	,407	,418	1,250
	SD	1,942	1,457	3,762	1,672	3,452	3,544	9,846
F		70,621	27,194	12,678	39,276	24,487	19,225	55,876
p		< ,001	< ,001	< ,001	< ,001	< ,001	< ,001	< ,001

Legend: N = frequency, M = mean, SEM = standard error of the mean, SD = standard deviation, F = value of ANOVA test, p = significance; FRR = family relations and rituals, SF = school and friendship, AB = addictive behavior, DB = delinquent behavior, BUL = bullying, EHA = eating habits and activities, RB = total score of risk behavior

Table 2 Comparison of risk behavior according to level of the attachment to father

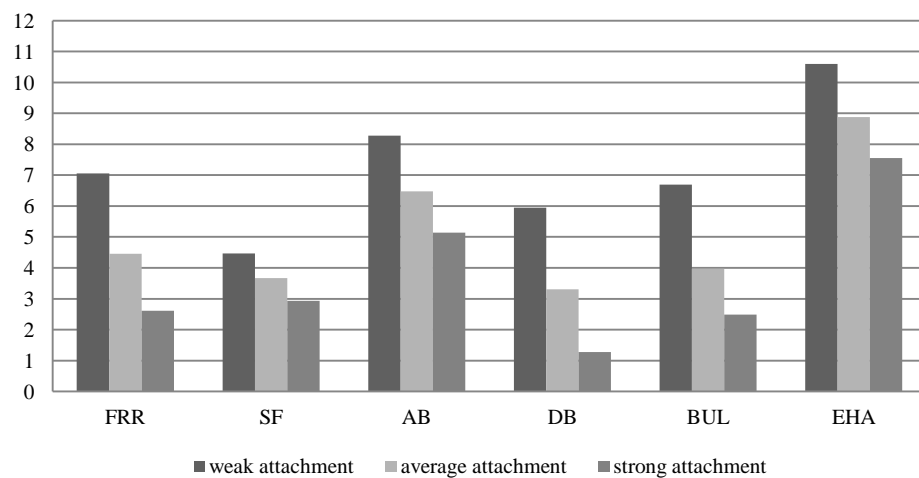
attachment_to father		FRR	SF	AB	DB	BUL	EHA	RB
weak	N	130	137	127	137	134	133	109
	M	7,02	4,25	8,24	5,12	5,86	10,16	40,19
	SEM	,239	,135	,482	,412	,498	,331	1,410
	SD	2,726	1,575	5,436	4,819	5,766	3,814	14,720
average	N	510	518	489	520	513	513	437
	M	4,28	3,64	6,19	3,18	4,01	8,94	29,93
	SEM	,115	,062	,176	,155	,193	,156	,587
	SD	2,593	1,410	3,888	3,538	4,365	3,535	12,276
strong	N	114	118	111	117	116	115	99
	M	3,01	3,14	4,95	2,15	2,97	7,57	24,18
	SEM	,221	,152	,287	,288	,378	,296	1,105
	SD	2,359	1,653	3,021	3,116	4,071	3,179	10,993
F		82,581	18,279	20,423	21,862	13,326	16,591	45,422
p		< ,001	< ,001	< ,001	< ,001	< ,001	< ,001	< ,001

Legend: N = frequency, M = mean, SEM = standard error of the mean, SD = standard deviation, F = value of ANOVA test, p = significance; FRR = family relations and rituals, SF = school and friendship, AB = addictive behavior, DB = delinquent behavior, BUL = bullying, EHA = eating habits and activities, RB = total score of risk behavior

Table 3 Comparison of risk behavior according to level of the attachment to peers

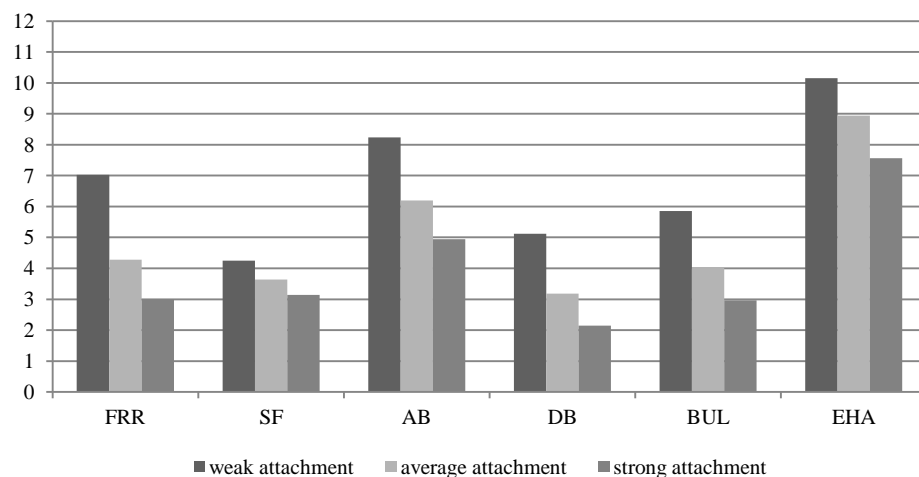
attachment_to peers		FRR	SF	AB	DB	BUL	EHA	RB
weak	N	140	141	139	143	140	140	121
	M	5,27	4,13	6,99	4,78	6,62	9,99	36,94
	SEM	,268	,123	,440	,387	,495	,290	1,359
	SD	3,166	1,465	5,191	4,632	5,861	3,434	14,948
average	N	529	550	522	545	537	539	459
	M	4,76	3,77	6,57	3,38	3,90	8,96	31,20
	SEM	,120	,064	,187	,153	,190	,152	,603
	SD	2,760	1,491	4,278	3,573	4,405	3,531	12,911
strong	N	151	160	145	159	160	158	128
	M	4,29	3,34	6,61	3,14	3,63	8,85	29,91
	SEM	,252	,127	,354	,348	,351	,305	1,348
	SD	3,093	1,606	4,261	4,389	4,441	3,829	15,251
F		4,161	10,407	,480	8,408	20,839	5,146	10,109
p		,016	< ,001	,619	< ,001	< ,001	,006	< ,001

Legend: N = frequency, M = mean, SEM = standard error of the mean, SD = standard deviation, F = value of ANOVA test, p = significance; FRR = family relations and rituals, SF = school and friendship, AB = addictive behavior, DB = delinquent behavior, BUL = bullying, EHA = eating habits and activities, RB = total score of risk behavior



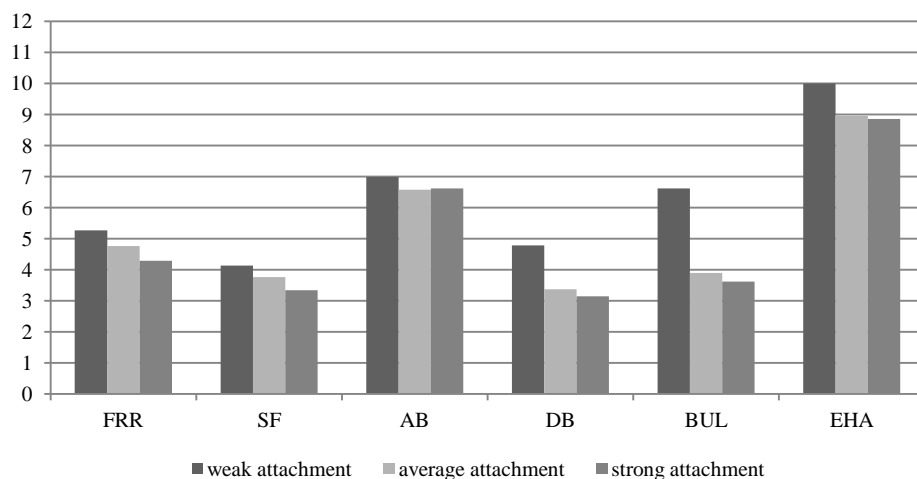
Legend: FRR = family relations and rituals, SF = school and friendship, AB = addictive behavior, DB = delinquent behavior, BUL = bullying, EHA = eating habits and activities

Figure 1 Subscales of risk behavior according to level of the attachment to mother



Legend: FRR = family relations and rituals, SF = school and friendship, AB = addictive behavior, DB = delinquent behavior, BUL = bullying, EHA = eating habits and activities

Figure 2 Subscales of risk behavior according to level of the attachment to father



Legend: FRR = family relations and rituals, SF = school and friendship, AB = addictive behavior, DB = delinquent behavior, BUL = bullying, EHA = eating habits and activities

Figure 3 Subscales of risk behavior according to level of the attachment to peers

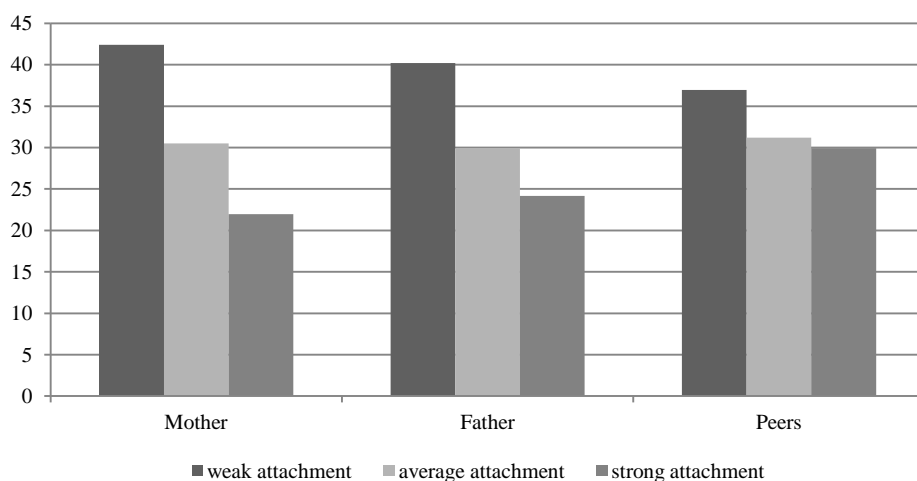


Figure 4 Total score of risk behavior according to level of the attachment to peers

We can formulate these conclusions:

- Attachment to mother significantly influences the risk behavior production. In all categories of the risk behavior we can identify the decrease of the values in the relation to quality of the attachment (table 1). F-values range from 12,678 to 70,621. All results were significant at level  $\alpha \leq 0,001$ . In the comparison of the subgroup with weak attachment and strong attachment we observed the most massive decrease of the risk behavior (subgroup with strong attachment scored lower) in the category of family relations and rituals, bullying (both 63%) and delinquent behavior (79 %) (figure 1). The score of the total risk behavior was lower by 49 % (figure 4).
- Attachment to father significantly influences the risk behavior production. In all categories of the risk behavior we can identify the decrease of the values in the relation to quality of the attachment (table 2). F-values range from 13,326 to 82,581. All results were significant at level  $\alpha \leq 0,001$ . In the comparison of the subgroup with weak attachment and strong attachment we observed the most massive decrease of the risk behavior (subgroup with strong attachment scored lower) in the category of family relations and rituals, and delinquent behavior (both 58 %)

(figure 2). The score of the total risk behavior was lower by 38 % (figure 4).

- Attachment to peers significantly influences the risk behavior production except the category addictive behavior (nonsignificant result). In all other categories of the risk behavior we can identify the decrease of the values in the relation to quality of the attachment (table 3). F-values range from 4,161 to 20,839. All results were significant at level at least  $\alpha \leq 0,05$ . In the comparison of the subgroup with weak attachment and strong attachment we observed the most massive decrease of the risk behavior (subgroup with strong attachment scored lower) in the category of delinquent behavior (35 %) and bullying (45 %) (figure 3). The score of the total risk behavior was lower by 19 % (figure 4).

## 5 Discussion

As the results showed, we can support all formulated statistical hypotheses except the hypothesis 17. The attachment to the mother seems to be the most influencing relation. It influences the expressions of the risk behavior in all categories, especially the family relations and rituals, bullying and delinquent behavior.

The attachment to father is also the important factor. It influences the expressions of the risk behavior in all categories, especially the family relations and rituals, and delinquent behavior. The attachment to peers is the weakest factor to the relation with risk behavior. The differences among the subgroups are the smallest. But these relations influence mainly the delinquent behavior and bullying. In the category of the addictive behavior the attachment to peers is not the protective factor.

Résumé: The research results showed that close relations with parents are strong factors influencing the risk behavior production. The close relation with the peers doesn't have this impact.

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#### Primary Paper Section: A

#### Secondary Paper Section: AN

## AWARENESS AND PERCEPTION OF MODERNIZED ELECTRONIC PUBLIC PROCUREMENT – CZECH CASE STUDY

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**Abstract:** In 2014, the EU enacted the Investment Plan for Europe to simplify public procurement, to support access to public procurement and to consider social and environmental criteria as well as the eIDAS Regulation. In 2017, the European Commission launched an Initiative for a more effective, efficient and sustainable public procurement on the single internal market. The aim of this paper is to assess the awareness and perception of the modernized electronic public procurement, i.e. to analyze the roots and situations across the EU as, so far, reported, and to discuss and perform a pioneering Czech case study based on questionnaire investigation focusing on three hypotheses. The presented data and arguments point to a potential which is, due to the reduced transparency and awareness, as yet underdeveloped.

**Keywords:** Public procurement, Single internal market, competition, Investment Plan for Europe.

### 1 Introduction

The EU is the latest stage of modern European integration (MacGregor Pelikánová, 2012 & 2013) dominated by the four freedoms, the single internal market, digitalization and other mature society factors (Floridi, 2016) including the (so far unsuccessful) ambition to become the world competitiveness leader (MacGregor Pelikánová, 2017). Its strategy is set for each decade and currently is ending the Europe 2020, i.e. COM (2010) 2020 Communication from the Commission Europe 2020 – A strategy for smart, sustainable and inclusive growth (EC, 2010).

For Europe 2020, definitely important is the fact that a substantial part of the public investment in the EU is done by public procurement. The total amount spent via public procurement exceeds EUR 2 trillion, i.e. oscillates around 15% of EU GDP (EC, 2017). This makes the need for a proper public procurement regime self-explanatory. Therefore, the EU requires all public contracts, above a certain threshold, to be processed by public procurement while observing principles of transparency, equal treatment and non-discrimination.

In 2014, President-elect Jean-Claude Juncker, in his strategic speech 'Setting Europe in Motion' made it clear that the EU needs more synergy in public procurement and specifically stated: "In times of scarce resources, we need to match ambitions with resources to avoid duplication of programs. More than 80% of investment in defense equipment is still spent nationally today in the EU. More cooperation in defense procurement is therefore the call of the day, and if only for fiscal reasons." (Juncker, 2014). Thereafter, the European Parliament and European Council have enacted a collection of measures under the umbrella of the Investment Plan for Europe: Getting Europe Investing Again, aka the Juncker Plan ("Investment Plan for Europe") in the hope of making the investment in the EU more effective, efficient and sustainable and consequently to support the economic growth in the EU and in EU member states (Radulescu et al., 2018). The three objectives of the Investment Plan for Europe are: (i) to remove obstacles to investment, (ii) to provide visibility and technical assistance to investment projects, and (iii) to make a smarter use of financial resources (EC, 2014). The pillars of the Investment Plan for Europe are the European Fund for Strategic Investments, the European Investment Advisory Hub and the European Investment Project Portal, and the Project for improvement of the business environment. With respect to public procurement, the Investment Plan for Europe basically simplifies the EU public procurement legislation, supports access to public procurement and considers social and

environmental criteria (Hochman et al., 2015). Rather than awarding a contract only on the basis of the best price, authorities are encouraged to integrate qualitative criteria, demand innovative, energy saving solutions or insist on sustainable and socially inclusive approaches (EC, 2014). In sum, this should contribute towards economic growth (Terzić, 2017) as well as to corporate social responsibility („CSR") (MacGregor Pelikánová, 2019a, Pakšová, 2016, Jindrichovska et al., 2019).

In 2017, the European Commission put forward an initiative to carry out procurement more efficiently and in a sustainable manner (MacGregor Pelikánová, 2019a), while making full use of digital technologies (MacGregor Pelikánová, 2019b) to simplify and accelerate procedures under the name 'Increasing the impact of public investment through efficient and professional procurement' ("Initiative") (EC, 2017). The Initiative was a reaction to the Investment Plan for Europe and its drive to support the economic development and the reinforcement of the single internal market. The Initiative defines six priority axis for the fulfillment of the Investment Plan for Europe and in particular addresses the importance of public procurement in EU member states and the fact that the selected providers are almost always from the same EU member state as the public authority. The not fully open, effective and efficient competition in this arena represents one of the obstacles for the complete single internal market. Therefore, it is necessary to launch measures and instruments making sure that subjects from all EU member states can participate in public procurement in each and every EU member state and this pursuant to non-discriminatory conditions. The Investment Plan for Europe and Initiative should lead to the increase of the competitiveness of European businesses, to the elimination of discrimination between competitors and development of the effectiveness, efficiency and sustainability of the competition (Damro, 2012).

All public procurements in the EU must be done in compliance with principles set by the EU law and with the quartet of freedoms. Public procurement calls, proceedings and procedures must satisfy competition requirements, trustworthiness, effectiveness and efficiency. Due to the digitalization and digital single internal market, the electronic communication and other digital aspects need to be properly addressed by public procurement. Consequently, the public procurement policies and legislation overlap with the drive for the intellectual property and digitalization (Vivant, 2016), such as the Electronic IDentification, Authentication and trust Services ("eIDAS") and GDPR setting (MacGregor Pelikánová & Cvik, 2018). Namely, eIDAS is a standardized system of electronic identification and trust services for electronic transactions in the internal single market, which was created by EU Regulation 910/2014 of 23 July 2014 on electronic identification and trust services for electronic transactions in the internal market and repealing Directive 1999/93/EC ("eIDAS Regulation"). The main goal of the eIDAS Regulation is the increase in the trustworthiness of electronic communication in the internal single market and to develop electronic signature, verification and authentication systems (Ribeiro et al., 2018). The eIDAS Regulation should provide a common foundation for safe electronic communication between citizens, businesses and public administration institutions and make the electronic communications, documents and signatures equivalent to their hardcopy counterparts. This should lead to a reinforcement of the effectiveness, efficiency of public and private on-line services and services for e-business in the sphere of public procurement and even beyond. Namely, the eIDAS Regulation imposes the duty to use a higher level of security during electronic communication and to use appropriate information systems and information technologies ("IS/IT") (Pohulak-Zoledowska, 2016). EU member states have to create a common framework for such an e-communication which recognizes electronic identification ("eID") from other EU member states and verifies the correctness and security. What is

the reality about the awareness and perception of the modernized electronic public procurement in the EU and, in particular, in the Czech Republic?

## 2 Materials and Methods

The aim of this paper is to assess the roots and context of the awareness and perception of the modernized electronic public procurement in the EU, and in particular in the Czech Republic. This aim rests on primary and secondary research linked to the three hypotheses addressing the awareness and perception as reported in other EU member states and in the entire EU and as revealed by the pioneering Czech case study. Particular attention is paid to the attitude of competitors regarding the Initiative, i.e. whether they believe that the Initiative, along with other instruments and the entire framework, contributes to the increase of the effectiveness, efficiency and sustainability of public procurement. Boldly, the ultimate question is whether, according to their opinion, the modernized electronic public procurement has a positive impact on the digital single internal market and the competition in it.

The mentioned three hypotheses are:

- H1 - Respondents are aware about the Initiative of the EU and its goal to increase the effectiveness, efficiency and sustainability of the public procurement?
- H2 - The Initiative of the EU will not have an impact on competition between businesses?
- H3 - Introduction of electronic communication in public procurement is perceived positively.

The employed research methods reflect options implied by the availability of domestic and foreign policy documents, literature, electronic and media resources and the case study. For the theoretic foundations and theoretic part of this paper, the method of description and critical interpretation is applied. For the practical part of the paper, the gathering of information is done by the collection, classification, verification and analysis. The explored resources, to yield this information and process it methodologically, entail the EU and national legislation, political and press releases and academic literature. The heterogeneous and multi-disciplinary nature of the data calls for the Meta-Analysis (Silverman, 2013), while using a holistic approach, a critical comparison of EU and EU member states policies, law and frameworks and confronting the concepts with the reality of the Czech case study. The quantitative research and data is complemented by qualitative research, along with a critical closing and commenting and refreshed by Socratic questioning (Areeada, 1996).

A pivotal aspect of the practical part is the case study, entailing the questionnaire investigation done in the Czech Republic and using the questionnaire, with six half-closed questions and four open questions. The questionnaire was created in the manner to confirm or reject the set hypotheses. In total, 60 respondents were contacted and 42 completed the questionnaire. Therefore, the conditions for using the chi-square were satisfied. Consequently, there was employed the method of questionnaire and forensic investigation, the method of categorical data processing by the software program Statistika and the method of dependence of quantitative signs of Pearson chi-squares (Pearson, 2009). It needs to be emphasized that, for the Pearson chi-square, two dependencies are analyzed via statistical analysis of table's frequencies. In order to confirm or reject each of the three hypothesis (H1, H2 and H3), there was used a support contingency table 2x2, which monitors the dependence between two qualitative signs. This contingency table facilitates the performance of the dependency test with respect to two qualitative values. The set null hypothesis is tested as hypothesis of independency H0. While creating the contingency tables 2x2, there is observed the relation between only two qualitative variables and where each variable has only two categories. The questionnaire search was done in the Czech Republic and with pre-selected competitors who participate in public procurement as interested providers.

## 3 Modernized electronic public procurement – EU roots and context

The EU framework for the modernized electronic public procurement is implied by primary, secondary and supplementary sources of the EU law and by various policy and strategy instruments. Pursuant to the primary source of the EU law with constitutional features – the Treaty on the functioning of the EU (“TFEU”), the Regulations have a general application, are binding in their entirety and directly applicable in all EU member states (Art.288 TFEU) and so they vigorously penetrate into the national settings (Azolai, 2011), while a very similar effect have the Directives, after the expiration of their deadline for national transposition. Consequently, the eIDAS Regulation is binding in its entirety and is directly applicable in all EU member states since 2016, except for certain provisions which had their application moved to 2014 or 2018 (Art.52 Regulation 2014) and is critical for the materialization of supplementary sources, such as EU strategies, including Europe 2020 (Erixon, 2010; Pasimeni & Pasimeni, 2016; Stec & Grzebyk, 2017; MacGregor Pelikánová & Beneš, 2017; MacGregor Pelikánová et al., 2017), Investment Plan for Europe and the Initiative. It is also necessary to mention SMART elements and their implementation not only in European documents, but also in common practice (Turečková & Nevima, 2018).

It needs to be underscored that the prior EU setting was confronted with a set of crises leading to an insufficient investment across the EU and to the failure of the Lisbon strategy desperately trying to make the EU the world economic leader (MacGregor Pelikánová, 2017). Well, the Lisbon strategy was replaced by a new ten year strategy, Europe 2020 (MacGregor Pelikánová et al., 2017) and, a few years later, the Investment Plan for Europe and Initiative have emerged. They all focus on the single internal market and competition in it (Chirita, 2014), especially in the digital setting (Balcerzak, 2016; Vivant, 2016). Since all, or as many as possible, obstacles need to be removed, then consequently the public procurement has to be modernized and digitalized to take full advantage of up-to-date IS/IT (Zelazny & Pietrucha, 2017), to make the entire process more transparent and simple, while addressing as well sustainability criteria (Sroka & Lörinczy, 2015; Sroka & Szanto, 2018; Cech et al., 2019) such as social and environmental aspects (Dima et al., 2018; MacGregor Pelikánová, 2019a). In sum, public investment via public procurement needs to contribute to the concept of public goods (Czyzewski et al., 2016).

Not only the EU, but as well the United Nations (“UN”) have identified that there is a gap between public services and social needs and that a collaboration across multiple stakeholders is one of the key goals for securing global sustainable development with social, environmental and economic progress and UN Sustainable Development Goals (SDGs) (Berrone et al., 2019). One academic stream strongly litigates for public-private partnership (“PPPs”), while for others PPPs remain a controversial proposition due to the complexity and limitation of current systems (Berrone et al., 2019; O’Shea et al., 2019). In general, the EU decided to opt for the public procurement. Indeed, public procurements have been high on the agenda of policy makers, decision makers, scholars, and the general public in the EU in the last few decades, inasmuch as such procurements make up nearly one-fifth of Europe’s total gross domestic product (Milosavljevic et al., 2019)

Therefore, contracting authorities across the entire EU should show a vigorous commitment to the public procurement and address both quantitative and qualitative aspects in the virtual setting, i.e. consider the smallest price as well as other factors such as innovative, energy saving solutions or insisting on sustainable and socially inclusive approaches (EC, 2017). Interestingly, despite the above indicated EU framework and policies, there have been just a few completed studies comparatively assessing and measuring the effectiveness, efficiency and sustainability of public procurement in EU member states, and this e.g. by using the composite I-distance Indicator (CIDI) methodology (Berrone et al., 2019,

Milosavljevic et al., 2019, Nystrom & Mandell, 2019, O'Shea et al., 2019).

Naturally, the Europe 2020, the Investment Plan for Europe and the Initiative are per se policies and so their objectives and goals need to be carried through by individual law instruments. Similarly, pursuant to the TEU and TFEU, the exclusive conferred competencies of the EU do not extend to the public procurement, and especially if it has a local or strictly national dimension. The eIDAS Regulation is rather an exception in the arena of the modernized electronic procurement, since softer instruments such as Directives and policies, prevail. Namely, there should be underscored a trio of Directives from the same year: (i) the Directive 2014/24/EU on public procurement abolishing the prior Directive 2004/18/EC, (ii) the Directive 2014/25/EU on public procurement in water, energy, transport and mail services abolishing the Directive 2004/17/EC and (iii) the Directive 2014/23/EU on concession granting. This trio, i.e. this general Directive and two special Directives on public procurement should make sure that businesses have a non-discriminatory access to the EU market and benefit by legal certainty as it concerns the governing law.

As a matter of fact, the Initiative represents an attempt by the European Commission to address the Investment Plan for Europe and to fully materialize these three Directives from 2014 and to make the public procurement more effective, efficient and sustainable and the related competition healthier (Radulescu et al., 2018). Within the Initiative, the European Commission sets out six priority axis for public procurement: a) use of innovation, ecological and social criteria (Hochman et al., 2015) with the focus on the complex assessment of the proposed solution, b) professionalization of public contracting authorities, c) improvement of the access of the SMEs to the public procurement on national as well as EU levels, d) increase of the quality of data about public procurement (unified e-forms, public registries), integrity and transparency, e) digitalization of public procurement, and f) setting of the co-operation with public contracting authorities from the entire EU. The pivotal priority axis is the first mentioned i.e. the use of innovation, ecological and social criteria (MacGregor Pelikánová, 2019a & 2019b). Specifically, there is the EU-wide tendering platform TED. In addition, the European Commission launched ex ante a help desk system to assist contracting authorities in public procurement regarding goods or services above EUR 250 million. The help desk system is instrumental in resolving issues and questions related to the selection of the type of public procurement used, setting of the criteria for selection, etc. Projects with a value exceeding EUR 500 million can be consulted with the European Commission.

Due to its well-known organization and IP drive, Germany was expected to be one of the flagship EU member states to carry on the Investment Plan for Europe, eIDAS and Initiative. The results regarding trustworthiness and other digital document issues meet expectations, since Germany has a long tradition of having a focus on the legal certainty in the digital setting (Vogt, 2016) and is the leading state with respect to the eID and the mutual recognition (Andrasko, 2017). In contrast, an analysis of public procurement in Germany and the German use of TED raises serious issues (EC, 2018 & 2019). Although opening up EU public procurement markets and transparency are critical, Germany has one of the lowest values of contract notices published in TED under the EU public procurement legislation. Including utilities, these contracts only make up 1.6% of GDP, compared to the EU average of 4.14% and this may hinder the effective, efficient and sustainable spending of public money and cause German and European companies to miss out on business opportunities (EC, 2018 & 2019). For example, in 2015 the total procurement volume of the German public sector was around EUR 330 billion, of which EUR 170 billion (52%) were allocated to the core- and extra-budgetary activities of the public authorities, and EUR 160 billion (48%) to public entities. Based on the total number of all public procurement procedures (EU-wide or national procedures that were not restricted from the outset to certain participants) in the period 2011 to 2015, 82%

were effected nationally and only 18% EU-wide (EC, 2018 & 2019). There is a myriad of reasons for this, such as laws open to divergent interpretations allowing for circumventing public procurement procedures, especially EU-wide procedures, and an underemployment of the modernized electronic public procurement. This leads to the lack of transparency, as better information can enable a more targeted policy approach when it comes to opening up the German public procurement market.

In contrast to Germany, Ireland showed a strong drive for PPPs with the explanation that it can address more efficiently, and perhaps as well more effectively and sustainably, public needs, especially public infrastructure needs (O'Shea et al., 2019). However recently, a comparative analysis of traditional public procurement and PPP mechanisms has revealed via detailed semi-structured interviews with key stakeholders and an examination of the available documentation a different picture. There was found no evidence that PPP leads to faster delivery or that PPP results in better value for money (O'Shea et al., 2019). Therefore, Ireland works further in the direction of the modernized electronic procurement.

A similar trend can be observed as well in Sweden and there are already some very practical propositions how to improve it, such as the use of unit price contracting ("UPC") forcing potential contractors, aka competing agents to offer corresponding unit prices i.e. the bid is a price vector. Due to the not exclusive drive for the low cost, most often, but not always, the lowest vector sum is awarded the contract. Such a modernized electronic public procurement is transparent and properly addressing the potential problem of unbalanced bidding (Nystrom & Mandell, 2019).

#### 4 Modernized electronic public procurement – a Czech setting and case study

The EU framework for the modernized electronic public procurement is reflected by the Czech law, namely the legal duty to have and conduct the public procurement electronically (4.1). A Czech case study via a pioneering questionnaire investigation reveals that the awareness is low, but once increased, respondents seem to see an impact on the competition and to share a positive perception of the modernized electronic public procurement and to welcome it (4.2)

##### 4.1 Czech compulsory electronization of public procurement

In the Czech Republic, the trio of public procurement Directives from 2014 is reflected by the Czech Act No. 134/2016 Coll., on public procurement ("Public Procurement Act"). The eIDAS Regulation is reflected by the Act No. 297/2016 Coll., on services to create trustworthiness for electronic transactions ("Trustworthiness Act") which, among other things, abolished the Act No. 227/2000 Coll., on electronic signature and took effect on 19 September 2018. The main focus of the Trustworthiness Act concerns the trustworthiness of electronic communications and transactions, including electronic signatures, stamps, seals and documents.

In order to properly follow the strategies from the Investment Plan for Europe and Initiative and further develop the Public Procurement Act and Trustworthiness Act, there was issued a Ministerial Ordinance 260/2016 Coll., on setting detailed conditions for electronic instruments, electronic acts for public procurement and conformity certificate ("Ordinance 2016"). The Ordinance 2016 took effect on 1 October 2016 and especially regulates the access to documents and information via electronic instruments in the sphere of public procurement.

The Ordinance 2016 imposes the duty on all public contracting authorities to make sure that everybody can check the identity of this public contracting authority as previewed by eIDAS Regulation, Trustworthiness Act and Art.3 of the Ordinance 2016. Further, the public contracting authority has the duty to provide potential contractors with a certificate of the public key in order to enable these potential contractors to encrypt the

content of offers. Pursuant to Art.5 of the Ordinance 2016, the public contracting authority can provide such a key either via the profile of the public contracting authority, or the internet page or by sending upon request. The communications between the contracting authority and potential contractors are done either while using hardcopies or electronic versions of documents. The electronization of public procurement is a process requiring full electronic communications with electronic signatures, including the electronic submission of bids. The general rule is that the public contracting authority has the duty to conduct electronic communications and exceptions, such as public procurement for low value goods or services, are set by Art.211 of the Trustworthiness Act. Therefore, since 2018 when the Act 2016 took effect, Czech public procurement authorities have to sign such electronic documents while using a qualified electronic signature (Art.5 and Art.19 Trustworthiness Act). This qualified electronic signature is established by a qualified instrument equipped with an appropriate qualified certificate, unless the law states otherwise.

Basically, there are three types of electronic signatures – a qualified electronic signature, an advanced electronic signature and a simple electronic signature (Art.5 – Art.7 Trustworthiness Act). The highest type is the qualified electronic signature, which is created by a qualified electronic signature creation device, and which is based on a qualified certificate for electronic signatures generated by appropriate IS/IT and hardware devices (Art.3 eIDAS Regulation, Art.5 Trustworthiness Act). In order to create the advanced electronic signature, it is necessary to use encryption and a qualified digital certificate, which is generated by the special hardware instruments and is linked to the qualified trust service provider.

Only the qualified electronic signature is based on the eIDAS Regulation equivalent to a handwritten signature, i.e. it generates the same legal effects in the entire EU, see Art. 25 of the eIDAS Regulation. The qualified electronic signature has the legal effect of a handwritten signed document is unambiguously linked to the signing person, allows the identification of the signatory with a high level of trustworthiness and is so attached to the concerned document that any future tampering or modification of such a document or its data can be discovered by the use of an appropriate crypto algorithm and other standards. In order to create a qualified electronic signature, potential contractors and bidders need to have an issued qualified certificate, private key to be used while signing electronic documents and certified instruments for the creation of such signatures. These certified instruments can be certified chip cards, tokens or certified HSM moduls (external hardware equipment) or remote services for signing via a selected intermediary.

## 4.2 Czech case study - Questionnaire investigation

At the very heart of the practical part of this paper is the Czech case study, based on the questionnaire investigation addressing the awareness and perception of the modernized electronic public procurement. This is achieved while focusing on the confirmation or rejection of the three hypotheses:

- H1 – Respondents are aware about the Initiative of the EU and its goal to increase the effectiveness, efficiency and sustainability of the public procurement?
- H2 – The Initiative of the EU will not have an impact on competition between businesses?
- H3 – Introduction of electronic communication in public procurement is perceived positively.

As indicated above, the practical part of this paper is built upon the Czech case study with the questionnaire investigation for which was used the method of a questionnaire search and its consequent assessment by the method of categorical data by the software program Statistika, by the method of dependence of qualitative signs and Pearson's chi-square, where two dependences are analyzed by the static analysis of tables frequency. The level of significance was set as  $\alpha=0,05$ . The conditions for the use of the chi-square were satisfied ( $n>40$ ).

For the confirmation or rejection of each of the set hypotheses, there was created a supportive contingency table 2x2 to observe the dependence between two qualitative signs. Based on contingency tables, there is performed the test of dependency which will be performed to assess the relationship between two values. The set null hypothesis is tested as the hypothesis of the independence  $H_0$ . Within the created contingency tables 2x2, there is observed the relationship between two qualitative variables where each variable has only two categories. Categories of the respondents were determined by the number of employees of the respondents. The questionnaire investigation was made in the Czech Republic while working with 60 pre-selected businesses which compete for public procurements, i.e. are bidders. Since 42 of them have completed the questionnaire, the conditions for using the chi-square were satisfied.

Pursuant to H1, respondents are aware about the Initiative of the EU and its goal to increase the effectiveness, efficiency and sustainability of the public procurement.  $H_0$  means that between the indicated signs there does not exist the dependency, i.e. the respondents are not aware about the Initiative of the European Commission. The feedback of respondents regarding H1 is included in Table 1.

Table 1: contingency table for H1

Number of employees	Yes, they are aware	No, they are not aware	Total
0-49 employees	5	22	27
50 or more employees	5	10	15
Total	10	32	42

Source: Prepared by authors

The value of the Pearson chi-square is  $X^2 = 1.166$ . The level of significance is  $\alpha=0,05$ , i.e.  $X^2_{0,05(1)} = 3,841$ . Since the value  $X^2 < X^2_{0,05(1)}$ ,  $H_0$  – the null hypothesis is confirmed. This means that between the indicated signs there does not exist the dependency, i.e. the respondents are not aware about the Initiative of the EU and its goal to increase the effectiveness, efficiency and sustainability of the public procurement. Therefore, H1 is rejected. All respondents who indicated their lack of awareness about the Initiative were informed about it so that they could fully participate to address H2 and H3.

Pursuant to H2, the Initiative of the EU will not have an impact on competition between businesses?  $H_0$  means that between the indicated signs there does not exist the dependency, i.e. the Initiative will have an impact on the competition between businesses. The feedback of respondents regarding H2 is included in Table 2.

Table 2: contingency table for H2

Number of employees	Yes, it will not have an impact	No, it will have an impact	Total
0-49 employees	15	12	27
50 or more employees	10	5	15
Total	25	17	42

Source: Prepared by authors

The value of the Pearson chi-square is  $X^2 = 0,494$ . The level of significance is  $\alpha=0,05$ , i.e.  $X^2_{0,05(1)} = 3,841$ . Since the value  $X^2 < X^2_{0,05(1)}$ ,  $H_0$  – the null hypothesis is confirmed. This means that between the indicated signs there does not exist the dependency, i.e. the Initiative of the EU will have an impact on the competition between businesses and H2 is rejected.

Pursuant to H3, the introduction of electronic communication in public procurement is perceived positively.  $H_0$  means that between the indicated signs there does not exist the dependency, i.e. the introduction of the electronic communication in public procurement is not perceived positively. The feedback of respondents regarding H3 is included in Table 3.

Table 3: contingency table for H3

Number of employees	Yes, it is perceived positively	No, it is not perceived positively	Total
0-49 employees	25	2	27
50 or more employees	14	1	15
Total	39	3	42

Source: Prepared by authors

The value of the Pearson chi-square is  $X^2 = 7.977$ . The level of significance is  $\alpha = 0.05$  tzn.  $X^2_{0.05(1)} = 3.841$ . Since the value  $X^2 > X^2_{0.05(1)}$ ,  $H_0$  – the null hypothesis is rejected. This means that between the indicated signs exists the dependency, i.e. H3 is confirmed – the respondents perceived the introduction of electronic communication in public procurement positively.

The performed questionnaire investigation reveals that the respondents are not aware about the Initiative of the EU to increase the effectiveness, efficiency and sustainability of public procurement in the single internal market. However, once informed, they are of the opinion that this will have an impact on the competition between businesses and that, very likely, businesses from other EU member states might get interested in previously only “national” public procurements. The enlargement of the pool of potential contractors should contribute to the healthy and more vigorous competition and ultimately to the increase of the quality of presented bids and of concerns for social, environmental and other aspects and conditions. Further, interestingly, the majority of the respondents welcomed the introduction of the electronic communication and generally electronic forms and procedures in public procurement. They believe that this will simplify the processes and make the communications faster and more effective and efficient. A few respondents, generally SMEs and foreign businesses, were reluctant and they explained their lack of enthusiasm for modernized electronic public procurement by the fear regarding IS/IT demands and complications related to the transfer to the electronic form. However, this is not an issue for the majority of respondents because they already use data boxes and qualified electronic signatures and the related IS/IT is affordable for them, sometimes even the costs are merely marginal. The respondents are not afraid that the Initiative will lead to unfair commercial practices and, as a matter of fact, 92% of the respondents do not expect any unfair competition impact of the Initiative.

## 5 Conclusion

The study, analysis and assessment of the roots and context of the awareness and perception of the modernized electronic public procurement in the EU and in particular in the Czech Republic provides a very interesting picture. On one hand, there is the EU determined to go for the integration and single internal market, providing a framework for the modernized electronic public procurement and generating ambitious policies and instruments, such as the Europe 2020 or the Investment Plan for Europe with the goal to simplify public procurement, to support access to public procurement and to consider social and environmental criteria accompanied by the digitalization promoting Initiative and eIDAS Regulation. On the other hand, the message does not seem to go smoothly through and be warmly embraced by the EU member states and their contracting authorities. The EU proclamations regarding the fight against discrimination in public procurement and regarding more effective, efficient and sustainable competition are alluring and EU policies and Directive wording appears positive. However, they are not well-known and well-incorporated in the national settings. As before, public procurement keeps its local or national character and national frameworks, policies and contracting authorities want “their own particular” modern electronic public procurement, i.e. they do not go for the EU template. This is suggested by academic literature, the so far

completed studies, and numbers about materialized and finalized public procurement.

The Czech pioneering case study with the questionnaire investigation fits in this fragmented picture. Czech respondents are not aware about the key pillars of the EU modernized electronic public procurement and, as a matter of fact, they know very little, if anything, about the Initiative of the EU and its goal to increase the effectiveness, efficiency and sustainability of the public procurement and so they make the H1 to be rejected. However, once they learned about the EU modernized electronic public procurement and its EU and Czech parameters, they expect that it will have an impact on the competition between businesses, i.e. this rejects H2 proposing the lack of impact on the competition. Even more interestingly, they perceive positively the introduction of electronic communication in public procurement, i.e. this confirms H3.

In sum, both academia, published studies and articles, as well as the primary pioneering case study suggest that the EU is heading in the right direction and might achieve in sharing the same tenor with EU member states and their contracting authorities while enjoying a good reception by potential contractors. However, so far, we are not there. As a matter of fact, the fine potential of the modernized electronic public procurement seems to be underdeveloped. Electronization, transparency, employment of more criteria with the sustainability focus, etc. are proper concepts and steps, but, boldly, Europeans know very little about these endeavors of the EU and if they do know, they do not fully trust them. Naturally, the ambiguity of the used legislative language and policy wording undermines further EU attempts for the modernized electronic public procurement. It can be speculated that there are other factors working against them, such as national protectionism, cultural differences, language barriers, etc.

Certainly, this introductory comparative analysis and rather small sample case study needs to be expanded and deepened in order to make the above suggested preliminary semi-conclusion more robust. Nevertheless, already at this point, it can be legitimately proposed that the EU should work more closely with EU member states, national competition authorities and contracting authorities and should engage in a dialogue with potential competitors. The bottom-up approach and open-minded exchange of opinions should be carefully examined and the EU should humbly recognize how far it can go with the modernized electronic public procurement while keeping the general support. Once these common denominators are identified, a very clear framework and policies should be issued. Primarily, the modernized electronic public procurement should be what EU member states and their businesses and individuals want, or at least are ready to accept, and not what the EU wants. Otherwise, proclamations about more integration, a single internal market and more effective, efficient and sustainable competition without any discrimination will remain beautiful dead letters.

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**Primary Paper Section: A**

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## OBJECT-SUBJECT SIMILARITY IN FACIAL ATTRACTIVENESS ASSESSMENT (FOCUSING ON EXTRAVERSION AND INTELLIGENCE)

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**Abstract:** According to the theory of assortative mating, the similarity/attraction hypothesis and the theory of cognitive averaging, the attractiveness of a human face can be based on the degree of similarity with the personality features of the subject (beholder). The study tests this tendency with the example of two characteristics – extraversion and intelligence. The subjects (N=1,903) were male (N=754; 39.6%) and female Slovaks between 15 and 67 years of age. The T-test revealed there was no difference in the levels of self-reported extraversion between group which preferred a face high in extraversion and group which preferred a face low in extraversion. Similar results were gained for intelligence variable.

**Keywords:** Face, attractiveness, intelligence, extraversion, assortative mating.

### 1 Introduction

In research into human facial attractiveness, a variety of approaches can be seen. Besides the opinion that attractiveness is very subjective, multi-causally influenced and a variable aspect of the objects perceived (commonly represented by phrases such as: "De gustibus non disputandum est" or "Beauty is in the eye of beholder"), there are also a large number of cases that point to the fact that there is some consensus in standards of beauty evaluation. The vast majority of the research into the attractiveness of the human face reports that attractive faces are those that present with symmetry (see e.g., Fink, Neave, Manning, & Grammer, 2006; Jones, DeBruine, & Little, 2007; Little, Apicella, & Marlowe, 2007), averageness (Apicella, Little, & Marlowe, 2007; Komori, Kawamura, & Ishihara, 2009), apparent sexually dimorphic traits (Perrett et al. 1998; Burriss, Welling, & Puts 2011), etc. The explanation for the attractiveness of these features lies in their close connection with the genetic quality of the subject (Scheib, Gangestad, & Thornhill, 1999), their age (Burt & Perrett, 1997), overall health (Etcoff 1999), or fertility (Gray & Boothroyd, 2012). From this point of view, facial features serve as an honest signal for the potential of "good genes" in a perceived subject (Little, Jones, DeBruine, & Feinberg, 2008).

Another tendency observed in this area of research is a preference for faces that resemble the face of the observer. This has been proved in various extrinsic facial features such as: eye colour (see e.g., DeBruine, Jones, & Little, 2017), the shape of the eyes, nose, mouth, or chin (Wong, Wong, Lui, & Wong, 2018), or by facial adiposity (Fisher et al., 2014). However, within the evaluation of facial attractiveness, humans do not rely on purely extrinsic characteristics. They are also influenced by other factors, such as apparent social status (Buss, 1989), intelligence (Kazanawa, 2011; Démuth & Démuthová 2018), or personality features (Little, Burt, & Perrett, 2006) visible in the face.

The tendency to prefer partners similar to themselves has been explained by various theories. Firstly, the theory of assortative mating assumes that individuals have a tendency to mate with those who are similar to them in some way, to a higher degree than would be expected at random (Escorial & Martín-Buro 2012). Research undertaken in this area showed a significant degree of similarity between couples in various features of their personalities – e.g., in agreeableness, openness to experience (McCrae et al., 2008), cooperativeness, generosity (Tognetti, Berticat, Raymond, & Faurie, 2014), attachment avoidance and anxiety, positive and negative affectivity, ~~esteem~~, and sensation seeking (Luo, 2017).

Secondly, the similarity/attraction hypothesis states that

people are generally attracted to those who are similar to themselves (Wee & Lee, 2017). Individuals assess their characteristics and then select others who are similar. This process works to reduce the potential degree of conflict in their relationship (Byrne, 1971), or to reduce the psychological discomfort that may arise from cognitive or emotional differences (Lungeanu & Contractor, 2015). Studies that have proven the similarity/attraction hypothesis include studies into the following (among others) personality traits (Bleda, 1974), attitudes (Yeong Tan & Singh, 1995), ethnic backgrounds (Hu et al., 2008), voice features (Nass & Brave, 2005), and also facial features (Bailenson et al., 2008) with no conscious awareness of the assessors to the manipulation of similarity.

Thirdly, perceiving familiar faces evokes positive feelings and, on the contrary, unfamiliar ones provoke caution and fear (Cao, Han, Hirschleifer, & Zhang 2011) or even hostility. An unfamiliar object or organism (or a person with strange facial features) is a potential source of danger for an organism striving for survival, hence it becomes alert, cautious, and prepares for flight or fight as needed. Fear of the unknown and xenophobia are considered to be a fundamental fear (Carleton, 2016) and such a "setup" provokes mostly negative emotions. Through this mechanism, objects that are frequently encountered and do not represent a danger evoke more positive reactions, are preferred and considered to be more attractive than unfamiliar or unusual ones. And finally, the theory of cognitive averaging states that subjects organize and classify sensory information into categories (e.g., "chairs", "dogs", or "faces" etc.). Cognitive averaging of the individual examples within certain categories creates a central representative of the category – a "prototype". An important consequence of prototype formation is that subjects find the prototype more attractive than any individual category member. The reason for is that the prototype (due to its familiarity) is easier (cognitively) to process (Pallet, Link, & Lee, 2010). Due to this cognitive averaging mechanism prototypes are often preferred to individual exemplars of the categories of stimuli (Whitfield & Slatter, 1979; Martindane & Moore, 1988) and for example a face that is familiar (resembles one's own face) is perceived as more attractive than any individual face (Rubenstein, Kalakanis, & Langlois, 1999).

A number of studies have proved the effect of the theories mentioned that lead to mating with similar partners. Most of them tested the similarity of existing pairs after partnerships of various lengths. However, in many cases, the resemblance observed in the personality of couples did not change with the length of the partnership and – actually – some characteristics seemed to correlate better in couples who had lived together for a shorter period (Escorial & Martín-Buro, 2012). It has been found that the attractiveness of similarity also extends to non-romantic friendships (McPherson, Smith-Lovin, & Cook, 2001). It, therefore, seems that the similarity of personalities in couples is not the outcome of a shared life, but is the result of an active choice of partner carried out at the beginning of a relationship.

Research concerning the assessment of human faces shows that people are able to assess the characteristics of others from their faces. Many authors (see e.g., Borkenau & Liebler, 1992, 1993; Costa & McCrae, 1992; Goldberg, 1993; Penton-Voak, Pound, Little, & Perrett, 2006) have proved the predictive value of facial features for specific personality factors. More recently, most of this research has employed the Big Five personality traits (for a review, see Connolly, Kavanagh, & Viswesvaran, 2007) with the main emphasis on conscientiousness and extraversion. This body of evidence has also led to the creation of a variety of facial composites that represent specific personalities (e.g., Big Five traits – Penton-Voak, Pound, Little, & Perrett, 2006) or other (e.g. intelligence – Kleisner, Chvátalová, & Flegel, 2014) features. Further research also shows that the assessed degree of

attractiveness of the face may be based on attributed personality traits of the evaluated faces and that people tend to prefer and consider more attractive those faces that resemble their own personality traits. Little, Burt, and Perrett (2006) found that male faces, attributed with a higher degree of extraversion, are preferred by women who are also extraverted.

## 2 Objective

From the data mentioned above, we may ask the question, based on the preferred personality traits present in the evaluated faces, whether people tend to consider those faces that resemble their own characteristics to be more attractive. It is also questionable, whether this preference (if valid) applies generally (extends to a non-mating context), or it is only valid in the evaluation of potential sexual partners. To find an answer, as an example, we have chosen extraversion/introversion as a personality trait and intelligence.

## 3 Methods

The subjects ( $N=1,903$ ) were Slovak men ( $N=754$ ; 39.6%) and women ( $N=1149$ ; 60.4%) between the ages of 15 and 67 (mean 23.96; st.dev. 9.128) who were asked to fill in a battery of tests. The intelligence score of each participant was measured using two subtests (measuring verbal and visuospatial IQ) from the standardized "Test of the Level of Mental Abilities" (Vonkomer, 1992) and the score of self-reported extraversion from the "Personality Inventory KUD" (Miglierini & Vonkomer, 1986).

For the assessment of the attractiveness of faces, eight computer-modified facial composites were used that represented high and low levels of intelligence and high and low levels of extraversion in both sexes. The technique of computer-modified facial composites is based on the process, where initially a large number of individuals complete the self-report extraversion/introversion questionnaire (or intelligence tests). Further, a smaller number of participants (e.g. 10%) who score the highest and the 10% who scored the lowest are selected as representative extraverted/introverted (or high/low intelligent) individuals. These representatives are photographed and to construct composites, hundreds (e.g., in case of extraversion/introversion there were 219) of standard feature points are marked as facial landmarks on each face. The mean coordinates of each delineated feature point are calculated to generate average shape information (Penton-Voak, Pound, Little, and Perrett, 2006). Information about the typical shape is applied to the facial average picture (an artificially created face computed from the many photographs) and a face typical of an extravert/introvert (or a person high/low in intelligence) is created.

Within the face assessment task, participants were asked (along with other tasks not listed here) to choose the most attractive face from a set of two nearly identical male and female faces. The participants were blind to the fact, that the two faces within each set differed in the specific features known to indicate different levels of intelligence (see Figure 1 – Kleisner, Charvatova, & Flegr 2014) and different levels of extraversion/introversion (see Figure 2 – Penton-Voak, Pound, Little, and Perrett, 2006). A statistical analysis was carried out using the SPSS program, version 16.

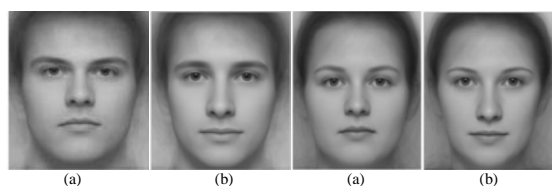


Figure 1. Face composites manipulated to show different levels of intelligence. Faces marked a) refer to faces indicating low intelligence, b) faces indicating high intelligence (Source:

Source: Kleisner, Charvatova, & Flegr 2014; <http://journals.plos.org/plosone/article?id=10.1371/journal.pone.0081237>)



Figure 2. Face composites manipulated for facial extraversion and introversion. Faces marked a) refer to faces indicating introversion, b) to faces indicating extraversion (Source: male faces: Penton-Voak, Pound, Little, & Perrett, 2006, p. 622; female faces: <http://www.bbc.co.uk/wales/radiowales/sites/sciencecafe/updates/20111016.shtml> [cit. 2016-06-28])

## 4 Results

To answer the question of whether people tend to consider those faces, that resemble their own characteristics based on their preferred personality traits present in the evaluated faces to be more attractive, we measured the intelligence and extraversion of the participants and their attractiveness preferences for low/high intelligence male/female faces and extravert/introvert male/female faces. The intelligence and extraversion of the participants were measured and found to have a normal distribution (values for intelligence: mean=13.79; st. dev. 2.63; skewness=-.286; kurtosis=.160, values for extraversion: mean=10.85; st. dev.=3.59; skewness -.697; kurtosis=.051), therefore parametric tests were used in further computations.

Table 1  
*T-test for differences in intelligence between 2 groups according to the preference for low/high intelligence facial composites*

Preferred male facial composite	N	Mean	St. dev.	T	Sig. (2-tailed)
Low intelligent	905	13.85	2.747	.877	.381
High intelligent	998	13.74	2.524		
Preferred female facial composite	N	Mean	St. dev.	T	Sig. (2-tailed)
Low intelligent	732	13.67	2.931	-1.581	.114
High intelligent	1171	13.87	2.425		

Table 1 shows there is no statistically significant difference in the intelligence level of the participants which preferred the face indicating low intelligence to those who considered the face indicating high intelligence to be more attractive, neither in the case of male facial composite nor female facial composites. It, therefore, seems that the intelligence level of the evaluator does not significantly influence the preference or assessed attractiveness of facial features typical of the presence of intelligence. Similarly (see table 2), we did not find a statistically significant difference in the self-reported extraversion levels of the participants which preferred the introverted facial composite to those who considered the extraverted facial composite to be more attractive, neither in the case of the male facial composite nor the female facial composite. It is likely that extraversion levels do not have an impact on the attractiveness ratings of faces having typical facial features of introversion or extraversion.

Identical conclusions can be drawn from the t-tests results computed separately for the analysis of the facial preferences of potential sexual partners (male choices for female facial composites and vice versa). Tables 3 and 4 do not show any significant differences in intelligence (Table 3) and extraversion

(Table 4) levels between the groups of participants which preferred low to high intelligence (introverted to extraverted) facial composites.

Table 2

*T-test for differences in extraversion between 2 groups according to the preference for the introverted/ extraverted facial composites*

Preferred male facial composite	N	Mean	St. dev.	T	Sig. (2-tailed)
Introverted	785	10.92	3.739	.621	.535
Extraverted	1118	10.81	3.477		
Preferred female facial composite	N	Mean	St. dev.	T	Sig. (2-tailed)
Introverted	454	10.81	3.676	-.327	.744
Extraverted	1449	10.87	3.560		

Table 3

*T-test for differences in intelligence between 2 groups according to their preference for low/high intelligent facial composites in the split sample*

Preferred male facial composite (female sample)	N	Mean	St. dev.	T	Sig. (2-tailed)
Low intelligence	500	13.67	2.675	.056	.955
High intelligence	649	13.66	2.519		
Preferred female facial composite (male sample)	N	Mean	St. dev.	T	Sig. (2-tailed)
Low intelligence	308	13.87	3.005	-.966	.334
High intelligence	446	14.06	2.450		

Table 4

*T-test for differences in extraversion between 2 groups according to their preference for introverted/ extraverted facial composites in the split sample*

Preferred male facial composite (female sample)	N	Mean	St. dev.	T	Sig. (2-tailed)
Introverted	450	11.02	3.518	1.097	.273
Extraverted	699	10.79	3.589		
Preferred female facial composite (male sample)	N	Mean	St. dev.	T	Sig. (2-tailed)
Introverted	206	10.81	3.702	-.045	.964
Extraverted	548	10.82	3.602		

From the results, we can assume that personal characteristics (specifically, the level of intelligence and extraversion) do not change attractiveness preferences for high/low intelligence of introverted/ extraverted facial composites when evaluating faces of the opposite sex.

## 5 Discussion

The presented study focused on attractiveness preferences for male and female faces differing in their levels of extraversion and intelligence. The objective was to reveal, whether subjects who prefer highly intelligent faces are also more intelligent compared to those who preferred faces possessing the facial features of lower intelligence. Similarly, we tested whether the subjects who preferred highly extraverted faces are also more extraverted compared to those who preferred faces possessing facial features indicating introversion. The findings of our study did not reveal a statistically significant difference in the levels of intelligence between the group of subjects who considered the highly intelligent facial composite to more attractive and the group of subjects who considered the facial composite with facial features typical for low intelligence faces to be more attractive. Also, there was no statistically significant difference

in the levels of extraversion between the group of subjects who considered extraverted faces more attractive and the group of subjects who considered introverted faces more attractive. As the attractiveness preference suggests inter-sexual dynamics, we also tested our objective on a sample of women (evaluating male faces) and men (evaluating female face) separately. Neither were there any statistical differences in the intelligence or extraversion levels in the groups of subjects that differed in their preference for intelligent and extraverted faces.

There might be various explanations for the absence of a similarity between the features of the observer and their tendency to prefer these features in the face of the composite evaluated in our research. Even though several studies have shown that people tend to mate with partners having similar in personality traits (Bleda, 1974), social attitudes (Yeong Tan & Singh, 1995), ethnic backgrounds (Hu et al., 2008), vocal features (Nass & Brave, 2005) or facial features (Bailenson, Iyengar, Yee, & Collins, 2008), these preferences have been seen in existing (and sometimes even long-lasting) couples. It is possible, that couples may adjust their characteristics in order to synchronize with their life partner or they tend to maintain a relationship with such a type of partner and split up with those who are too different. The similarity hypothesis in terms of personality/intelligence characteristics, therefore, might only be applicable after certain duration of "dating" and learning each other's character. We also assume that "at first sight" facial evaluation mainly concentrates on physical features that signal evolutionary important characteristics such as age, signs of good health, fertility, the potential for "good genes", features which give confidence in paternity (Bovet, Barthes, Durand, Raymond, & Alvergne, 2012) and therefore the preferred similarities shared by the evaluator and evaluated person can be tied primarily to such features.

Another group of explanations for the results achieved could come from the limitations of our study that might have interfered with our data. We did not take into account the sexual preferences of the evaluators. If we assume that attractiveness preferences are closely tied (mainly within "at first sight" attractiveness preferences) to the evaluation of potential sexual partners, it is possible, that subjects with a homosexual orientation would not evaluate the presented facial composites as expected. Also, we may discuss how age affects attractiveness choices. Those subjects in the fertile period of their lives may evaluate the faces of possible sexual partners in a different way to women who are post-menopausal. Similarly, if the evaluator is already engaged in a relationship (has a partner) or is actively searching for a partner could affect the way that faces of the opposite sex are evaluated in terms of their attractiveness. Several studies have proved (see e.g. Burriss, Welling, & Puts, 2011) that, for example, women looking for a short-term partner consider different male facial features attractive than when they are searching for a long-term one. Differences in attractiveness preferences also depend on more delicate factors, such as the menstrual cycle (Little & Jones, 2012). All these considerations may be useful topics for further research with the potential to verify results of this study as well as to clarify the specifics of the proposed objectives.

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#### Primary Paper Section: A

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## CURRENT STATE OF RISK AND PROBLEM BEHAVIOUR OF PUPILS AND ITS REFLECTION IN SCHOOL PLANS OF PREVENTION

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**Abstract:** The study theoretically presents the current state of problem or risk behaviour of pupils at elementary and high schools, as well as school prevention in Slovakia. It presents the results of content analysis of school documents, specifically of school plans of preventive activities, or work plans of prevention coordinators, with special focus on the reflection of the current state of risk and problem behaviour of the pupils in these plans. The results show that the plans take only minimal account of the current state and trends of risk and problem behaviour of pupils.

**Keywords:** problem behaviour of pupils, risk behaviour of pupils, prevention, school prevention, school prevention plans, coordinator of prevention

### 1 The Current State of Problem or Risk Behaviour of Elementary and High School Pupils

Elementary and high school teachers often, many of them daily, face inappropriate behaviour of their pupils. It covers wide scale of behaviour: starting from small misdeeds, through violation of the school order, up to serious socio-pathological phenomena, that should be differentiated from the point of view of prevention and subsequent solution.

Risk behaviour is the more frequently used term in school prevention, as can be seen in the strategic documents, guidelines and other materials (e.g. Pedagogical-organisational instructions for the school year 2018/2019). The term "risk behaviour" should according to several authors (Miovský et al., 2010, Bělik, Hoferková, 2016) mitigate the stigmatization of pupils with problem behaviour of different character.

Pupils of elementary and high schools show various kinds of inappropriate – problem behaviour, that doesn't necessarily have to be included among behavioural disorders or socio-pathological phenomena. From the point of view of pedagogical and vocational training employees, inappropriate, provocative, aggressive or undisciplined behaviour of pupils should be adequately referred to as problem behaviour of pupils. In the context of problem behaviour, M. Lipnická (2014) states that it most often has these negative features that dominate on the long-term basis, are often repeated and have negative effect on others: intransigence, inattention, maladjustment, disobedience, moodiness, unpredictability, restlessness. Problem behaviour could also be a symptom of disability or social disadvantage of a child, or his/her talent.

Act No. 245/2008 Coll. on Upbringing and Education (the School Act), in § 144, section 4 regulates the obligations of elementary and high school pupils, so teachers have legal support, e.g. to respect the instructions of school employees (general regulation of prevention of undisciplined behaviour), not to restrict other people's rights by your actions in the process of education (bullying prevention), to protect the property of school or school facility used for education against damage (vandalism prevention), to regularly participate on education and to study properly (truancy prevention), etc.

The increase in socio-pathological phenomena among adults in Slovakia has been manifested also in the increase of problem behaviour of elementary and high school pupils. We talk about wide scale of unacceptable behaviour of various gravity. First problems with behaviour occur among still younger pupils. Despite the fact, that several data indicate a decrease of problem behaviour of pupils (e.g. Criminality statistics SR, European School Survey Project on Alcohol and Other Drugs – ESPAD), we cannot consider the situation as positive. Pedagogical and vocational training employees of common schools point out the occurrence of problem behaviour. The kinds of risk, or problem

behaviour vary, e.g. in connection with ICT. However, besides the new risks, some kinds of problem behaviour still persist.

The current situation is illustrated also by negative changes concerning the sex of pupils: balancing between sexes occurs, in some cases girls outperform boys. R. Tomšík, M. Dolejš, M. Čerešník, J., Suchá and O. Skopal (2017), based on their empirical findings state, that risk behaviour does not concern just boys, but is similarly extent in both sexes and the breaking age of sharp increase of this behaviour is between the 14<sup>th</sup> and 16<sup>th</sup> year of age.

Effective preventive activities require prognosis of the probability of occurrence of a given phenomenon and to think over the choice of methods and forms of action, in the area of primary and secondary prevention in the school environment. The reality of school practice is illustrated by the results of researches carried out among teacher and prevention workers.

The necessity of systemic and effective prevention is proved also by the results of the screening carried out in 2013. Teachers from all Slovak counties (except Bratislava county) noted pupils they recommend to the care of educational counselling and prevention facility, because their problem behaviour cannot be handled by common pedagogical measures at school. On the basis of the most significant findings we can state (2014):

- teachers from the researched schools would recommend 18,10% of pupils to counselling care,
- compared to the previous periods, the number of problematic girls increased,
- all demonstrations of problem behaviour (including truancy, contact with drugs, criminal activities) does not concern the second-grade pupils only, compared to the past we registered a significant increase of problem behaviour among first-grade pupils. The necessity of implementation of risk behaviour prevention among first-graders is pointed out also by M. Procházka, M. Vitečková and K. Špačková (2017).

J. Skopalová and K. Janiš (2017) carried out a research at elementary schools among teachers, headmasters and prevention workers in 2017. They surveyed the occurrence of risk behaviour of pupils. Among the most wide-spread ones the respondents stated the following: aggressiveness, relationship problems, cyberbullying and rough behaviour (relatively broadly conceived type of risk behaviour), smoking (despite the decreasing trend of the number of smokers, it is still a wide-spread form of risk behaviour among pupils), vulgar language, truancy and hidden truancy, frauds and failure to fulfil their school duties (cheat sheets, writing off, falsifying a signature, etc.), thefts. The fact, that some types of risk behaviour did not occur does not mean they do not exist among pupils. The authors asked for the most frequent types of risk behaviour.

In 2017 we carried out a research among prevention coordinators (15) and police preventivists (5). All respondents, prevention coordinators and police preventivists alike, consider the situation of problem behaviour occurrence as negative – they all point to the increase in the problem behaviour of pupils. They emphasized especially the increase in aggressive behaviour and risk behaviour connected with ICT.

The scale of problem or risk behaviour is broad and it is constantly changing. Besides the phenomena that occur for years among children and youth (truancy, experiments with drugs, committing criminal offences, etc.), new trends in the occurrence of problem behaviour of pupils appear, such as binge drinking with the goal to get drunk as soon as possible, and especially new risks connected with ICT and online environment.

One of the serious issues is also the rapid increase of certain kinds of problem behaviour, as it is with eating disorders. Eating disorders among children and youth have in Slovakia increasing tendency. It is proved by National Health Information Center ([www.nczisk.sk](http://www.nczisk.sk)). Eating disorders present a serious problem, because they endanger health and sometimes even life of a person. Among most common eating disorders belong mental bulimia and mental anorexia. People suffering from these eating disorders have morbid fear of obesity and they lost control of food intake. Dangerously many girls and women suffer from this disorder, this mental disorder also occurs among men, but in a much lesser extent.

Another serious problem of today is experimenting with drugs, legal and illegal, by pupils of elementary and high schools. Experimental and recreational drug use present significant risk of addiction emergence. School researches TAD and ESPAD describe the situation in Slovakia and other countries. Pupils of elementary and high schools have personal experiences with legal drugs (pupils stated regular smoking, drinking alcohol, they admitted being drunk), they experiment also with illegal drugs, mainly with marijuana.

A substantial problem these days is also the increase of aggressive behaviour of pupils (Tomšík, Dolejš, Čerešník, Suchá, Skopal, Čerešníková, 2018) and its occurrence among still younger pupils (Saracho, O. N., 2017). Aggressive behaviour of elementary and high school pupils may lead to committing criminal offences. Such behaviour of pupils is becoming more daring and brutal. The extreme form of aggressive behaviour is bullying. It is a targeted and repeated violence against such pupil or pupils who can't defend themselves. Bullying may take different forms and it must be dealt with by teachers of both elementary and high schools. (Wachs, Bilz, Niproschke et al., 2019).

While in the past aggressive behaviour and bullying was mostly spread among pupils, nowadays there are many cases when aggressive behaviour is aimed at teachers. Several authors point to this shift (Csémy, et al., 2014, Espelage, Anderman, Brown, Jones, Lane, McMahon, Reddy, Reynolds, 2013, Garrett, 2014, Kopecký, Szotkowski, 2017 a i.).

Current situation is characteristic by spreading new negative phenomena connected with media and information technologies. Their usage brought along with many advantages also many risks and threats, especially for children and youth. A serious problem of today is the so called cyberbullying, aka electronic bullying (Hollá, Fenyvesiová, Hanuliaková, 2017, Wagner, 2019). It is the abuse of cell phones and the Internet to send aggressive, hateful and damaging messages, or intimidation of people. In particular, the anonymous Internet environment poses in this case a considerable danger. Electronic bullying or cyberbullying, despite the absence of real physical force, is very insidious and dangerous.

Cyberbullying can grow into cyberstalking. Stalking (hunting, persecution) is a term that identifies repetitive, long-term, systematic and gradual persecution, which may vary in form and intensity. We talk about cyberstalking when an attacker uses ICT (through chat, social networks, etc. he/she arouses victim's fear). In relation to virtual space, it is necessary to draw attention to the cyber-grooming, which is such behaviour of the internet user that evokes the victim to false trust and convinces him/her to meet him/her personally. The motive of such behaviour is sexual abuse, physical violence, or the abuse of victims for pornography or prostitution.

Another type of risk behaviour is sexting, the possible negative consequences of which young people do not realize. It also occurs among pubescent and adolescent youth. Sexting is the electronic distribution of text messages, one's own photos or videos with sexual content. Most often, it is the distribution of erotic photos or videos between partners. However, after a breakup one of the partners may distribute these materials through a cell phone or the Internet.

K. Hollá (2017) found out that boys and girls in the Slovak Republic between the ages of 12 and 18 send their intimate photographs, a significant increase in sexting in the form of sending their naked and half-naked images was demonstrated at the age of 12-17 years.

According to the current research from 2017 in the Czech Republic, sexting is performed by 15% of children and youth in the age of 8 to 17 years.

There are many reasons why children and youth commit this form of risk behaviour (Kopecký, 2012, Hollá, Jedličková, Seidler, 2018). Most often it is boredom, sexting is perceived as a part of romantic relationships, it appears as the product of social pressure (of a group), sexting is the product of consumer society and it becomes a tool of self-presentation, sexting as a tool of revenge.

A serious risk is the fact, that sensitive material can be sent to a stranger (anonymous environment enables anyone to pretend to be a classmate, elicit an intimate photograph by blackmailing, etc.).

According to some authors, there is a close relation between cyberbullying and sexting (Davis, Schmidt, 2016, Hollá, 2016). Publishing the misused intimate materials on the internet hurts the victim and may cause repeated harm.

Sexting provides the sexual deviants (predators) with a relatively easy access to information that will help them gain the trust of a child or juvenile and lead to extortion. It may be related to the dangerous phenomenon we call sextortion. Sextortion is a compulsion for sexual services or favours, the online extortion of the victim. K. Kopecký (2014), based on the analysis of actual cases, developed a model of perpetrator behaviour: establishing contact with the victim (after first contacting, where he/she acts under the same gender identity as the victim, the offender convinces the child to provide him/her with personal, or even intimate information), manipulation with flattery (the offender evaluates positively of all the materials he/she receives, by which he/she is getting the child close, the child longs for admiration and appreciation), verifying the true identity of the child (the offender needs to make sure that he/she actually communicates with the child and that the photographs are authentic, using the method of photographing with a specific inscription, current newspapers, etc.), gradation of intimacy (the intimacy of photographs that the victim and the offender exchange usually raises, the photographs of the offender are scams, and he/she gets them from foreign portals, the child then begins to perceive the distribution of intimate material as something ordinary, and sends his/her own shots to the offender), multistage extortion (when the victim decides to quit, the offender goes into extortion and he/she menaces that he/she will publish and forward the material he/she has received). With the obtained materials, the perpetrator can force the victim to a personal meeting; extortion may go through to forced prostitution.

## 2 Prevention of Risk and Problem Behaviour of Pupils in Slovakia

School, especially primary school, plays an important role in prevention as it is attended by the whole population of children from their sixth year of age, with some rare exceptions. School, as a professional institution, ensures implementation of prevention, mainly primary prevention and since problem behaviour is wide-spread among pupils, also secondary prevention. The area of secondary prevention covers a complex care of pupils with problem behavior, starting from educational problems in a family, through violation of the school order, up to violation of valid legislation.

Prevention coordinators are the main actors of prevention at elementary and high schools in Slovakia. A school director assigns one of the teachers the function of prevention

coordinator on the basis of his/her voluntary interest, personal skills and professional competence, usually for the duration of one year. It is a teacher who supervises, coordinates and directs the activities within prevention. In current school practice, the focus of responsibility for prevention implementation is on the shoulders of prevention coordinators - teachers who also teach full-time and they are not extra financially rated for performing this function.

In practice, the director of a primary or secondary school will determine the prevention coordinator from the rank of teachers based on their voluntary interest, personality assumptions and professional competencies. The prevention coordinator, together with the director, develops a prevention plan, or preventive activities plan for the relevant school year, based on strategic documents of the Slovak Republic or the EU.

The prevention coordinator should coordinate preventive activities at school, not to be the only preventer at the school. The coordinator should also cooperate with preventive, advisory and other professional institutions. The prevention coordinator has the following tasks:

- To work out the plan of preventive activities for the respective school year.
- To perform the role of school counsellor on the issues of prevention.
- To pay special attention to pupils from a disadvantaged social environment (at risk from social pathology) who are at increased risk of developing socio-negative phenomena.
- To provide coordination of prevention as an integral part of the education and training process. Within the school's activities the coordinator should provide preventive and educational consultations to pupils and their legal representatives.
- To provide a connection between a school and preventive, counselling and other professional institutions and NGOs involved in prevention.
- To coordinate and methodically guide the preventive and information activities of pedagogical staff at school alongside the long-term systematic monitoring and evaluation of the development of pupils at risk of drug addiction and other social pathology.
- To inform pupils, their parents (or legal representatives) about the activities of preventive counselling and other professional institutions about the possibilities of prevention.

At schools, prevention is implemented through various forms of preventive action. Preventive projects or programs are the most suitable form. The most common one-shot activities at schools are discussions with experts, lectures and classroom prevention. It is appropriate to include the prevention of socio-pathological phenomena in individual subjects (e.g. Ethics, Civics, as well as other subjects that allow it within their curriculum).

### 3 Content Analysis of School Plans of Preventive Activities

The current state of prevention implementation in the conditions of elementary and high schools can be evaluated on the basis of content analysis of the plans of preventive activities at elementary and high schools, or work plans of a prevention coordinator. We analysed 70 plans of preventive activities from the school year 2018/2019 in the Slovak republic (35 plans from elementary schools and 35 plans from high schools).

A plan of preventive activities must be worked out in detail and must be specific. It is important for the author of the plan to be aware of the real risks that endanger the pupils. It is inevitable to monitor the problem behaviour. Each school must have a plan of preventive activities worked out for the respective school year. Some schools develop a plan of activities (or a work plan) of a prevention coordinator.

Positively can be evaluated those plans, which have activities aimed at identifying the occurrence of risk and problem behaviour at school planned at the beginning of a school year.

The majority of plans (52 plans) contained the issue of extremism, racism and xenophobia prevention, fully in accordance with the valid Pedagogical-organisational instructions for the school year 2018/2019. However, the activities were not specified.

The issue of virtual environment risks was covered by 27 plans, in another 2 cyberbullying was mentioned in connection with bullying. So the prevention of cyberspace risks was included in the plans of 29 schools, which represent 41% of the evaluated schools.

The results showed that insufficient attention is paid to certain issues in the process of planning the preventive activities. Of the plans that paid special attention to cyberspace risks, only 3 explicitly mentioned sexting. None of the evaluated plans contained the prevention of risk sexual behaviour. Similarly, none of them mentioned eating disorders.

When evaluating the plans from elementary schools, a serious deficiency was identified – preventive activities were only rarely aimed at primary level pupils. The preventive plans contained activities for the 5<sup>th</sup>-9<sup>th</sup> grade pupils only.

A plan of preventive activities, or work plan of prevention coordinators, can be considered a strategic school document in the area of prevention. We can assume that if it contains planned preventive activities, they will be really implemented. Naturally, even precisely worked-out plan may not be implemented. Or, on the other hand, such situation may occur that even if a certain phenomenon is not included in the prevention plan, it is covered by activities from counselling facilities workers and performed on a professional level.

### 4 Conclusion

Pay adequate attention to plans of preventive activities, so that they are conclusive and specific. We found out, that the surveyed school preventive plans take only minimal account of the real occurrence of problem or risk behaviour of pupils.

At schools, it is necessary to pay attention to prevention, it is suitable to implement programs focused on harmonization of relationships and improvement of school climate. To implement effective forms of prevention (e.g. solving the problematic situations, trainings, experience and interactive forms). To make prevention of risk, or problem behaviour an integral part of the educational process. Incorporate into school educational programs the compulsory topics connected with multicultural education, education in the terms of humanism, human rights education, prevention of all forms of discrimination, xenophobia, antisemitism, intolerance and racism and in the area of migration. To continually monitor the behaviour of pupils and the changes in the cases their healthy personal development endangerment to ensure their protection and to deal with the problem in cooperation with the school management and legal representatives of the child.

When planning the preventive activities, it is important to take account of the risks that result from modern technologies. At schools, it is important to inform pupils in an appropriate way about the risks connected with modern technologies and to organize interesting preventive activities on the topic, e.g. on the Safe Internet Day, to teach pupils to protect their identity (e.g. when creating their profile, publishing their photographs and personal information) and to emphasize the danger of personal meetings with contacts from internet, to keep the rule not to go on with communication with sexual context. Not to forget the prevention of victimization.

School headmasters should appoint such teachers for coordinators who passed a specialized education in the area of

prevention, or they should allow them to participate on such education (the opportunities for such education are relatively broad). To increase knowledge and to support education of all pedagogical employees in the area of prevention. To pay more attention to this area also within university training of future teachers.

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#### Primary Paper Section: A

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## APPLYING OF STRATEGIES OF CRITICAL AND CREATIVE THINKING BY TEACHERS ACCORDING TO THE TEACHING SUBJECT AND DEGREE OF EDUCATION

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**Abstract:** The study presents the results of our research dealing with teaching strategies that develop critical and creative thinking of pupils. The subject of our study is the correlation level between the application of strategies developing the critical and creative thinking by teachers and the subjects they teach. The analysis of dependence of particular strategies pointed out the fact that teachers of natural sciences, social sciences, languages, as well as educational and artistic subjects use strategies developing critical and creative thinking with the same frequency, and there does not exist any difference in their application according to particular groups of teaching subjects. We identified a statistically significant difference only in two teaching strategies.

**Keywords:** critical thinking, creative thinking, teaching strategies.

### 1 Introduction

The ability to think in a critical and creative way represents one of the key abilities of people for effective and meaningful life in the 21st century. The excessive usage of technologies in our environment, informative explosion and quickly spread information require individuals who are able to select information, assess and solve problems, find and judge possible alternatives, make correct decisions and offer their own ideas. It is possible to develop these skills and they represent a challenge for the current school system and its form of the teaching process. The changes in the contents and processes of education are indispensable so that teachers can carry out cognitively oriented teaching and apply such teaching strategies that develop reflective, critical and creative thinking of pupils. The work was developed as part of research project solution VEGA No. 1/0098/17 Individual Conception and Strategy of Education within the Context of Teacher's Professional Development.

### 2 Theoretical and Empirical Starting Points

It is indispensable to look at the concept of critical thinking in a complex way within the context of development of critical thinking by means of education. Until now there does not exist any overtly accepted definition that would define critical and creative thinking to the full extent. For the needs of assessing learning results of pupils there was approved a definition that was published in the so called Delphi Report (Facione, 1990) Critical thinking is: *intentional, regulated thinking based on the consistent consideration of evidence, concepts, methods, criteria and correlations, focused on the interpretation, analysis, assessment and drawing of conclusions.*

Critical thinking is perceived as a more dimensional concept. The core of critical thinking consists of two dimensions (Ennis, 1985; Facione, 1990; Paul, 1992; Halpern, 2014; Bailin et al., 1999):

1. specific categories of cognitive competences: interpretation, analysis, assessment, assuming, explaining, and self-regulation;
2. dimension of personal predispositions.

The cognitive dimension of critical thinking is formed by mental processes like analysis, synthesis, and assessment which are denoted as higher cognitive processes. Halpern (1997) understands critical thinking as *“the use of those cognitive skills or strategies that increase the probability of a desirable outcome”*. Critical thinking is a mental process and on its basis individuals are able to judge arguments and new information, to draw conclusions and create their own opinions. Thinking at the highest level, the critical and creative thinking, allows us to gain individual freedom (Limbach,

Waugh, 2010). Erwin (2002) made a list of cognitive competences of critical thinking, including there:

- the competence to identify key ideas and assumptions in the argument,
- the competence to recognize important correlations,
- the competence to interpret data correctly,
- the competence to draw logical conclusions from accessible information,
- the competence to differentiate between facts and assumptions,
- the competence to assess the reliability of evidence mentioned to support the statements and credibility of authority,
- the competence to re-evaluate our own convictions,
- effective decision making and problem solving. (In Pascarella, Terenzini, 2005).

The affective level of critical thinking is created by personal predispositions, attitudes of individuals to information, their interest and motivation to solve tasks and problems. A very important part is represented by the so called “intellectual curiosity” and openness to new horizons (Paul, 1992). Also Watson and Glaser (2012) mention the close relationships between the cognitive and affective level of critical thinking. According to them, critical thinking contains attitudes to information, knowledge, as well as valid assumptions, abstractions, generalizations and abilities that could be used at work. In addition to the cognitive and affective levels of critical thinking, Kosturková (2016, p. 15) describes also the performing dimension whose essence is created by the abilities of individuals to use different methods for better orientation in manifold types of information, such as creating of conceptual maps, Venn Diagram, recurrent graphical organization, etc.

As aforementioned, in the educational -formational process it is possible to have a direct impact on the ability to think critically (Paul, 1992; Nelson, 1994; Halpern, 2014; Bailin et al., 1999). However, the development of critical and creative thinking in the conditions of Slovak school system seems to be an unexplored area. There exist only few research works that document the state of critical thinking of pupils and their teachers. There are hardly any research works and data about the preparation of teachers in the course of their pre-graduate formation from the point of view of applying strategies for development of critical thinking. Current measurements and analyses, dealing with the state of critical and creative thinking of pupils of the secondary education, emphasize the unsatisfactory results. According to the results of PISA 2012, 2015, the level of their literacy in reading, mathematics and natural sciences has been below the average of other countries of OECD for long time. Kosturková (2016) was interested in finding out the state of critical thinking of students at Slovak secondary grammar schools. The research sample was formed by 365 students of secondary schools and her diagnostic tool was the W-GCTA test of critical thinking. The general achieved mean level of gross score was 40,41 points out of the total number of 80 points, and pupils achieved the lowest mean score in the subtest for judging and the highest score in the subtest for recognizing assumptions. To a certain degree, these results reflect the insufficient attention paid to the development of critical thinking of pupils. At the same time, these results emphasize the need for the development of critical and creative thinking of teachers and also the subsequent need for creative application of adaptive teaching strategies by teachers of primary schools, secondary schools and universities. International measurements Tallis (2008) pointed out the fact that the structured approach to teaching is dominant in Slovakia when compared to the approach focused on pupils and extensive teaching. The frequency of applying this extensive teaching type with dominant individual and creative activities of pupils (debate, argumentation, project work, production of products for others, essay writing) was identified as the lowest one out of all three evaluated types of teaching. Many other research works confirm that teachers develop higher cognitive abilities of pupils to a very limited extent (Zelina

1990, Portík, 2001, Šuťáková, 2017). Kosturková (2016) assesses the state of critical thinking of Slovak teachers as unsatisfactory. Compared to the sample of British teachers, our teachers obtained a relatively low mean gross score (41,15 points out of 80 possible points) in the W-GCTA test (Watson-Glaser test of critical thinking). Our research was based on the fact that the level of critical thinking of teachers subsequently determines the application of teaching.

### 3 Method and Methodology

Our formulation of the research problem is focused on the aims of the research project No. APVV-15-0368, Practice in the centre of specialized didactics, specialized didactics in the Centre of practical preparation. Its aim was to identify the key adaptive strategies applying the cognitively oriented approach to the development of pupils' critical and creative thinking by teachers.

#### Research subject

The correlation level between the application of strategies for development of critical and creative thinking by teachers and the subjects these teachers teach.

#### Research problem

A statistical significance of the correlation between the application of strategies for development of critical and creative thinking by teachers and the group of subjects they teach.

In the assessment we pay our attention to the frequency of applying specific identified strategies of critical and creative thinking by teachers in terms of factor division of strategies and also according to particular items belonging to the given strategies (Duchovičová, Tomšík, 2017, 2018). The frequency of their application is based on the self-reflective analysis by teachers of particular groups of subjects (natural sciences, informatics and mathematics, social sciences and mother tongue, artistic education and educational subjects, foreign languages).

#### Research sample

Our research sample was formed by  $N = 125$  randomly selected teachers (teachers fulfilling the requirement for the position of training teachers) working at primary schools ( $n = 67$ ) and secondary schools ( $n = 58$ ) in Slovakia. The average age of respondents was  $M = 45,58$  years with the standard deviation  $SD = 9,71$  years ( $\min = 25$ ;  $\max = 65$ ), and the average length of teaching practice was 20,61 years. Out of the total number of participants in the research there were  $N = 16$  male respondents and  $N = 107$  female respondents ( $n = 2$  non-categorized). The division according to the teaching subjects is the following one: teachers of natural sciences, informatics and mathematics ( $n = 38$ ); teachers of social sciences and mother language ( $n = 32$ ); teachers of artistic education and educational subjects ( $n = 16$ ) and teachers of foreign languages ( $n = 39$ ).

#### Research methods

In the collection of research data we used the questionnaire "Strategies of critical and creative thinking in teaching" (Duchovičová, et al. 2017). The questionnaire is designed for teachers and training teachers. By means of this questionnaire it is possible to identify the key didactic strategies for development of critical and creative thinking of pupils that are used by teachers. The research tool consists of two two-dimensional parts one one-dimensional part. For the purposes of our research, we selected the first part focused on the frequency of using particular strategies in teaching for development of critical and creative thinking of students. This part has 41 items and they are divided into six following subscales (the reliability of particular subscales for specific dimensions is expressed with the Cronbach's coefficient  $\alpha$ ):

- Strategies for development of self-regulation (9 items;  $\alpha=0,824$ ;  $\alpha=0,844$ ),

- Strategies for development of systematic and interpretative skills (10 items;  $\alpha=0,785$ ;  $\alpha=0,800$ ),
- Argumentation strategies (6 items;  $\alpha=0,803$ ;  $\alpha=0,760$ ),
- Strategies for drawing conclusions and problems solutions (8 items;  $\alpha=0,673$ ;  $\alpha=0,608$ ),
- Strategies for development of assessment (5 items;  $\alpha=0,522$ ;  $\alpha=0,586$ ),
- Strategies for development of reading skills (4 items;  $\alpha=0,737$ ;  $\alpha=0,643$ ).

The reliability of the complete tool expressed with the Cronbach's coefficient is  $\alpha=0,935$ .

The inner consistency and validity of the questionnaire was verified with the factor analysis (Duchovičová, Tomšík, 2017). Taking into account the unequal number of items in the particular subscales of the questionnaire, the score of respondents' answers can achieve different levels. Higher score represents a higher level of the factor analysed in the subscale. All items are formulated as declarative sentences that require answers according to the five-degree scale of Likert type (1-5).

The research data were processed by means of the programme Microsoft Excel and statistical programmes IBM SPSS (ver. 22) and STATA (ver. 9). For the description of the research data, we used methods of descriptive statistics, namely: the number, mean, the mean of items (the summary score was divided with the given number of items in the factor), the standard deviation. In order to find out the differences in the studied variables between the research groups, we used the Kruskal-Wallis test/Mann-Whitney U test. We compared the data from the particular groups of teachers divided according to their teaching subject by means of the variation analysis ANOVA (Tomšík, 2016; 2017).

#### Design

The collection of data was carried out within the period of April, May and June 2017. The administration of the tool took approximately 30 minutes. The tool was in the print form and it was completed by teachers. During the months of July and August 2017 we analysed the obtained data and published information about the factor analysis of the tool. Partial data from the research of strategies of critical and creative thinking applied by teachers are published continually.

### 4 Results and discussion

The aim of the research was to find out what relationship is between the application of strategies of critical and creative thinking by teachers according to the subjects they teach. The results of the analysis of applying a specific strategy according to the type of subject are mentioned in the table 1.

As it is evident from our findings, teachers include and apply particular strategies developing critical and creative thinking of pupils in particular subjects in a comparable way. We identified a statistically significant difference only in the strategy *Creating space for presenting different views, attitudes and cultural differences among learners*. This strategy was more frequently applied by teachers of social and educational subjects. Another statistically significant difference was found out in the strategy *Using of discussion as a space for exploration of learners own feelings, remarks and opinions* that was much more often used by teachers of foreign languages and natural sciences. In the final overall assessment we did not find any significant differences in the application of particular strategies in teaching by teachers of specific groups of subjects.

We mention the results of the frequency in application of particular strategies according to the factors consisting of the given items in the graph 1. The division of frequencies of application of strategies according to the factors of critical thinking is stated in the table 2.

Table 1. Descriptive statistics of research data - application of strategy by teachers from the particular group of subjects

		N	Mean	Std. Deviation	Std. Error
A2. Use of contradictions and conflicts, guidance to argumentation	natural sciences	37	4,30	1,127	,185
	social sciences	32	4,16	,987	,175
	languages	39	4,38	,815	,130
	artistic education	16	4,13	1,088	,272
	Total	124	4,27	,989	,089
A3. Using role plays	natural sciences	37	3,43	1,237	,203
	social sciences	31	3,39	1,334	,240
	languages	39	3,56	1,046	,168
	artistic education	16	3,13	1,147	,287
	Total	123	3,42	1,187	,107
A4. Leading learners to identify key and relevant facts and ideas in the curriculum	natural sciences	37	4,68	,784	,129
	social sciences	31	5,00	,856	,154
	languages	38	5,03	,944	,153
	artistic education	15	4,73	,884	,228
	Total	121	4,88	,871	,079
A5. Structuring of the subject curriculum based on defined goals according to specific taxonomies (Bloom, Simpson, Harrow, Krathwohl, Tollinger...)	natural sciences	37	3,57	1,444	,237
	social sciences	32	3,94	,914	,162
	languages	38	3,55	1,655	,269
	artistic education	16	3,56	1,365	,341
	Total	123	3,66	1,384	,125
A6. Using various sources (other than a textbook)	natural sciences	37	4,95	,941	,155
	social sciences	32	5,09	,818	,145
	languages	39	5,13	,732	,117
	artistic education	16	4,94	1,124	,281
	Total	124	5,04	,869	,078
A7. Using debate in lessons (requiring analysis and arguments)	natural sciences	37	4,76	,895	,147
	social sciences	31	5,13	1,056	,190
	languages	39	4,92	,900	,144
	artistic education	15	4,60	,986	,254
	Total	122	4,89	,955	,086
A8. Learners guidance to graphic design of the subject matter (conceptual maps, handout, table, graphic representations)	natural sciences	37	3,89	1,390	,229
	social sciences	32	4,44	1,076	,190
	languages	39	4,44	1,273	,204
	artistic education	16	3,94	1,389	,347
	Total	124	4,21	1,290	,116
A9. Leading learners towards identification of the differences between fact and opinion	natural sciences	37	3,92	1,038	,171
	social sciences	32	3,84	1,167	,206
	languages	39	4,23	1,063	,170
	artistic education	16	3,69	,946	,237
	Total	124	3,97	1,074	,096
A10. Leading learners towards drawing conclusions and generalization	natural sciences	36	4,50	1,183	,197
	social sciences	32	4,63	1,040	,184
	languages	39	4,64	1,013	,162
	artistic education	16	4,50	1,265	,316
	Total	123	4,58	1,094	,099
A11. Use of digital study materials, programmes and applications	natural sciences	37	4,16	1,365	,224
	social sciences	32	4,25	1,078	,191
	languages	39	4,62	1,091	,175
	artistic education	16	3,88	1,310	,328
	Total	124	4,29	1,215	,109
A12. Guidance toward formulation of questions that support thinking (question types like: What is the essence of it? What does it mean? Why is it happening? What if? etc.)	natural sciences	36	4,72	1,210	,202
	social sciences	32	4,97	1,177	,208
	languages	39	5,13	,864	,138
	artistic education	16	4,75	1,483	,371
	Total	123	4,92	1,142	,103
A13. Creating space for presenting learners ideas, their presentation and improvement	natural sciences	37	4,59	,985	,162
	social sciences	32	4,59	,911	,161
	languages	39	4,36	,932	,149
	artistic education	16	4,19	1,047	,262
	Total	124	4,47	,958	,086
A14. Guidance of learners towards identification, naming of problems	natural sciences	37	4,49	,989	,163
	social sciences	32	4,69	,859	,152
	languages	39	4,26	,880	,141
	artistic education	16	4,50	1,033	,258
	Total	124	4,47	,932	,084
A15. Asking questions to repeat already learnt by heart subject matter	natural sciences	37	4,49	1,017	,167
	social sciences	32	4,66	1,125	,199
	languages	39	4,72	,944	,151
	artistic education	16	4,44	1,209	,302
	Total	124	4,60	1,043	,094
A16. Managing learners to assess the credibility of the	natural sciences	37	4,11	1,197	,197

resource, leading to argumentation	social sciences	32	4,16	1,221	,216
	languages	39	4,26	1,141	,183
	artistic education	16	4,13	1,500	,375
	<i>Total</i>	<i>124</i>	<i>4,17</i>	<i>1,215</i>	<i>,109</i>
A17.Respect for interdisciplinary relationships	natural sciences	37	4,32	1,082	,178
	social sciences	32	4,69	,965	,171
	languages	39	4,33	,898	,144
	artistic education	16	4,31	1,195	,299
	<i>Total</i>	<i>124</i>	<i>4,42</i>	<i>1,013</i>	<i>,091</i>
A18.Guiding pupils to identify the cause and effect	natural sciences	37	3,95	1,153	,190
	social sciences	32	4,59	1,043	,184
	languages	39	4,28	,972	,156
	artistic education	16	4,13	1,408	,352
	<i>Total</i>	<i>124</i>	<i>4,24</i>	<i>1,122</i>	<i>,101</i>
A19.Using techniques for remembering	natural sciences	37	4,59	,927	,152
	social sciences	32	4,66	1,125	,199
	languages	39	4,44	,968	,155
	artistic education	16	4,50	1,461	,365
	<i>Total</i>	<i>124</i>	<i>4,55</i>	<i>1,062</i>	<i>,095</i>
A20.Using graphical representations for presentation of the curriculum (conceptual maps, handout, table, graphic representations)	natural sciences	37	4,16	1,214	,200
	social sciences	32	4,78	,832	,147
	languages	39	4,44	1,046	,168
	artistic education	16	4,13	1,258	,315
	<i>Total</i>	<i>124</i>	<i>4,40</i>	<i>1,096</i>	<i>,098</i>
A21.Learning learners to work with text and to create their own notes	natural sciences	37	4,30	1,244	,205
	social sciences	32	4,66	1,181	,209
	languages	39	4,41	,966	,155
	artistic education	16	4,19	1,167	,292
	<i>Total</i>	<i>124</i>	<i>4,41</i>	<i>1,133</i>	<i>,102</i>
A22.Creation of presentations and supporting learning materials for learners	natural sciences	37	4,43	1,068	,176
	social sciences	32	4,47	,761	,135
	languages	39	4,51	1,073	,172
	artistic education	16	4,25	1,065	,266
	<i>Total</i>	<i>124</i>	<i>4,44</i>	<i>,990</i>	<i>,089</i>
A23.Solution of problems and drafting conclusions	natural sciences	37	3,95	1,177	,194
	social sciences	32	4,34	,937	,166
	languages	39	4,10	1,095	,175
	artistic education	16	4,00	1,095	,274
	<i>Total</i>	<i>124</i>	<i>4,10</i>	<i>1,081</i>	<i>,097</i>
A24.Learning learners toward deduction, specification (drawing on specific examples from general theories)	natural sciences	36	4,17	1,183	,197
	social sciences	32	4,38	,976	,172
	languages	39	4,18	1,073	,172
	artistic education	16	4,50	1,095	,274
	<i>Total</i>	<i>123</i>	<i>4,27</i>	<i>1,079</i>	<i>,097</i>
A25.Using project assignments	natural sciences	36	3,61	,994	,166
	social sciences	32	3,72	,888	,157
	languages	38	3,97	,885	,144
	artistic education	16	3,88	,806	,202
	<i>Total</i>	<i>122</i>	<i>3,79</i>	<i>,911</i>	<i>,082</i>
A26.Using procedures for understanding	natural sciences	36	4,39	,994	,166
	social sciences	31	4,26	1,154	,207
	languages	38	4,58	1,081	,175
	artistic education	16	4,31	1,138	,285
	<i>Total</i>	<i>121</i>	<i>4,40</i>	<i>1,077</i>	<i>,098</i>
A27.Learning to summarize and interpret the curriculum (say the learning content in own words)	natural sciences	37	4,92	1,038	,171
	social sciences	32	5,25	,762	,135
	languages	39	4,97	,873	,140
	artistic education	16	5,00	1,211	,303
	<i>Total</i>	<i>124</i>	<i>5,03</i>	<i>,945</i>	<i>,085</i>
A28.Preference of cognitively more challenging tasks (tasks with analysis, evaluation, creativity) with one right solution	natural sciences	37	4,00	1,225	,201
	social sciences	32	4,09	,856	,151
	languages	38	3,95	1,012	,164
	artistic education	16	4,00	1,211	,303
	<i>Total</i>	<i>123</i>	<i>4,01</i>	<i>1,060</i>	<i>,096</i>
A29.Learning to application of the subject matter in unusual situations and tasks	natural sciences	37	3,62	1,010	,166
	social sciences	32	3,78	,832	,147
	languages	39	3,44	,852	,136
	artistic education	16	3,69	1,195	,299
	<i>Total</i>	<i>124</i>	<i>3,61</i>	<i>,943</i>	<i>,085</i>
A30.Preference of tasks with multiple correct solutions	natural sciences	37	3,70	1,392	,229
	social sciences	32	3,44	1,216	,215
	languages	38	3,58	1,222	,198
	artistic education	16	3,50	1,414	,354
	<i>Total</i>	<i>123</i>	<i>3,57</i>	<i>1,287</i>	<i>,116</i>
A31.Using categorization (division -sorting based on a certain criterion)	natural sciences	35	3,26	1,268	,214
	social sciences	31	3,68	,748	,134
	languages	39	3,72	1,191	,191
	artistic education	16	3,25	1,065	,266
	<i>Total</i>	<i>121</i>	<i>3,51</i>	<i>1,111</i>	<i>,101</i>
A32. Preference of tasks aimed at innovation and	natural sciences	37	4,38	1,233	,203
	social sciences	32	4,19	,965	,171

improvement of assignments and solutions	languages	39	4,38	,847	,136
	artistic education	16	4,13	1,258	,315
	Total	124	4,30	1,051	,094
A33.Guiding learners towards creation of original ideas, solutions and products	natural sciences	37	4,11	1,242	,204
	social sciences	32	4,56	,840	,148
	languages	39	4,23	,986	,158
	artistic education	16	4,00	1,506	,376
	Total	124	4,25	1,116	,100
A34.Using associations (initial ideas associated with a certain term, phenomenon)	natural sciences	37	4,62	1,037	,170
	social sciences	32	4,56	,948	,168
	languages	39	4,77	1,038	,166
	artistic education	16	4,69	1,014	,254
	Total	124	4,66	1,003	,090
A35.Creating space for self-presentation, presentation of a learner's own solutions	natural sciences	37	4,43	1,094	,180
	social sciences	32	4,28	1,114	,197
	languages	39	4,62	,847	,136
	artistic education	16	4,31	,793	,198
	Total	124	4,44	,990	,089
A36.Creating space for presenting different views, attitudes and cultural differences among learners	natural sciences	37	4,54	,989	,163
	social sciences	32	5,09	,928	,164
	languages	39	4,72	,916	,147
	artistic education	16	5,13	,806	,202
	Total	124	4,81	,949	,085
A37.Identification and definition of basic terms and their relations by a teacher, creation of notes	natural sciences	36	4,19	1,117	,186
	social sciences	31	4,35	,950	,171
	languages	39	4,23	,959	,154
	artistic education	16	4,25	,931	,233
	Total	122	4,25	,992	,090
A38.Using the discussion as a space for exploration of learners own feelings, remarks and opinions	natural sciences	37	3,89	1,329	,218
	social sciences	32	3,53	1,218	,215
	languages	39	4,05	,826	,132
	artistic education	16	3,19	1,047	,262
	Total	124	3,76	1,150	,103
A39.Using small work groups when teaching	natural sciences	37	3,95	1,129	,186
	social sciences	31	4,03	1,080	,194
	languages	39	3,97	,932	,149
	artistic education	16	3,56	1,031	,258
	Total	123	3,93	1,042	,094
A40.Creating space for learners discovery,curiosity	natural sciences	37	3,76	1,164	,191
	social sciences	32	3,97	1,031	,182
	languages	39	3,85	1,089	,174
	artistic education	16	3,75	1,000	,250
	Total	124	3,84	1,077	,097
A41.Using problem solving teaching	natural sciences	35	3,86	1,478	,250
	social sciences	31	4,32	,871	,156
	languages	39	4,03	1,013	,162
	artistic education	16	3,88	1,408	,352
	Total	121	4,03	1,190	,108
A42.Using similarities and analogies	natural sciences	37	3,84	1,143	,188
	social sciences	32	3,81	,821	,145
	languages	38	3,89	1,060	,172
	artistic education	16	4,19	1,167	,292
	Total	123	3,89	1,039	,094

\*Note: N – number; Std. Deviation – standard deviation, Std. Error - standard error

Graph 1 Application of particular strategies for development of critical and creative thinking by teachers of secondary education (more in detail Fenyvesiová et al. 2018)

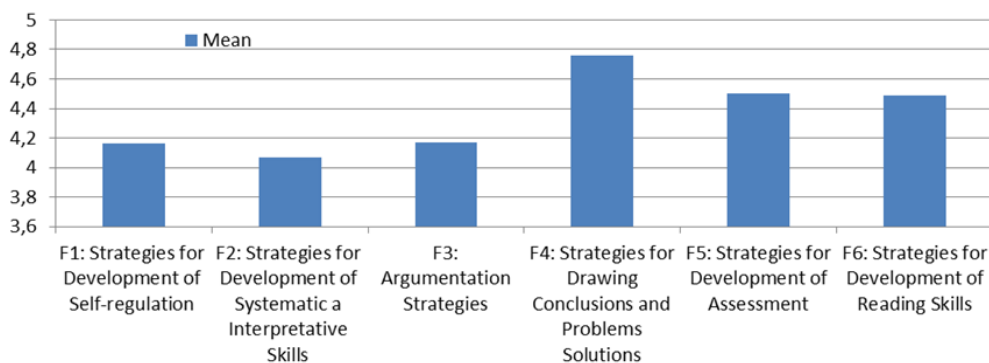


Table 2. Descriptive statistics of research data - application of strategies by teachers of particular group of subjects according to the factors of creative thinking

		N	M	SD	SE	Sig. ANOVA
F1: Strategies for Development of Self-regulation	natural sciences	34	35,3529	6,92769	1,18809	,753
	social sciences	31	36,1613	4,89964	,88000	
	languages	37	36,7027	5,50689	,90533	
	artistic education	16	35,3750	4,85627	1,21407	
	Total	118	35,9915	5,69074	,52388	
F2: Strategies for Development of Systematic a Interpretative Skills	natural sciences	34	38,0882	6,25405	1,07256	,693
	social sciences	29	39,6207	4,85808	,90212	
	languages	37	39,4324	5,83829	,95981	
	artistic education	16	38,5000	6,71317	1,67829	
	Total	116	38,9569	5,82706	,54103	
F3: Argumentation Strategies	natural sciences	37	23,2703	4,81692	,79190	,586
	social sciences	31	23,9355	4,39648	,78963	
	languages	39	24,3077	3,97462	,63645	
	artistic education	16	22,6875	5,12144	1,28036	
	Total	123	23,6911	4,47970	,40392	
F4: Strategies for Drawing Conclusions and Problems Solutions	natural sciences	35	36,1143	5,73827	,96994	,377
	social sciences	31	38,2258	5,18787	,93177	
	languages	39	36,8718	4,89994	,78462	
	artistic education	15	35,8667	6,41278	1,65577	
	Total	120	36,8750	5,42878	,49558	
F5: Strategies for Development of Assessment	natural sciences	37	21,0541	3,61283	,59395	,294
	social sciences	31	22,3871	3,19038	,57301	
	languages	37	22,0811	3,00350	,49377	
	artistic education	15	20,9333	4,36654	1,12744	
	Total	120	21,7000	3,44366	,31436	
F6: Strategies for Development of Reading Skills	natural sciences	37	17,0541	2,94341	,48389	,117
	social sciences	32	18,1563	2,55405	,45150	
	languages	39	17,9744	2,96015	,47400	
	artistic education	16	16,4375	2,63233	,65808	
	Total	124	17,5484	2,84949	,25589	

\*Note.: N– number; M– mean; SE– standard error of mean; SD – standard deviation; Sig. ANOVA – statistical significance

Analyses of identifying applied strategies for the development of critical thinking show that teachers of secondary degree of education most frequently apply strategies for drawing conclusions and problems solutions, as well as strategies for development of reading skills and assessment of learners. (Fenyvesiová, et al., 2018). The works by Brečka, Valentová et al., 2017; Čeretková et al., 2017, Horváthová, Reid, et al., 2017 analyse the application of strategies of critical and creative thinking by teachers of particular teaching subjects more in detail. The authors present detailed results of applying strategies from the point of view of several criteria of data division. We were interested to find out if there are any differences in the application of the given strategies from the point of view of groups of subjects taught by teachers of secondary education. We divided the subjects into the following groups: natural sciences (we included there also teachers of mathematics and informatics), social sciences, languages and subjects of artistic education/educational subjects. When analysing the obtained data, we found out that the application of strategies of critical and creative thinking by teachers is not determined by the character of the teaching subject, and therefore the contents of the teaching subject do not influence the application of argumentation strategies, strategies for development for development of systematic and interpretative skills of learners, strategies for development of self-regulation, assessment, drawing conclusions and problems solving, and strategies for development of reading skills. We did not find any statistically significant relationship between the application of strategies by teachers and the type of subject they teach in the secondary degree of education in any of the studied factors of developing critical and creative thinking.

Unsatisfactory results of pupils in particular areas of critical and creative thinking represent a long-term problem in the educational system of the Slovak Republic. Zelina (2011) sees the reason of this situation in the didactic level, i.e. in the methods and strategies applied by teachers and also in the relationship between teachers and their pupils. Within the project APVV-15-0368 we identify the basic and referential orientation in the level of applying strategies of critical and creative thinking by teachers (Duchovičová et al. 2018). We found out that teachers of secondary degree of education most frequently apply strategies for drawing conclusions and problems

solving, as well as strategies for development of reading skills and assessment of learners. We also found out that there do not exist any statistically significant differences in the application of strategies for development of critical and creative thinking by teachers from the point of view of teaching subjects they teach in the secondary degree of education. Teachers of particular groups of subjects apply strategies for development of self-regulation, strategies for development of systematic and interpretative skills, argumentation strategies, strategies for drawing conclusions and problems solving and strategies or development of reading skills with the same frequency. Their application is not determined by the contents and character of the teaching subject. The analysis of the dependance of particular strategies proved the fact that teachers of natural sciences (we included also teachers of mathematics and informatics into this group), social sciences, languages and subjects of artistic education/educational subjects use the given strategies with the same frequency of application. We identified a statistically significant difference only in the strategy *Creating space for presenting different views, attitudes and cultural differences among learners* and *Using the discussion as a space for exploration of learners own feelings, remarks and opinions*.

A new problem for statistical processing of data related to the application of strategies of critical thinking by teachers is their classification according to the degree of education, their inclusion into the process of continual education, or according to their expertness expressed with the length of their pedagogical practice. We consider these results to be relevant for further education of teachers as well as for the orientation of education in the pre-graduate preparation. It is important to focus on these areas more intensively also at the methodical level.

Based on this research, Fenyvesiová, Duchovičová, Tomšík, Grofčíková, 2018 assess the frequency of applying strategies for development of cognitive processes by teachers of secondary education as satisfactory. However, the effectiveness of their application is unsatisfactory and therefore this problematic area still requires to be in the centre of intensive research work.

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## Primary Paper Section: A

## Secondary Paper Section: AM

# EXPLANATORY VARIABLE SELECTION WITH BALANCED CLUSTERING IN CUSTOMER CHURN PREDICTION

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**Abstract:** The interest in customer relationship management has been fueled by the broad adoption of customer-centric paradigm, rapid growth in data collection, and technology advances for more than the past 15 years. It becomes hard to identify and interpret meaningful patterns in customer behavior; thus the goal of the paper is to compare multiple explanatory variable selection procedures and their effect on a customer churn prediction model. Filter and wrapper concepts of variable selection are examined, moreover, the runtime of the machine learning pipeline is improved by the novel idea of balanced clustering. Classification learners are incorporated with regard to simplicity and interpretability (LOGIT, CIT) and complexity and proven performance on a given dataset (RF, RBF-SVM). In addition, we show that when combined with learner capable of embedded feature selection, explicit variable selection scheme does not necessarily lead to performance improvement. On the other hand, RBF-SVM learner with no such ability benefits from relevant selection procedure in all expected aspects, including classification performance and runtime, problem comprehensibility, data storage.

**Keywords:** customer churn prediction, customer relationship management, feature selection, machine learning, variable importance

## 1 Introduction

Customer relationship management (CRM) became a topic of interest with a shift to the customer-centric paradigm. It aims to create, retain, and strengthen a relationship with customers while maintaining profits and revenue. Over the past 15 years, CRM has been augmented by progress in data collection and technology, enabling to tackle its challenges with a new set of tools, i.e., machine learning. An important objective of customer relationship management is to minimize customer churn, where term customer churn refers to affinity to cease business with the company in a given time. Churn reduction is usually motivated by a difference between underlying unitary costs of customer acquisition and customer retention, even though there are more benefits to it (Gronwald, 2017; Gupta et al., 2004; Torkzadeh et al., 2006).

To retain customers, prediction models are required to identify early churn signals and flag customers at high risk of leaving. In an environment, with rapid growth in data generation and collection, it becomes increasingly challenging to detect meaningful patterns and extract useful knowledge. Hence the aim of the paper is to examine the explanatory variable selection procedure and its effect on the performance of the churn prediction model. It is generally assumed that the explanatory variable selection procedure improves learner prediction performance, ability to generalize the problem, comprehensibility, reduce computational runtime and reduce storage requirements (acc. Aggarwal, 2014; Bagherzadeh-Khiabani et al., 2016).

## 2 Explanatory variable selection

The merit of explanatory variable selection is to find a subset of explanatory variables, which highly discriminates response variable. One can distinguish three procedure types – filter, wrapper and others (embedded, hybrid) however opinions on the matter might differ (Aggarwal, 2014; Bolón-Canedo et al., 2013; Bagherzadeh-Khiabani et al., 2016; Duda et al., 2012). We focus solely on filter and wrapper selection procedures. The task of dimensionality reduction is also tackled with feature extraction methods (PCA, LDA, CCA, Isomap, Autoencoder, etc.) since they project original features into new feature space while losing original comprehensibility (Aggarwal, 2014), they are not included.

**Filter selection** – FS relies on data properties without utilizing any classification learner. The procedure consists of two steps, (1) features are ranked according to the chosen criterion, (2) highly ranked features are selected. Univariate filters account

only for a feature-class relationship; however, multivariate filters explore feature set-class relationship; hence, the former is inferior to the latter in handling redundant features.

**Wrapper selection** – As opposed to FS, WS adopts classification learner to estimate the quality of the feature set. Considering specific classification learner wrapper selection consists of three steps, (1) searching subset of features (2) evaluating the selected subset of features by the learner (3) repeating (1) and (2) until a stopping criterion is met. WS outperforms FS in terms of prediction quality of final learner, although the procedure can be computationally very expensive.

**Others** – In addition to FS and WS procedures, scientific literature depicts two more categories of selection methods, (1) embedded procedures – feature selection is included in the phase of learner fitting (i.e., logistic regression with L1 regularization, tree-based methods), which might reduce computational time (2) hybrid procedures – usually sequential combination of FS and WS method.

The explanatory variable selection domain broadly intersects with fields of machine learning (see Aggarwal, 2014; Arauzo-Azofra et al., 2008; Bolón-Canedo et al., 2013; Dash, Liu, 2003; Duda et al., 2012; Hall, 1999; Kononenko, 1994; Shakil Pervez, Farid, 2015), biostatistics and high-throughput biology (see Bagherzadeh-Khiabani et al., 2016; Guyon et al., 2002; Gilhan et al., 2010; Zhu et al., 2010; Chu et al., 2011). In customer churn domain, applications are limited and default to an evaluation of only a few feature selection/extraction methods (see Verbeke et al., 2012; Xiao et al., 2015; Spanoudes, Nguyen, 2017; Subramanya, Somani, 2017; Vijaya, Sivasankar, 2018). Hence, our goal is to examine the performance of multiple approaches to explanatory variable selection and to compare the results with literature utilizing the same customer churn dataset.

### 2.1 Filter selection

**Fisher score** – FS is univariate selection method, returns feature ranks. Important features are expected to exhibit similar observed values in the one class and different observed values across different classes. This intuition is denoted in formula (1), where  $S_i$  stands for Fisher score,  $\mu_{ij}$  and  $\rho_{ij}^2$  are the mean and variance of  $i$ -th feature in the  $j$ -th class respectively  $n_j$  is the number of instances in the  $j$ -th class, and  $\mu_i$  is the mean of the  $i$ -th feature (acc. Aggarwal, 2014; Bagherzadeh-Khiabani et al., 2016).

$$FS_i = \frac{\sum_{k=1}^K n_j (\mu_{ij} - \mu_i)^2}{\sum_{k=1}^K n_j \rho_{ij}^2} \quad 1)$$

**Entropy-based measures** – EBMs are based on an idea of measuring uncertainty, the unpredictability of the variable. In the paper, three types of information measures are examined: (1) information gain, (2) information gain ratio, and (3) symmetrical uncertainty criterion.

Information gain (IG) is denoted in formula (2), where  $H(f_i)$  represents entropy of  $i$ -th feature,  $H(C)$  stands for class entropy, and  $H(f_i|C)$  amounts to joint entropy of  $f_i$  and  $C$ . Features with high IG are considered necessary, this predicament also holds for IGR and SU (acc. Aggarwal, 2014; Bagherzadeh-Khiabani et al., 2016; Duda et al., 2012).

$$IG(f_i, C) = H(f_i) + H(C) - H(f_i|C) \quad (2)$$

IG suffers from a bias towards multi-valued features, to correct that different metric was proposed – information gain ratio (IGR). IGR is denoted in formula (3) (acc. Aggarwal, 2014; Bagherzadeh-Khiabani et al., 2016; Duda et al., 2012).

$$IGR(f_i, C) = \frac{IG(f_i, C)}{H(f_i)} \quad (3)$$

IGR is limited by its asymmetry. To deal with both lack of symmetry and bias towards multi-valued features, symmetrical uncertainty criterion (SU) was suggested. SU is denoted in formula (4) (acc. Aggarwal, 2014; Bagherzadeh-Khiabani et al., 2016; Duda et al., 2012).

$$SU(f_i, C) = 2 \frac{IG(f_i, C)}{H(f_i) + H(C)} \quad (4)$$

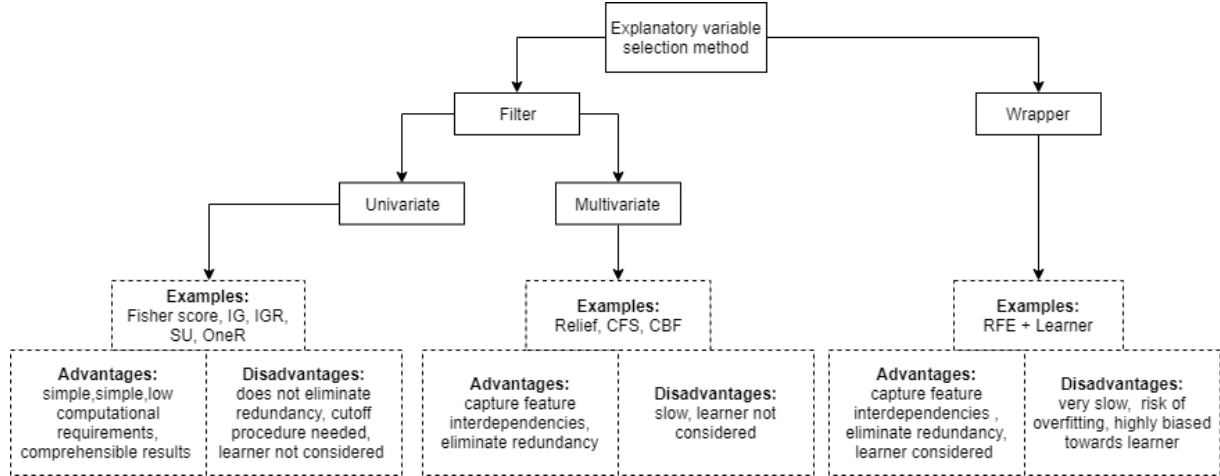


Figure 1. Categorization of explanatory variable selection methods, Source: 3, 4

**Correlation-based feature selection** – CFS is multivariate selection method, returns feature subset. CFS measures how are features in feature set correlated with each other and with the target class. A feature set with high correlation with class and low correlation amongst features is preferred. This intuition is denoted in formula (5), where  $M_S$  stands for heuristic “merit” of a feature subset  $S$  consisting of  $k$  features,  $\bar{r}_{cf}$  is the mean feature-class correlation for  $f \in S$ , and  $\bar{r}_{ff}$  is the average feature-feature inter-correlation (Dash, Liu, 2003; Hall, 1999). Search through feature subset space is done through the best-first forward search.

$$M_S = \frac{k\bar{r}_{cf}}{\sqrt{k + k(k-1)\bar{r}_{ff}}} \quad (5)$$

**Consistency-based filter** – CBF is multivariate selection method, returns feature subset. CBF evaluates how consistently belong observations with the same set of feature values to target class (continuous feature values must be discretized). The algorithm finds a feature subset relying on Liu’s consistency measure. Consistency measure is denoted in formula (6) (acc. Arauzo-Azofra, 2008). Search through feature subset space is also maintained with the best-first forward search.

$$\text{Consistency} = 1 - \frac{\text{number of inconsistent observations}}{\text{number of observations}} \quad (6)$$

## 2.2 Wrapper selection

**Recursive feature elimination** – RFE is popular multivariate selection method, returns feature ranks. The algorithm fits classification learner to the full feature set. Each feature is ranked using the classification learner (its coefficients / importance). At each iteration of the algorithm, top-ranked features are retained (low ranked features are eliminated), the classification learner is refit and scored. The feature set with learner’s best performance is chosen. RFE was originally proposed with linear SVM (see Guyon et al., 2002), procedure, however, can be utilized with different classification learners. We combine RFE with classification methods LOGIT, RF, RBF-

**OneR** – OneR is univariate selection method, returns feature ranks. It creates a root-level decision tree for each feature and target class. For each such a tree, the error rate is calculated. Features with a low error rate are considered important (acc. Bagherzadeh-Khiabani et al., 2016).

**Relief** – Relief is multivariate selection method, returns feature ranks. It randomly samples observations and locates its nearest neighbor in the same and different target class; feature importance is adjusted subsequently. A significant feature set is assumed to have homogeneous values for each class, heterogeneous values across classes (Kononenko, 1994).

SVM. The author considers RFE to be wrapper selection procedure based on the implementation used (see Kuhn, 2008); however, opinions on the matter differ (see Aggarwal, 2014; Guyon et al., 2002).

## 3 Classification methods

From a machine learning viewpoint, customer churn prediction is perceived as a binary classification problem with a purpose to separate observations (customers) into one of two classes (churners, non-churners). There is a vast amount of research dedicated to classification method selection; however, we have decided to apply (1) simple and interpretable classification methods (LOGIT, CIT) and (2) more complex classification methods, with the proven performance considering given dataset (RF, RBF-SVM), acc. Verbeke et al. (2012).

**Logistic regression** – LOGIT is a parametric statistical method which estimates the probability of an event (discrete response variable), based on known circumstances (explanatory variables). LOGIT models tend to suffer from the influence of confounding factors and overfitting, to prevent that we used LOGIT with L1 and L2 regularization forms (Fan et al., 2008). LOGIT is straightforward to understand and interpret; it is also broadly used as classification baseline.

**Conditional inference tree** – CIT is non-parametric decision tree method (DT). Common implementations of DT tend to overfit and endure bias towards selected features. To address that, Hothorn et al. (2006) propose to base the splitting criterion on resampling and multiple inference tests, resulting in CIT. Its prediction ability is proven to be on par with pruned DT with no bias towards selected explanatory variables (see Horton et al., 2006; Horton, Zeileis, 2015).

**Random forest** – RF is non-parametric ensemble method which combines DTs such that each model is built upon randomly sampled explanatory variables (with replacement), votes of individual DTs are aggregated to form the prediction (Breiman, 2001). RF models are prone to overfitting and often produce satisfying prediction results without extensive hyperparameter search.

*Support vector machine* – Gaussian radial basis function SVM (RBF-SVM) is a non-parametric method that constructs hyperplane in high-dimensional space which has the largest distance (maximum-margin) between borderline observations (support vectors) while separating classes. Use of RBF kernel trick enables more complex boundaries in original feature space, which may lead to overfitting when not having enough observations (acc. Jin, Wang, 2012).

#### 4 Research methodology

##### 4.1 Dataset

We utilize public telecommunication dataset, originally published on UCI Machine learning repository, which is now part of the C50 package in CRAN. The dataset is popular in customer churn prediction research (see Verbeke et al., 2012; Vafeiadis et al., 2015; Mehreen et al., 2017) enabling broader discussion of results. It consists of 5000 observations, 19 explanatory variables (features), and 1 response variable (churn).

The features are largely based on transactional data. Observed churn rate is 14.14 %.

##### 4.2 Performance metrics

*Accuracy* – Performance of classification methods is routinely evaluated with confusion matrix and related measures. One of the popular metrics is *ACC*. It is defined as follows (Powers, 2011):

$$ACC = \frac{TP + TN}{TP + TN + FP + FN}, \quad (7)$$

wherein numerator depicts a number of correctly classified positive (*TP*) and negative examples (*TN*), in the denominator we have sum a of correctly (*TP + TN*) and incorrectly classified examples (*FP + FN*). Accuracy is used for clear interpretability; however, it is threshold dependent and is not reliable when dealing with imbalanced classes.

Table 1. Churn dataset - variable names and data types

Variable name	Description	R dtype
state		factor
account_length	number of months as an active user	int
area_code		factor
international_plan	has an international plan (yes/no)	factor
voice_mail_plan	has voicemail plan (yes/no)	factor
number_vmail_messages	number of voice mail messages	int
total_day_minutes	total sum of day call minutes	num
total_day_calls	total number of day calls	int
total_day_charge	total sum of day charge	num
total_eve_minutes	total sum of evening call minutes	num
total_eve_calls	total number of evening calls	int
total_eve_charge	total sum of evening charge	num
total_night_minutes	total sum of night call minutes	num
total_night_calls	total number of night calls	int
total_night_charge	total sum of night charge	num
total_intl_minutes	total sum of international call minutes	num
total_intl_calls	total number of international calls	int
total_intl_charge	total sum of international charge	num
number_customer_service_calls	number of calls to customer service	int
churn	response variable	logi

Source: author

*Top-decile lift* – In retention campaign, the only a fraction of customers can be contacted and offered discount or premium service. To address that, *TDL* as an extension of *ACC* measure is often applied. It is calculated as a ratio of *ACC*s, with *ACC* for customers in top-decile propensity to churn (churn score) in the numerator and *ACC* for whole customer base in the denominator. *TDL* is popular for its practical implications; however, it is threshold dependent and ignores variations in fraction selection (Verbeke et al., 2012).

*Area under the receiver operating curve* – Classification model is expected to produce churn score  $s = s(x)$ , which is a function of feature vector  $x$ ; probability density function of corresponding scores is described as  $f_k(s)$ , with cumulative distribution function  $F_k(s)$  and two classes  $k \in \{0,1\}$ . *AUC/ROC* is then outlined in Eq. 8 (Hand, 2009).

$$AUC/ROC = \int_{-\infty}^{\infty} F_0(s)f_1(s)ds \quad (8)$$

*AUC/ROC* notion can be interpreted as a probability that randomly drawn member of class 0 will produce a lower churn score than randomly drawn member of class 1. *AUC/ROC* is the most popular measure of classification performance due to threshold independence (acc. Bradley, 1997), albeit it suffers from several conceptual issues (see Hand, 2009).

##### 4.3 Experimental design and implementation

Performance of different feature selection techniques is examined through machine learning pipeline consisting of four main steps – (1) data processing, (2) feature selection, (3) model training and (4) model evaluation; their linkage is characterized in Fig. 2. To ensure the stability of the outcomes, the process is repeated 50 times. The pipeline is implemented in the R language for statistical programming, specifically in Microsoft R 3.5.1.

*Data processing* – Original churn dataset is randomly stratified into the train (60 % of examples) and test set (40 % of examples). Data transformations are performed on the train set and projected to the test set to prevent data leak. Non-binary factor columns are concealed with the one-hot encoding scheme. Numerical/integer features are expanded to 2nd-degree interaction terms, which results in a total of 158 explanatory variables. Consequently, all numerical/integer features are centered and scaled. Features with near zero variability are removed.

*Feature selection* – Processed train set serves as the only input to feature selection block. To address computational complexity and class imbalance in the feature selection procedure, we propose a balanced clustering method to reduce the number of observations. The algorithm is described with pseudo-code in Fig. 3. It is worth noting that the upper boundary for the expected number of examples per class is limited by properties of the train set. The procedure is implemented with clustering

around medoids and balancing classes with 250 observations per each, producing a total of 500 observations. The resulting set is

then utilized over selection schemes.

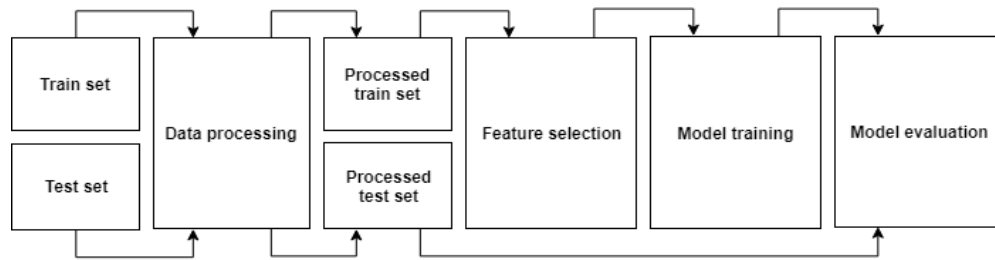


Figure 2. Conceptual depiction of machine learning pipeline, Source: author

To ensure the algorithm captures the original data structure, projection to two-dimensional space is made with Isomap embeddings in Fig. 4. The structure of the train set after balanced clustering resembles the original train set, the majority class of non-churners is largely under-sampled, which is to be expected.

We focus on two types of selection procedure – filter selection and wrapper selection. In filter-based selection whole train set is utilized at once, feature importance is estimated, unimportant

features are filtered out. For wrapper-based selection, stratified 4-fold cross validation with 2 repeats is utilized in RFE procedure. RFE classification learner is subject to randomized hyperparameter search with 5 steps; target metric for both RFE selection and parameter search is set to *AUC/ROC*, as it is not subjective-dependent. Number of features to be selected is the function of each procedure, albeit univariate filter selection is set to return at least 20 explaining variables.

#### Algorithm 1:

- 1.1 for each class in target class do:
  - 1.2 get feature data, where target class equals class
  - 1.3 cluster features, set number of clusters to expected number of observations per target class
  - 1.4 get the observation which is the nearest to each cluster center
  - 1.5 add a class label to the selected observations
  - 1.6 return the temporary results
- 1.7 row-bind temporary results to the feature train set

Figure 3. Balanced clustering for feature selection, Source: author

*Model training and evaluation* – Model training block digests processed train set and annotations of feature selection and classification method. A classifier is trained for all combinations of feature selection method and classification method. Experimental setup for randomized hyperparameter search is based on stratified 4-fold cross validation with 2 repeats; parameter search is done in 15 steps; its target metric is set to *AUC/ROC*. Final classification learners are built on top of the

processed train set, feature selection, and randomized hyperparameter search. Learner's performance on unseen data is estimated on the processed test set; to address bias-variance trade-off performance on the processed train set is also evaluated. Applied metrics are described in detail in the previous section.

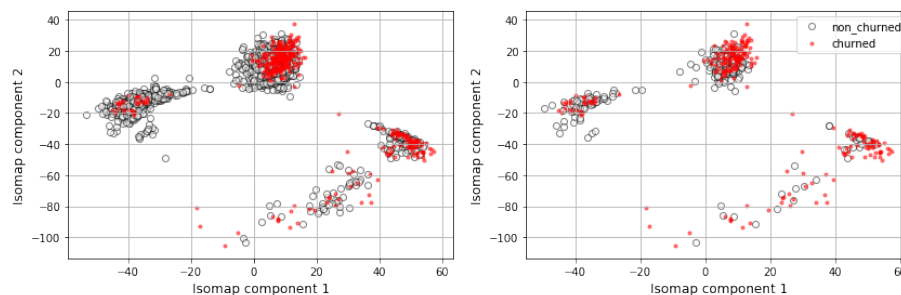


Figure 4. Structure of the original train set (left) and train set after balanced clustering (right), Source: author

## 5 Results

In order to summarize the performance of multiple approaches to explanatory variable procedures, mean point estimates across feature selection methods are depicted in Tab.3; the best indicators are marked in bold; 95 % confidence intervals for underlying distributions are constructed.

Classifiers combined with RFE selection show marginally better performance on both train and on test sets. Consistency, EBM schemes, and OneR display noteworthy behavior when significantly reducing the number of original features while (1) being almost on par with RFE procedures in all performance measures and (2) being less computationally demanding. Other

selection procedures do not perform that well, which is induced by a considerable drop in retained features.

Statistical significance of a difference is assessed by paired t-tests with Bonferroni correction. Test performance of each selection scheme is compared to test performance without selection procedure; observations are paired on classification learners and pipeline repeats.  $H_0$  states that true difference in sample means is equal to 0,  $H_A$  means the true difference in sample means is not equal to 0. We reject  $H_0$  for all feature selection schemes except SVM-RFE, LR-RFE, RF-RFE on unadjusted  $\alpha = 0.01$ ; this holds for all performance indicators. In other words, there is not enough evidence that SVM-RFE, LR-RFE, RF-RFE selection schemes improve test set

performance; on the other hand, previously mentioned procedures allow us to reduce explanatory variables by ~ 40 % while retaining the same level of classification performance as

with original dataset. Other feature selection methods appear to lead to inferior results.

Table 2. Classification methods with respective parameters

Classification method	Optimized parameters	Implementation
LOGIT	regularization forms: {L1, L2 dual, L2 primal}, cost	Fan et al., 2008
CIT	max tree depth, p-value threshold	Hothorn, Zeileis, 2015
RF	number of selected predictors, splitting rule, minimal node size	Wright, Ziegler, 2017
SVM	kernel: {RBF}, cost, sigma	Karatzoglou et al., 2004

Source: author

To inspect explanatory variable importance in original feature space (Tab. 1), co-occurrence matrix of selection scheme-feature is constructed; the number of feature occurrence for both individual and interaction terms are included. Moreover, the co-occurrence matrix is scaled by the maximum possible incidence

of a feature (scheme-feature pair for the procedure without feature selection). The result of the outlined steps is depicted using heatmap and dendrograms in Fig. 5; the explanatory variable state is not present as it is eliminated in data preprocessing step due to near-zero variance.

Table 3. Classification performance indicators aggregated by the feature selection method

feature selection method	number of features	feature selection runtime [s]	Train ACC (95 % CI)	Train AUC (95 % CI)	Train TDL (95 % CI)	test ACC (95 % CI)	test AUC (95 % CI)	test TDL (95 % CI)
CFS	10.3	6.1	0.923 (0.852, 0.994)	0.911 (0.801, 1.022)	5.678 (3.441, 7.914)	0.905 (0.860, 0.950)	0.874 (0.813, 0.935)	5.171 (3.462, 6.880)
Consistency	18.2	139.6	0.939 (0.870, 1.007)	0.929 (0.836, 1.021)	6.165 (4.432, 7.898)	0.919 (0.877, 0.960)	0.890 (0.848, 0.931)	5.696 (4.381, 7.011)
FS	24.8	0.1	0.920 (0.860, 0.979)	0.907 (0.797, 1.017)	5.632 (3.822, 7.442)	0.904 (0.867, 0.941)	0.868 (0.786, 0.950)	5.123 (3.809, 6.437)
Relief	25.4	179.9	0.915 (0.850, 0.980)	0.896 (0.759, 1.032)	5.444 (3.309, 7.579)	0.898 (0.860, 0.935)	0.852 (0.765, 0.940)	4.868 (3.430, 6.305)
IGR	44.4	0.6	0.937 (0.872, 1.002)	0.927 (0.831, 1.022)	6.124 (4.429, 7.819)	0.918 (0.878, 0.958)	0.889 (0.836, 0.941)	5.652 (4.281, 7.024)
IG	45.0	0.7	0.939 (0.876, 1.003)	0.930 (0.844, 1.016)	6.196 (4.603, 7.789)	0.920 (0.883, 0.957)	0.892 (0.855, 0.929)	5.711 (4.463, 6.959)
SU	47.5	0.5	0.940 (0.875, 1.005)	0.929 (0.839, 1.020)	6.196 (4.642, 7.750)	0.920 (0.883, 0.958)	0.892 (0.845, 0.939)	5.751 (4.517, 6.984)
OneR	51.4	0.5	0.943 (0.881, 1.005)	0.933 (0.849, 1.016)	6.286 (4.883, 7.688)	0.923 (0.889, 0.958)	0.895 (0.862, 0.928)	5.856 (4.777, 6.935)
SVM-RFE	87.9	2190.3	0.952 (0.884, 1.020)	<b>0.940</b> (0.860, 1.020)	<b>6.465</b> (4.965, 7.965)	0.932 (0.883, 0.980)	<b>0.900</b> (0.865, 0.935)	6.108 (4.692, 7.524)
LR-RFE	91.4	2190.4	0.951 (0.879, 1.023)	0.940 (0.858, 1.022)	6.437 (4.854, 8.019)	0.931 (0.880, 0.982)	0.899 (0.859, 0.939)	6.088 (4.614, 7.562)
RF-RFE	96.8	2190.2	<b>0.952</b> (0.881, 1.022)	0.940 (0.859, 1.020)	6.454 (4.916, 7.991)	<b>0.932</b> (0.881, 0.983)	0.900 (0.860, 0.939)	<b>6.114</b> (4.626, 7.603)
none	158.0	0.0	0.950 (0.882, 1.018)	0.940 (0.863, 1.016)	6.441 (5.030, 7.853)	0.931 (0.880, 0.982)	0.899 (0.861, 0.936)	6.075 (4.562, 7.588)

Source: author

There are two evident analytic perspectives arising from co-occurrence matrix, (1) feature importance across different selection procedures and (2) underlying similarity amongst results of feature selection schemes.

Considering the former perspective (1), three diverse groups of impact on the target variable are identified by the row-wise dendrogram. The bottom cluster consists of just one element – international\_plan, which is recognized to be very important by all selection schemes; the middle cluster contains three elements – total\_day\_charge, number\_customer\_service\_calls,

total\_day\_minutes, that are also observed to be important indicators of customer's propensity to churn; the structure of the upper cluster is rather ambiguous, except for area\_code element which is generally omitted.

From the latter perspective (2), three distinct groups of feature structures are identified by the column-wise dendrogram. The left cluster contains multivariate filter selection methods and Fischer's score; the middle cluster consists of EBM schemes and OneR; the right cluster is reserved for RFE procedures. The underlying similarity amongst selection schemes appears to be driven by both number and structure of included features; this is supported by the internal coherence of clusters considering the

performance of classification learner (see Tab. 3), albeit Consistency method does exhibit different behavior.

To outline a prediction performance of individual classification learners, mean point estimates across algorithms and selection/no selection schemes are displayed in Tab.4; the best indicators are depicted in bold; 95 % confidence intervals for underlying distributions are constructed.

RF algorithm presents superior performance with very low bias and acceptable variance across all performance measures; however, the drop in test performance might be a sign of overfitting. LOGIT method, on the other hand, displays higher bias and very low variance as a consequence of regularization. CIT and SVM learners exhibit akin performance with low bias and moderate variance.

To examine the behavior of classification learners further, another CIT model is built on top of the pipeline results; the

response variable is top-decile lift measured on the test set, explanatory variables are feature selection scheme and classification method. The motivation for analyzing test TDL comes from its link to retention campaign profit dynamics (see Verbeke et al., 2012). The tree structure is charted in Appendix 1.; it becomes apparent that a feature selection procedure does not lead to significant improvement of the performance metric when combined with classification learners with embedded feature selection. This observation is supported by terminal nodes 12 (CIT), 18 (RF) and 23 (LOGIT) which blend learner's performance with and without feature selection. SVM learner, however, displays leap in performance when coupled with feature selection scheme. This conclusion is backed by comparison of boxplot charts in terminal node 10 (Consistency, EBMs, OneR) or 12 (RFE) with terminal node 15 (no feature selection scheme).

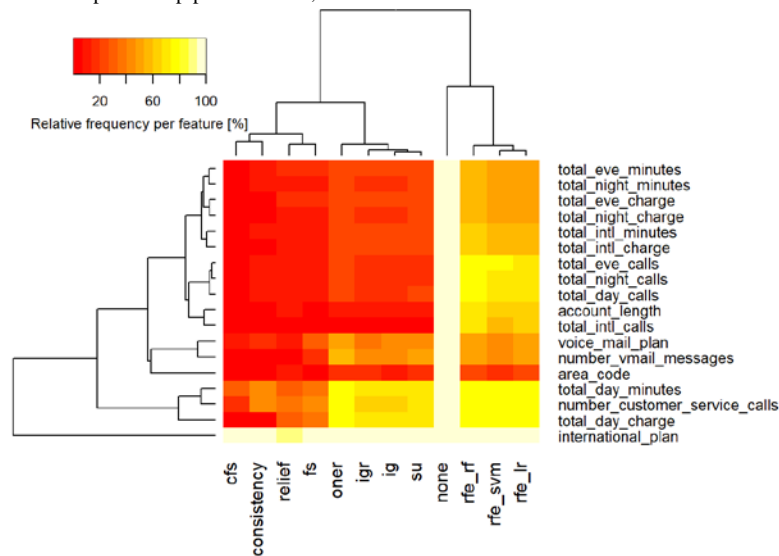


Figure 5. Scaled co-occurrence matrix for selection scheme-feature pairs, Source: author

The subsequent dimension of analysis comprises of time complexity of classification learners as a function of a number of explanatory variables ( $n$ ). The empirical relationships are

exposed by locally estimated scatterplot smoothing (LOESS) and depicted in Fig. 6.

Table 4. Classification performance indicators aggregated by the classification method

classification method	classification runtime [s]	train ACC (95 % CI)	Train AUC (95 % CI)	Train TDL (95 % CI)	test ACC (95 % CI)	test AUC (95 % CI)	test TDL (95 % CI)
LOGIT	21.8	0.893 (0.865, 0.920)	0.874 (0.814, 0.934)	4.891 (3.727, 6.054)	0.890 (0.864, 0.917)	0.868 (0.808, 0.928)	4.782 (3.647, 5.917)
CIT	52.2	0.941 (0.908, 0.974)	0.917 (0.865, 0.970)	6.335 (5.228, 7.442)	0.925 (0.891, 0.959)	0.879 (0.824, 0.933)	5.832 (4.596, 7.067)
SVM	244.3	0.939 (0.898, 0.981)	0.919 (0.865, 0.973)	6.315 (5.064, 7.565)	0.922 (0.895, 0.950)	0.897 (0.851, 0.943)	5.806 (4.855, 6.758)
RF	361.7	<b>0.980</b> (0.941, 1.020)	<b>0.996</b> (0.975, 1.017)	<b>6.965</b> (6.452, 7.478)	<b>0.940</b> (0.899, 0.981)	<b>0.906</b> (0.861, 0.951)	<b>6.318</b> (5.013, 7.623)

Source: author

From asymptotic perspective there appear to be three classes of behavior; (1) there is no clear relationship between number of features and classification runtime, suggesting complexity of  $O(1)$ , LOGIT flat line indicates such a nature; (2) there seems to be linear relationship between number of explanatory variables and classification runtime, indicating complexity of  $O(n)$ , this appears to be valid for SVM and RF models; (3) there is quadratic relationship between number of included variables and classification runtime, implying complexity of  $O(n^2)$ , this

behavior fits the shallow convex curvature of CIT arc. RF LOESS, however, shows the systematic residual pattern in the middle and right sections of the figure; the observed phenomenon is induced by hyperparameter search step (sensitivity of a weak learner to a number of predictors and its depth).

## 6 Conclusions and future work

In an environment with steep data growth, it becomes inevitably hard to identify useful patterns and extract relevant knowledge. Thus, the goal of this paper is to examine the explanatory variable selection procedure in customer churn domain, specifically (1) its effect on prediction performance of a classification learner; (2) its behavior across explanatory variables; (3) a link between the number of included variables and classification runtime. The general topic is examined using an original experimental setup and utilizes publicly available dataset.

We witness slight improvement in learner's prediction performance when combined RFE selection, although the difference is not found statistically significant. From another viewpoint, RFE schemes allow us to reduce the number of features by ~ 40 % while retaining the same level of classification performance as with full-featured dataset. Consistency, EBM and OneR methods present notable behavior

when heavily reducing the number of features while (1) being almost on par with RFE schemes across all performance measures and (2) being computationally less demanding.

When examining underlying feature importance across different selection schemes (see Fig. 5), `international_plan`, `total_day_charge`, `number_customer_service_calls` and `total_day_minutes` are recognized as important to the churn event; relevance of other features is inconclusive, except for `area_code` which is generally disregarded. From the perspective of business enterprise, the aforementioned findings may represent an invaluable insight into customer behavior. The latent similarity amongst results of feature selection procedures seem to be induced by number and structure of retained variables (see Fig. 5); the observation is supported by the internal coherence of clusters considering the performance of classification learner (see Tab. 3), albeit Consistency method does conduct adversely.

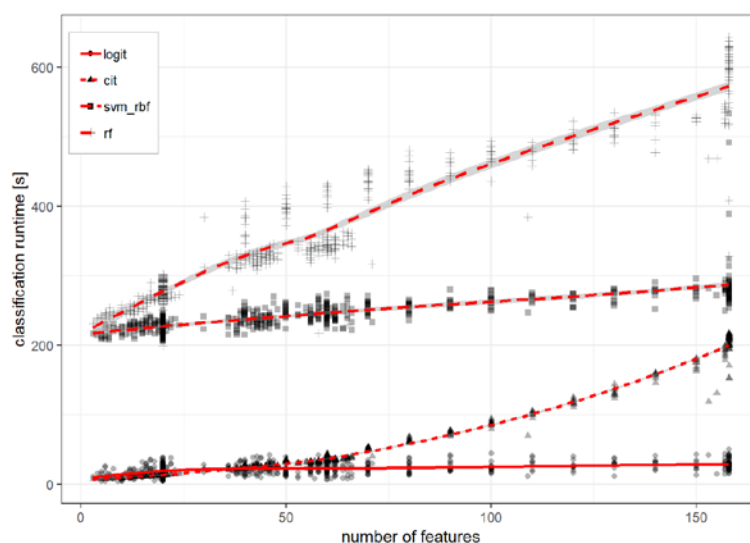


Figure 6. LOESS approximation of classification learner's runtime as a function of a number of included variables, Source: author

Considering the overall performance of classification learners, RFs exhibit superior behavior across all metrics. LOGIT learners distinct with higher bias and very low variance both of which are induced by regularization. CIT and SVM algorithms show comparable performance with low bias and moderate variance (see Tab. 4). We exploit a link between classifier's ability to generalize and feature selection procedure through the CIT model (see Appendix 1.). It becomes evident that incorporation of selection scheme does not improve performance metric when combined with classification learners with embedded feature selection. On the other hand, practitioners and researchers can tackle performance vs runtime trade-off with explicitly including selection scheme into machine learning pipeline; more specifically, by combining classifier with runtime sensitive to a number of features (CIT, SVM, RF) with efficient and computationally cheap univariate filter procedure (EBM, OneR). We can notice comparable benefits in EBM + SVM setup, which reduces computational runtime by ~ 15 % and improves test set TDL by ~ 5 % when compared to none + SVM setup (see Appendix 2.).

To illustrate the relevance of other parts of machine learning solution, we compare obtained results with selected research papers which utilize the same dataset, although their primary goals do not involve feature selection. We achieved performance comparable with Verbeke et al. (2012), the main discrepancy appears amongst LOGIT models where our incorporation of interaction features in data processing step leads to increase in test TDL by a factor of ~ 1.5. On the other hand, works of Vafeiadis et al. (2015) and Mehreen et al. (2017) exploit

concepts of meta-learning which lead to increase in test ACC by ~ 5-10 % when compared to our endeavors.

As for future research of selection procedures in customer churn domain, we suggest considering more datasets and conceptually diverse classification learners. To explicitly address the trade-off between a number of features and information retained, multi-objective optimization might be leveraged in novel types of selection procedures. Another possible direction for research involves feature selection ensembles; meta-learning selection based on votes of multiple selection methods. From the perspective of the enterprise, adjusting feature selection procedures to business objectives in order to analyze retention drivers in profit perspective might be also a topic of interest.

### Literature:

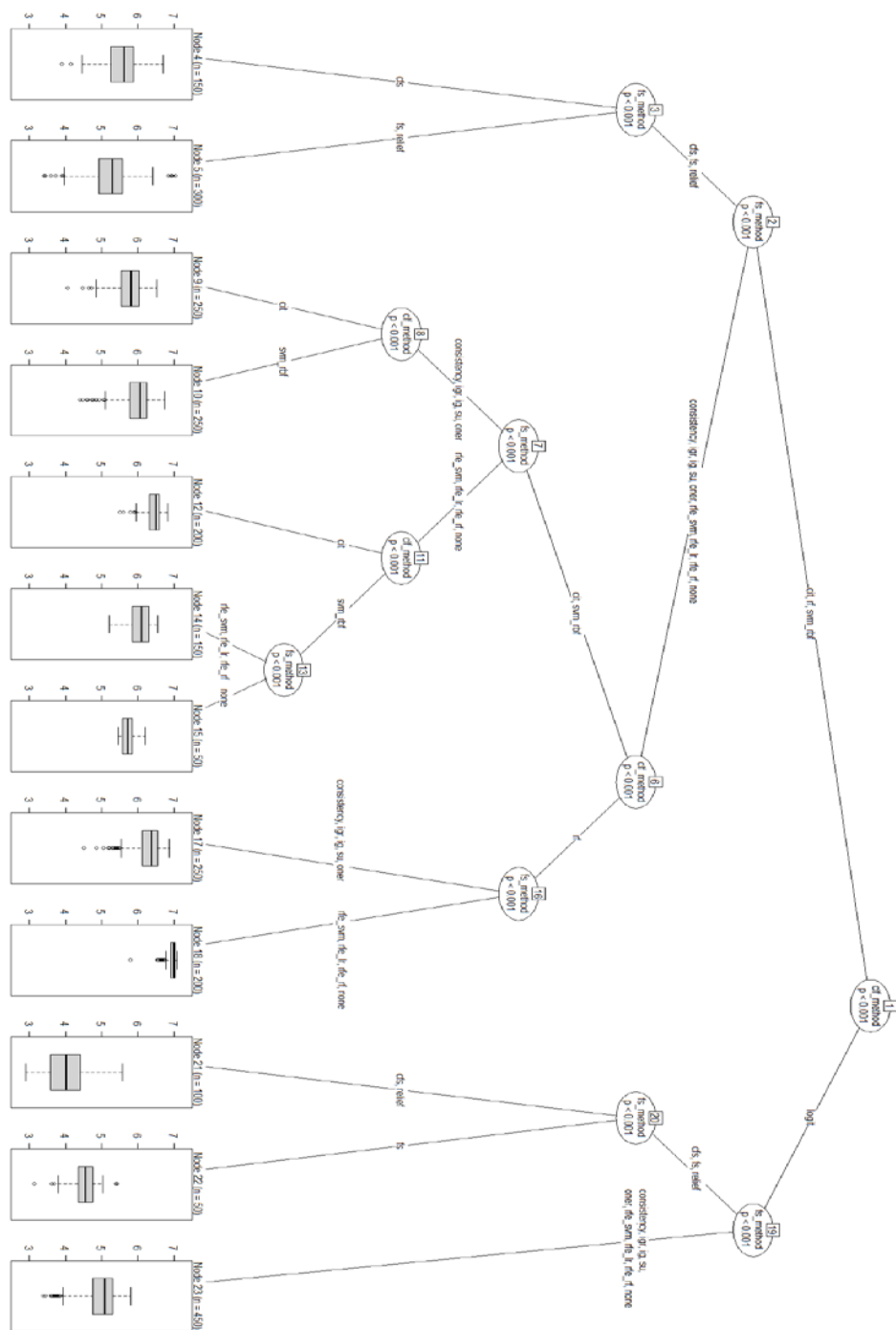
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#### Primary Paper Section: A

Secondary Paper Section: AE, BB, IN

Appendix 1. Condition inference tree describing test TDL performance as a function of a feature selection procedure and classification method, Source: author



Appendix 2. Classification performance indicators aggregated per feature selection and classification method, Source: author

feature selection method	classification method	train ACC (95 % CI)	train AUC (95 % CI)	train TDL (95 % CI)	test ACC (95 % CI)	test AUC (95 % CI)	test TDL (95 % CI)
CFS	LOGIT	0.872	0.842	4.013	0.872	0.837	3.954
		(0.856, 0.888)	(0.802, 0.882)	(2.963, 5.063)	(0.853, 0.890)	(0.790, 0.884)	(2.753, 5.155)
		0.930	0.909	5.964	0.910	0.865	5.333
CFS	CIT	(0.904, 0.956)	(0.857, 0.960)	(5.022, 6.907)	(0.890, 0.931)	(0.821, 0.910)	(4.477, 6.189)
		0.924	0.904	5.874	0.917	0.894	5.609
		(0.893, 0.956)	(0.870, 0.937)	(4.823, 6.926)	(0.892, 0.941)	(0.871, 0.917)	(4.817, 6.401)
CFS	SVM	0.965	0.990	6.858	0.922	0.900	5.788
		(0.927, 1.003)	(0.966, 1.014)	(6.215, 7.501)	(0.893, 0.951)	(0.878, 0.922)	(4.833, 6.743)
		0.890	0.871	4.827	0.888	0.868	4.760
Consistency	LOGIT	(0.872, 0.907)	(0.848, 0.895)	(3.996, 5.658)	(0.869, 0.906)	(0.838, 0.898)	(3.908, 5.612)
		0.939	0.925	6.318	0.922	0.880	5.759
		(0.924, 0.955)	(0.893, 0.956)	(5.800, 6.836)	(0.904, 0.939)	(0.847, 0.914)	(5.161, 6.358)
Consistency	CIT	0.943	0.920	6.457	0.928	0.900	5.993
		(0.915, 0.971)	(0.894, 0.947)	(5.636, 7.277)	(0.906, 0.950)	(0.879, 0.922)	(5.282, 6.704)
		0.984	0.999	7.057	0.937	0.910	6.271
Consistency	RF	(0.967, 1.001)	(0.994, 1.003)	(7.004, 7.109)	(0.919, 0.954)	(0.892, 0.928)	(5.689, 6.852)
		0.885	0.856	4.553	0.884	0.851	4.507
		(0.863, 0.907)	(0.790, 0.923)	(3.682, 5.424)	(0.863, 0.904)	(0.765, 0.937)	(3.642, 5.372)
FS	LOGIT	0.922	0.898	5.673	0.907	0.862	5.158
		(0.893, 0.951)	(0.828, 0.968)	(4.567, 6.780)	(0.878, 0.936)	(0.778, 0.946)	(4.041, 6.276)
		0.918	0.891	5.635	0.910	0.875	5.331
FS	CIT	(0.881, 0.955)	(0.832, 0.950)	(4.364, 6.906)	(0.881, 0.938)	(0.802, 0.948)	(4.213, 6.449)
		0.955	0.982	6.668	0.916	0.885	5.496
		(0.908, 1.001)	(0.934, 1.031)	(5.707, 7.629)	(0.881, 0.950)	(0.814, 0.956)	(4.246, 6.746)
FS	SVM	0.875	0.825	4.052	0.875	0.824	4.016
		(0.856, 0.895)	(0.728, 0.923)	(3.072, 5.032)	(0.856, 0.893)	(0.737, 0.910)	(3.072, 4.961)
		0.919	0.889	5.564	0.902	0.848	4.955
Relief	LOGIT	(0.887, 0.951)	(0.799, 0.978)	(4.343, 6.784)	(0.874, 0.930)	(0.763, 0.933)	(3.788, 6.122)
		0.911	0.881	5.435	0.903	0.863	5.143
		(0.876, 0.945)	(0.810, 0.951)	(4.245, 6.624)	(0.879, 0.927)	(0.789, 0.936)	(4.290, 5.996)
Relief	CIT	0.955	0.987	6.726	0.911	0.875	5.358
		(0.914, 0.997)	(0.967, 1.007)	(5.983, 7.468)	(0.879, 0.943)	(0.801, 0.949)	(4.215, 6.500)
		0.896	0.878	5.000	0.894	0.875	4.890
Relief	SVM	(0.869, 0.923)	(0.824, 0.931)	(3.894, 6.106)	(0.868, 0.921)	(0.818, 0.932)	(3.713, 6.066)
		0.937	0.917	6.225	0.921	0.880	5.696
		(0.914, 0.960)	(0.875, 0.959)	(5.427, 7.024)	(0.898, 0.944)	(0.834, 0.926)	(4.910, 6.481)
IGR	CIT	0.938	0.916	6.305	0.923	0.896	5.840
		(0.897, 0.979)	(0.861, 0.970)	(5.025, 7.585)	(0.893, 0.954)	(0.854, 0.939)	(4.816, 6.864)
		0.978	0.996	6.967	0.934	0.904	6.183
IGR	SVM	(0.943, 1.012)	(0.980, 1.012)	(6.460, 7.474)	(0.904, 0.965)	(0.862, 0.946)	(5.154, 7.213)
		0.898	0.883	5.064	0.896	0.879	4.973
		(0.875, 0.920)	(0.852, 0.914)	(4.163, 5.965)	(0.874, 0.918)	(0.845, 0.913)	(4.051, 5.896)
IG	LOGIT	0.939	0.921	6.303	0.921	0.882	5.717
		(0.920, 0.958)	(0.894, 0.948)	(5.692, 6.915)	(0.901, 0.941)	(0.846, 0.917)	(4.957, 6.477)
		0.941	0.921	6.411	0.925	0.900	5.905
IG	CIT	(0.905, 0.978)	(0.885, 0.957)	(5.302, 7.519)	(0.900, 0.951)	(0.878, 0.922)	(5.026, 6.783)
		0.980	0.997	7.005	0.936	0.908	6.249
		(0.950, 0.986)	(0.986, 0.997)	(6.727, 7.005)	(0.911, 0.936)	(0.888, 0.908)	(5.408, 6.249)

		1.009)	1.008)	7.283)	0.961)	0.927)	7.090)
		0.899	0.883	5.122	0.897	0.880	5.036
SU	LOGIT	(0.879,	(0.845,	(4.378,	(0.876,	(0.832,	(4.218,
		0.918)	0.922)	5.867)	0.917)	0.927)	5.854)
		0.938	0.915	6.261	0.922	0.883	5.737
SU	CIT	(0.917,	(0.868,	(5.511,	(0.900,	(0.837,	(4.915,
		0.959)	0.962)	7.012)	0.944)	0.929)	6.558)
		0.940	0.920	6.392	0.926	0.899	5.937
SU	SVM	(0.905,	(0.879,	(5.258,	(0.898,	(0.864,	(5.041,
		0.976)	0.961)	7.526)	0.953)	0.935)	6.834)
		0.983	0.998	7.008	0.937	0.907	6.293
SU	RF	(0.952,	(0.987,	(6.647,	(0.910,	(0.872,	(5.435,
		1.014)	1.009)	7.370)	0.964)	0.941)	7.152)
		0.902	0.889	5.259	0.900	0.885	5.143
OneR	LOGIT	(0.884,	(0.868,	(4.665,	(0.882,	(0.861,	(4.531,
		0.920)	0.909)	5.853)	0.917)	0.908)	5.756)
		0.940	0.920	6.354	0.924	0.884	5.837
OneR	CIT	(0.924,	(0.892,	(5.802,	(0.907,	(0.850,	(5.238,
		0.957)	0.947)	6.906)	0.941)	0.919)	6.437)
		0.944	0.923	6.483	0.928	0.902	6.023
OneR	SVM	(0.916,	(0.893,	(5.630,	(0.910,	(0.883,	(5.446,
		0.972)	0.953)	7.336)	0.946)	0.921)	6.599)
		0.986	0.999	7.046	0.941	0.911	6.422
OneR	RF	(0.964,	(0.993,	(6.862,	(0.924,	(0.892,	(5.869,
		1.008)	1.005)	7.230)	0.959)	0.929)	6.975)
		0.900	0.891	5.211	0.896	0.882	5.061
SVM-RFE	LOGIT	(0.879,	(0.870,	(4.614,	(0.877,	(0.863,	(4.462,
		0.921)	0.911)	5.807)	0.914)	0.901)	5.659)
		0.956	0.929	6.806	0.942	0.890	6.405
SVM-RFE	CIT	(0.942,	(0.898,	(6.438,	(0.927,	(0.864,	(5.966,
		0.970)	0.959)	7.174)	0.956)	0.915)	6.845)
		0.958	0.942	6.783	0.931	0.911	6.073
SVM-RFE	SVM	(0.936,	(0.918,	(6.295,	(0.913,	(0.895,	(5.482,
		0.980)	0.966)	7.271)	0.949)	0.928)	6.664)
		0.993	1.000	7.061	0.960	0.918	6.894
SVM-RFE	RF	(0.977,	(0.999,	(7.061,	(0.946,	(0.899,	(6.486,
		1.008)	1.001)	7.061)	0.973)	0.937)	7.303)
		0.896	0.888	5.112	0.893	0.879	4.983
LR-RFE	LOGIT	(0.876,	(0.870,	(4.531,	(0.873,	(0.858,	(4.389,
		0.916)	0.905)	5.693)	0.913)	0.901)	5.577)
		0.957	0.931	6.826	0.941	0.888	6.402
LR-RFE	CIT	(0.943,	(0.896,	(6.425,	(0.925,	(0.849,	(5.896,
		0.971)	0.965)	7.228)	0.958)	0.927)	6.909)
		0.956	0.940	6.747	0.930	0.910	6.056
LR-RFE	SVM	(0.931,	(0.916,	(6.201,	(0.914,	(0.892,	(5.527,
		0.981)	0.965)	7.293)	0.946)	0.928)	6.584)
		0.995	1.000	7.061	0.960	0.918	6.911
LR-RFE	RF	(0.981,	(0.999,	(7.061,	(0.948,	(0.899,	(6.609,
		1.009)	1.000)	7.061)	0.972)	0.936)	7.213)
		0.898	0.890	5.170	0.893	0.880	4.992
RF-RFE	LOGIT	(0.877,	(0.869,	(4.562,	(0.873,	(0.860,	(4.408,
		0.919)	0.910)	5.778)	0.914)	0.899)	5.575)
		0.958	0.929	6.854	0.944	0.890	6.463
RF-RFE	CIT	(0.948,	(0.900,	(6.556,	(0.931,	(0.853,	(6.089,
		0.969)	0.958)	7.152)	0.956)	0.926)	6.837)
		0.956	0.941	6.730	0.930	0.911	6.049
RF-RFE	SVM	(0.931,	(0.918,	(6.177,	(0.913,	(0.893,	(5.514,
		0.981)	0.964)	7.283)	0.946)	0.929)	6.584)
		0.995	1.000	7.061	0.961	0.918	6.954
RF-RFE	RF	(0.982,	(1.000,	(7.061,	(0.953,	(0.901,	(6.765,
		1.007)	1.000)	7.061)	0.970)	0.936)	7.143)
		0.902	0.896	5.306	0.897	0.880	5.071
none	LOGIT	(0.883,	(0.880,	(4.743,	(0.877,	(0.860,	(4.431,
		0.921)	0.913)	5.868)	0.916)	0.900)	5.711)
		0.959	0.929	6.873	0.945	0.892	6.515
none	CIT	(0.944,	(0.897,	(6.459,	(0.931,	(0.854,	(6.038,
		0.974)	0.960)	7.287)	0.960)	0.930)	6.992)
		0.944	0.933	6.526	0.919	0.903	5.717
none	SVM	(0.923,	(0.912,	(5.998,	(0.909,	(0.886,	(5.383,
		0.966)	0.955)	7.055)	0.930)	0.920)	6.051)
		0.995	1.000	7.061	0.963	0.919	6.996
none	RF	(0.981,	(1.000,	(7.061,	(0.956,	(0.901,	(6.873,
		1.009)	1.000)	7.061)	0.970)	0.937)	7.119)

## MYTHOPOETICS OF THE MODERN RUSSIAN NOVEL (ON V. PELEVIN'S PROSE MATERIAL)

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**Abstract:** This article analyzes the strategy of artistic transformation of mythological material in mythopoeitics elements of the author's text in Pelevin's novels. In particular, we investigate specifics of animal images interpretation in "Numbers" using comparative historical method and method of integral analysis of literary work. It is established that by beating the images of animals from different mythological traditions, V. Pelevin in "Numbers" constructs his own neomyth, part of which becomes the central character of the novel as a new mythological hero, taking a series of tests. We have discovered that in "The sacred book of the Werewolf" novel the author leads to play with meanings, new understanding of archetypal images and motives by rethinking the myth using postmodern techniques.

**Key words:** Russian Modern prose; V. Pelevin; novel; myth; mythopoeitics; neomyth; motive; device.

### 1 Introduction

Appeal to mythology, the rethinking of mythological images and plots presents as one of the key features of modern Russian prose. As O. Osmukhina rightly notes, "the mythological" component "becomes a part of poetics of the author's work" (Osmukhina 2013, p. 228). It is precisely "the artistic transformation of the original mythological material (antique, Christian etc.) into myth-poetic elements of the author's text" that is characteristic of Russian prose of the turn of the XX-XXI centuries (novels by V. Sorokin, Boris Akunin, D. Lipskerov etc.), where use of "allusions, intertextuality, citations, play with pretexts" (Osmukhina 2013, p. 228-230; Osmukhina 2012, p. 186-189) leads to creation of a very specific author's neo-myth.

Myth-poetics is traditionally referred to as the conscious turn of artists of the word to various artistic techniques of "mythological genesis", its images and themes, "subjected to creative rethinking and, accordingly, moving from the mythological into the myth-poetic sphere, that is, becoming part of the poetics of the artistic work" (Soldatkina 2009, p. 8). It is the artistic transformation of the original mythological material into myth-poetic elements of the author's text that seems most significant, since this is the aspect where myth-poetics demonstrates ability for global generalizations at content related and structural levels of a piece.

### 2 Materials and methods

Mythology in the literature of the turn of the XX-XXI centuries is a very special phenomenon, which is both an artistic medium and a certain outlook, which becomes one of the key ways of perceiving reality by one or another artist. In this connection, numerous myths of the "new time" are created, according to D. E. Maksimov's fair observation, processed "through individual consciousness with its introspection and author's free attitude to the depicted" (Maksimov 1986, p. 203). Thus, "neo-mythologism" is created (Mintz 1978, p. 76), numerous author's neo-myths, which are not at all aimed at recreating mythological thinking, but seek to reveal the internal structures and mechanisms of modern socio-cultural consciousness.

The study of myth has a long history in science (not only in literary criticism, but also in philosophy and culturology) the myth looked at as one of the universal categories of human existence, the fundamental component of human thinking, and, at the same time, as one of the determinants of the existential norms in the existence of an individual in society, (Shafranskaya 2008, p. 473-481). At the same time, artistic literature is

analyzed by Russian and Western mythology researchers - E. M. Meletinsky (Meletinsky 2012), M. Adamovich (Adamovich), M. Eliade (Eliade 1976) and R. Barthes (Barthes 1972). They view literature not just as an indirect realization of myth, but also as an area of movement of images, motifs, plots, myth-genesis techniques from mythological into myth-poetic sphere, as their conscious use and rethinking by poets, prose writers and playwrights.

### 3 Literature Review

Results of the study of mythological images and plots transformation of into author's text in V. Pelevin's prose appear to be original and new since no one before us has studied this aspect of the problem. In a generic context, O. Osmukhina (Osmukhina 2013; Osmukhina 2012), Ya. Soldatkina (Soldatkina 2009), E. Shafranskaya (Shafranskaya 2008), M. Adamovich (Adamovich 2002), A. Tsyganov (Tsyganov) looked at it. The domestic experience in studies of the author's neo-myth in general and neo-myth in Pelevin's prose in particular can indeed be used in world science, especially in Slavic studies. The prospect of studying myth-poetics involves the use of scientific achievements of this article.

### 4 Results and Discussions

The most remarkable in the aspect of myth-poetics is the work of one of the most popular writers in Russia V.O. Pelevin, translated into all European languages. Virtually in all novels of the prose writer - from *Omon Ra*, *Empire V* and *Batman Apollo to Love to the Three Zuckerbrins*, *The Ranger and Lamps of Methuselah* - in the framework of postmodern poetics, philosophical and religious treatises, fairy tales and urban folklore, Celtic, Germanic and Scandinavian myths, Chinese fairy tales and numerology, Buddhism and Taoism, shamanism and yogic techniques, classical literature and mass culture (Ditkovskaya 2002; Safronova 2004; Chepelevskaya 2006; Tsyganov). At the same time, the writer addresses the content of myths, their heroes, using the hidden and previously unrealized potential of mythological thinking: synthesizing various mythological motives, "turning inside out" well-known stories, he constructs his own author's neo-myth.

In this context, V. Pelevin's novel *Numbers* is indicative. Already the main character of the novel Muss is similar to a cat: "Muss was a charming young woman, to the astonishment like a cat. She had big, as in fear, eyes and an amazing hairdo, which consisted of a short haircut and six "antennas" - tufts of hair woven with the strongest gel into long parallel needles ... These swaying antennas resembled Steppe's cat's whiskers, which seemed to him all the time-Muss is just meowing" (Pelevin 2016, p. 34-35).

Moreover, in the Latin script the name of the heroine is written "Meowth", which is phonetically consonant with the feline meow. About the feline nature Muss is also evidenced by her identification with the Pokémon Meowth - "this is such a cat, very cute. You will laugh, like Muss Julianovna. The same arrows stick out from the hairstyle" (Pelevin 2016, p. 265). In modern mass culture, Meowth is a villain from a series of games, manga and anime, and various animated and print adaptations of the Pokémon series, which looks like a cat (Meowth). Moreover, Meowth was a pupil of Team R boss Giovanni, whose name, incidentally, is also phonetically close to the Pelevin's "patronymic" of the heroine.

Note that the image of Muss, in addition, is quite comparable with the figure of the goddess-cat in Egyptian mythology. The goddess Bast patronized fire, the moon, childbirth, fertility, pleasures, embodied the feminine and maternal origin. Represented Bast, usually in the form of a woman with a cat's head, in her right hand contained a musical instrument - a sistrum, in the left - a mirror Hator. In addition, she had four

kittens at her feet. Bast was a defender of evil spirits. It is important to note the external similarity between Muss and the goddess Bast, as well as her need for pleasure and the continuation of the family. Muss, as well as Bast, protected Stepa from evil forces. Noteworthy in the Pelevin's heroine is the synthesis of the character traits of the masscult (Pokemon Meowth) and mythology (the goddess-cat Bast). As in other novels of the prose writer (*The Sacred Book of the Werewolf*, *t, Empire V*), the mythological images in the *Numbers* are turned inside out and rethinking paradoxically, and the point here is in the prose writer's orientation to the modern reader, whose consciousness is formed in originally given coordinates, similar to the reality in which Pelevin's characters participate. The ironic tone of the narrative and the "routine" of Step's spiritual quest, his obsession with the "magic of numbers", game contamination of various mythological images, with which Stepa and his surroundings are fully correlated, reflect the futility of any quest in the hope of self-acquisition by the hero himself, dissolved in games with reason higher powers or the very law of being as a whole.

Present in the novel is a goldfish, in which Stepa asks for help. The image of a goldfish fulfilling its desires is correlated here not only with Pushkin's fairy tale, but also with Finno-Ugric and Slavic folklore. The image of fish, for example, is one of the key in Mordovian folklore. So, in the Mordovian folk epic *Mastorava* it is described in detail that it is on three fish that the earth holds (Mastorava): "I created Nishkepaz great water, / I created the largest water, / And in that great water to Nishka, / Wise good Scuba put three fish, / Oh, three fishes are native to each other: / All three fishes are blood sisters. // <...> The elder sister, the big fish, / To the rest of the sisters told the rest: / <...> For that, we came into the world, / In order to be born, born / To keep the three great burdens / To carry them on your own on the backs. // Three beginnings are at the Mastorava, / There are three chasms at the Mastorava // " (Mastorava 2012, p. 37).

Moreover, in the myth about the fisherman, Andyamo, the notions of "great waters" are associated primarily with the possessions of Vedava and Vedyat, filled with "free fish": "There are many fish here / With radiant eyes: / Many good fish of God, / Together with her - the Shaitan fish. Who is the master of fish? Who owns the fish? / White Sarage is their master, / Murasei is a strict holder // " (Mastorava 2012, p. 100). It is noteworthy that, on the one hand, in mythological representations, fish is clearly associated with the underground and underwater world as the realm of the dead and therefore endowed with the magical power inherent in otherworldly beings.

It is not by chance that in fairy tales the fish caught for eating is unusual and golden, which in mythopoetic symbolism appears as a sign of "another" world. On the other hand, in many cultures of the early-natal structure, fish was considered an animal ancestor and patron of the genus and, accordingly, an object of religious veneration. In a number of myths, fish acts as a demiurge, i.e. takes part in the creation of the world. For example, fish brings from the bottom of the primeval ocean the mud from which the land is created, or it serves as the support of the earth. The ancient Semites had the deity Dagon (Dag), which meant "fish", "guardian" or "Messiah", which was depicted in the guise of a fish.

In V. Pelevin novel a goldfish rescues hero from death, while being "in a hollow between his wet legs, next to a string of seaweed and a piece of plastic". In the future, the characters treat the fish as a symbol of life, abundance and luck (according to Chinese mythology): "the chef's assistant returned to the kitchen and poured water from the tap into the boat. "Come on, - he said, placing the rook on the counter in front of Stepa. Stepa at the second attempt picked up the fish in the palm of his hand and let it into the boat. Nervously wagging its tail, the fish swam first to one end of its new universe, then to the other and froze in place" (Pelevin 2016, p. 48). In fact, people who have just committed murder take care of the life of the fish.

As well as in mythology, the main character believes in the miraculous power of the fish, its ability to fulfill desires and appeals to her for help: "In the yellowish water before the Stepa's eyes hung a large goldfish with a forked tail - shaking its fins, she mysteriously looked at Stepa with a round eye-key. <...> Stepa thought that just right it would be to ask for something goldfish. "Fish, fish," he whispered inaudibly, "make me live and healthy from here ... Eh, I would give any money" (Pelevin 2016, p. 43-44). The final phrase of the hero plays a fundamental role: it turns out that the fish will fulfill his desire, because she was promised material rewards. Thus, the initially sacrificed image of the fish sets the reader to a special perception of it in the "Numbers", but V. Pelevin profanates his original semantics.

Writer refashioned and mythological significance of animals, the patron of heroes. As we know, animals could be represented in the image space zone (in Egyptian mythology, for example, the sky depicted as a cow); connected the underworld, the human world and the heavenly world (Amerindian cosmic serpent); he restored the original structure of the universe after the fall of heaven to earth (Eastern-Bolivian mythology). Thus, animals often acted as Creator of the universe. Sometimes the animal-demiurge is in conflict with another animal. So, the Indians of the Northwest coast of the Pacific Ocean believes that there is a myth about the Raven who stole the Gray eagle of the sun, moon, stars, fresh water and fire, strengthened the luminaries in the sky, and dropped it to the ground. The Tlingit Raven, Eel wins wolf Hanwha and takes away his fire and water, becoming then a tribal deity.

According to the myths of the Nenets, people learned to use fire due to the polar bear. In some myths, there is a motif of metamorphosis; the transformation of the animal into man, man into animal, animal into another animal. This kind of transformation sometimes characterizes animal-trickster, which often play the role of cultural hero (Meletinsky 2012). For example, in Egyptian mythology, the gods were represented as follows: Ra in the image of a golden calf, Anubis in the image of a dog, Horus in the image of a falcon, Hator in the image of a cow, etc. In ancient Greek myths, the transformations of gods in animals were plotted deterministically: Zeus turned into a bull, eagle, swan, ant; Dionysus appeared in the guise of a goat, a lion, a panther; Poseidon took the form of a horse, etc.

Remarkable and reinterpretation by the prose writer in the *Numbers* of the image of the donkey. With the donkey in the novel, the antipode of the main character identifies himself - George Varfolomeevich Srakandayev. Note that the donkey is a very dualistic image: if in a number of mythological traditions it symbolizes stupidity (it is enough to recall the donkey ears of King Midas), meanness, lust, violence, then in the mythology of Buddhism, the donkey, on the contrary, is a symbol of asceticism, humiliation. In Hebrew mythology, the donkey is a symbol of peace and salvation, in Egyptian mythology he is one of the incarnations of the solar deity, in the image of the donkey, Seth was also the god of deserts, the symbol of evil, the lower world of Egypt was filled with demons with donkey heads. In some mythological traditions, the donkey acts as a mount of any deity (the Ashwinian chariot is harnessed by an ass, or by several donkeys, by means of which the Ashvins won a competition for the Soma and Surya weddings). According to ancient Greek mythology, the donkey is a symbol of stupid idleness, lust and laziness (it is no accident that Bacchus and his intoxicated suite rode on donkeys); In the guise of a donkey, Priap was depicted - the ancient Greek phallic deity of the productive forces of nature.

The donkey in many myths is a contradictory way: it can perform both good deeds and blasphemous, depending on who saddles it. For example, Messiah's donkey with the colt is the sign of the humble peace of the King of Kings, while the giant donkey carrying Dajjal symbolizes the threatening power of the Muslim Antichrist. The color of the donkey also played a significant role: white served the leaders, kings, prophets, the gray donkey was subordinate to the lower classes.

In the novel *Numbers* G.V. Srakandayev calls himself "Donkey seven cents" (Pelevin 2016, p. 137). Indeed, Srakandayev is only an antipode, a mirror duplicate of Stepa. He liked to humiliate himself, and for sexual games he used a "bandage bandage with two long white ears" (Pelevin 2016, p. 202), posing as an ass and complementing this image with the corresponding sounds of the animal. White ears - a symbol of the fact that Srakandayev already obeys Stepa, immediately recognizes his supremacy. Donkey - Srakandayev - according to Stepa, was his enemy, who has no place in this world. But Stepa could not kill him. The hero found another way to defeat the rival. He had the opportunity to "saddle" the donkey. In the process of coition, Stepa turned from a pokemon into a wolf: "Pikachu was a small, quiet mumps," Stepa thought, "but the evil people broke his heart. And he became a wolf! He is now a wolf!" (Pelevin 2016, p. 208).

It is necessary to emphasize that the wolf in the Pelevin bestiary is one of the key characters - he appears in both "The problem of the werewolf in the middle lane" and the *Sacred Book of the Werewolf*. At the same time we will make a reservation that the image of a wolf in mythology is very ambiguous. The mythology of North-West and Central Eurasia shares a story about the upbringing of a city or a tribe by a wolf. Thus, in Roman mythology, the she-wolf fed Romulus and Remus, who then founded Rome; in Chinese mythology there is a story about the only surviving boy of the exterminated tribe, who was nurtured by a wolf, who later became his wife and gave birth to ten sons. In Mongolian mythology, there is a similar plot about the wolf as the progenitor of the genus. Often, the leader of the tribe acted in the image of a wolf, could take its shape, for example: Dolon in Greek mythology, a fiery wolf in Slavic mythology. Hence the connection with folkloric ideas about werewolves in all mythological traditions (werewolf in German mythology). In addition, the wolf had a connection with the gods of war in Indo-European mythology: the cult of the god Mars in Roman mythology, the wolves of Gehry and Freka, who accompanied Odin. In Egyptian mythology, the bellicose deity Vepruat was depicted as a wolf, which is a symbol of courage; in Roman mythology to see the wolf signified the successful outcome of the battle. However, the wolf could bring destruction. For example, in the "Senior Edda" there is a story about the wolf Fenrir. According to the myth, the giantess Angrbod created the wolf Fenrir to destroy the world and the gods. In order to avoid a catastrophe, by order of the gods, a special chain was made to hold Fenrir, with whom he at the time of the last battle of the Aesir with the Yotuns broke and swallowed the sun, thereby destroying the world.

V. Pelevin in the novel *Numbers* creates two opposite mythological images: the wolf symbolizing power, the Sun and being the essence of Stepa, and the donkey is a symbol of stupidity, humiliation, the Moon is the essence of Srakandayev. The prose writer refuses from the usual duel between animals, familiarizing the mythological motif and transferring it to the sphere of the "corporal bottom" (M.M. Bakhtin). His heroes enter into sexual intercourse, during which the wolf-Stepa understands his true nature (a similar interpretation will be present in the *Sacred Book of the Werewolf*), takes it and overcomes the donkey-Srakandayev: "And the Stepa Wolf realized that the Donkey was overthrown" (Pelevin, p. 209). And here we note a characteristic feature not only for "Numbers", but also for all novels of the prose writer: Stepa (*Numbers*), and Peter Voidota (*Chapaev and Void*), and Vavilen Tatarsky (*Generation P*), and Rama (*Empire V*), and fox A Huli (*The Sacred Book of the Werewolf*) carry out the spiritual path, an ascension to the heights of higher wisdom, absolute knowledge and gaining absolute freedom. True, often the spiritual quest for a hero or their result is presented in a "reduced" version, as, for example, in the novel *Empire V*, where Rama eventually becomes "Ishtar's friend, the head of glamor and discourse, a komarin muzhik and the god of money with oak wings" (Pelevin 2009, p. 408), or here, in the *Numbers*, where the "elevation" and "enlightenment" of the hero is obviously reduced, is realized through coition and transmitted through images of the "close lower".

The decisive battle of the antagonistic characters takes place at the club "Perekrestok", the name of which is very symbolic. Let us make a reservation that in the mythology the intersection is a symbol of choice, and at the same time a symbol of the unity of opposites. It is considered a point of collision of time and space, a place where the evil forces gather - demons and witches. At the crossroads, suicides, vampires were buried, so they got lost and could not chase the living. The intersection is connected with Ganesha, Janus and Hecata, who were sacrificed to the dog in this place. In ancient Greek mythology, Hercules makes the choice between virtue and pleasure precisely at the crossroads, and prefers virtue. While Stepa in the *Numbers* chooses pleasure.

According to V. Pelevin, the intersection is the place of choice for the heroes. Here Stepa decides to abandon the murder of Srakandayev, replacing him with a more "pleasant" way of defeating his rival. In addition, the very battle of the wolf and donkey took place in the "borderland", the room behind the mirrored panels: "I walked quickly to the mirror wall. Stopping near her, he looked around the reflected hall" (Pelevin 2016, p. 197). And this is by no means an accident. Mirror in many mythological traditions is considered the boundary between the worlds through which the otherworldly forces can pass into the real world; man by means of a mirror, can penetrate into the world "supernatural", thus appearing in the looking-glass.

In mythology, ideas about the mirror are connected with the soul. It was believed that the soul can separate from the body and travel to other worlds. Also, the mirror is capable of reflecting the true essence of a person or his counterpart, which is repugnant to him, but with which one should not be at enmity, but to make friends. The mirror in Pelevin, thus, marks the opposite of Stepa and Srakandayev. In addition, according to folkloric ideas, mirrors reflect negative energy: if a person who has conceived something bad looks in the mirror, then it will direct this energy against the beholder. In the *Numbers* this happened with Stepa, who could not commit the murder, thereby losing as a man, but having defeated as the Wolf; the mirror marks the metamorphosis that has occurred with the protagonist. The mythological properties of the mirror reveal and reflect the true essence of Srakandayev and Stepa, thereby helping to win the Wolf victory over the Donkey. This is evidenced by the exchange made by the heroes: "On the table lay the crumpled ears of Srakandayev - a memorable gift that Stepa received in exchange for the red lingas of victory" (Pelevin 2016, p. 211).

In the novel *The Sacred Book of the Werewolf* the key motifs that the prose writer expands and reinterprets are the motives for transformation, duality, kissing power, and turnaround. The construction of the text of *The Sacred Book of the Werewolf* - without division into chapters or indications of chronological stages characteristic for the diary of confession - creates a feeling of a ring composition. The plot level is complemented by the philosophical-symbolic: all the details of the work, performing a certain role at the level of plot development, work on the main idea of the work. Already the title of the novel sets the perception vector - it contains not just the text content compressed to symbols.

The phrase "*The Sacred Book*", taken from the cover, taken from the sacral culture, immediately outlines the difference with this culture: on the one hand, for the Western socio-cultural consciousness only the Bible can be considered a holy book; on the other hand, this phrase refers the reader to the East (more precisely, the Far Eastern cultural area), in which it traditionally defines the circle of classical Chinese texts, as T. I. Chepelevskaya pointed out for the first time (Chepelevskaya 2006, p. 234). Accordingly, the pre-determined opposition sacred / secular pre-sets the reader to a special perception of this semantic signal. However, the prose writer introduces into the title the notion of werewolves, borrowed from a completely different, mythological, cultural tradition, thereby achieving an oxymoronic semantics: potentially religious, the sacred appears next to the mythological. Opposition East-West finds the potential for simultaneous functioning in different semantic fields of the work as a common or internal frame.

The narrative in the novel is conducted on behalf of the main character, a werewolf fox, engaged in virtual prostitution and generating in the minds of the client the illusion of intimacy. It has the ancient name A Huli (in translation from Chinese "huli" is a fox, "A" is a diminutive suffix put to the beginning), which can be translated as "Fox". However, the heroine also has a "modern" pseudonym fixed in a false foreign passport - Alice Lee, who can be perceived as a common Korean surname, and as a hint of her "unauthenticity", an imaginary essence visible to others, but mistaken for a genuine, - "Alice is it?" (Pelevin 2007, p. 20). And here the allusion to *Alice in the Looking Glass* by L. Carroll, where the genuineness of the main character is being questioned by Truylal, is insisted that she is "not at all", she is "not real" but "just dreaming" (Carroll).

Returning to the novel by V. Pelevin, we emphasize that the heroine's game of authenticity / imaginariness (none of the surrounding people even suspects who the mild-tempered girl is with the appearance of the nymph) generates the motives of duality (concealment of a real person under a different name as a result of crushing each other -equivalent names) and werewolves (concealment of the true essence under a false form). The vicissitudes of the virtual prostitute's life reduce A Huli with the FSB General Alexander. A young general handsome, magnificent lover and part-time wolf-werewolf, is another major character in the novel. In addition to the central werewolf characters, other creatures of "inhuman" origin from different clans are mentioned: foxes are A Huli's sisters (E-Huli and I-Huli), wolves from the flock of Alexander (the leader of the pack is Colonel Lebedenko, werewolf "out of the ordinary" - Mikhalych). And, if the characters-people of the novel seem to be real animals with their limited minds and desires, the werewolves symbolize what should be correlated with man - they are characterized by a rich inner world, a deep knowledge of life, an excellent education (the same properties, by the way, will inherent in vampires as the highest race, invisibly controlling the world of people, in *Empire V* and *Batman Apollo*).

Werewolf in the novel includes a huge mythological layer of culture of the East and the West. "The motif of werewolves is correlated with the archaic concept of "mutual engraving" of all sides and manifestations of reality" (Neklyudov 1992, p. 235), and hence determines the existence of real and "reverse" worlds. This allows V. Pelevin to develop the idea of co-existence of different worlds in a single space-time continuum and to continue the traditional topic of the possibility / impossibility of transition, crossing the spatial and temporal boundaries between these worlds. By the way, the prose writer resorts to Chapayev and Void, where the past / future coexist as the only possible reality of the protagonist, in *Empire V* and in *Batman Apollo*, in which the world of vampires is "included" in everyday reality, and in novel *Love for the Three Tsukerbrines*, where the "profane" world and the world of spiritual insights of the characters, overlapping each other, are nothing more than one of the levels of the game *Angry Birds*. At the same time, consideration in the *Sacred Book of the Werewolf* as a metaphor for concealing the true essence allows V. Pelevin to introduce the theme of a superscore, which is important for the ideological content of the whole work.

Fox A lives at the junction of different worlds, not belonging to any of them, and freely moves in this border zone. In the real world, it falls into a chain of semi-criminal situations, which, as we have already noted, deduce it to the special services and lieutenant-general of the FSB Alexander (Sasha Gray). He, in turn, turns out to be a werewolf, sending the reader not only to V. Pelevin's early story *The Problem of Werewolves in the Middle Strip*, but also to the well-known folklore character (in the novel the last parallel is played out in the episode when A Huli himself is to Alexander in a red cloak with a hood and a basket of pies, and he immediately tells her an anecdote about Little Red Riding Hood and Wolf (Pelevin 2007, p. 157). Noteworthy in this connection is the "rapprochement" of the eastern and western cultural contexts: werewolf foxes are most often associated with the East, occupying one of the key places

in the legends of China, Korea and Japan (it is enough to recall Kumicho from Korean folklore or the history of kitsune in Japanese mythology etc.), while the stories about werewolves are more widely distributed in the European cultural space - from mythology to mass culture.

The image of the wolf in folkloric representations, as we have already noted, was traditionally close to the mythological dog and was associated with the cult of the leader of the fighting squad and the ancestor of the tribe. Moreover, many myths about wolves unite "the idea of the transformation of man into a wolf", when he simultaneously becomes both "a victim (an outcast, a persecuted) and a predator (murderer, persecutor)" (Myths of the peoples of the world. Encyclopedia 1992, p. 242). Wolves attributed ambivalent properties: on the one hand, ferocity, cunning, greed, cruelty, and on the other - courage, loyalty, the will to win. The images of the wolf and foxes in mythological representations often had a negative connotation, but both animals could be transformed into beings of a completely different nature.

If Fox A's ability to werewolves is innate, then Alexander acquired it: his story, described in the story *The problem of werewolf in the middle lane*, claims that he "went out of the way" after a certain sign-signal, sleep, in which he saw a wolf. He is one of those who are called "elected", but his "choosiness" was the result of numerous trials, after which he gets the ability to transform, and was not given at birth. In Pelevin's novel the representation of characters capable of metamorphosis is somewhat different from the traditional ideas about werewolves: they are not evil spirits, they have never been subjected to sorcery spells or curses, they are quietly living among people visually from nothing different from them.

However, having a special, "unreal" component, Pelevin's werewolves could safely do without "games in people", they do not need to live a different life, but they do not. And this is the most important reinterpretation by the prose writer of the traditional mythological motif: werewolves are a different "race," they are stronger and more powerful than humans, they are given secrets that people are trying to unravel, because they are the representatives of the "other" world and already act in other conditions for a person. In the novel there are heroes who are formally werewolves who live in harmony with human being (despite their secret life). In the final, one of them remembers his destiny, and the other, "humanizing" in emotions, hesitates in the choice: "The marvelous power received from you as a gift, I will send to serve my country. Thank you for her" (Pelevin 2007, p. 367). Or: "I will go to the very center of the empty morning field, I will gather all my love in my heart, I will be dispersed and I will climb up the hill. And as soon as the wheels of the bicycle come off the ground, I will loudly scream my name and stop creating this world. There will come an amazing second, like no other. Then this world will disappear. And then, at last, I find out who I really am" (Pelevin 2007, p. 381).

The Pelevin's fox-werewolf, on the one hand, is a typical representative of its clan (it is cunning, hypocritical, insidious, capable of sending a wand, creating complex illusions in the minds of "clients"), on the other hand, carries features that sharply distinguish it from its own companions. She is beautiful, intelligent, not devoid of humanity and philanthropy; in contrast to her sister "T", she is "virtuous", for she respects the heavenly laws: "A virtuous fox must earn only by prostitution and in no case should use her hypnotic gift for other purposes - it is the law of heaven" (Pelevin 2007, p. 41). In addition, A Huli, although cunning, but good: "Your heart is not evil. It's as cunning as all foxes," the Yellow Master tells her. - A cunning heart is difficult to heal, forcing him to follow moral rules. Precisely because it is cunning, it will certainly find a way to get around all these rules and fool everyone" (Pelevin 2007, p. 344). The heroine, unlike fox-werewolves, does not live in a "pack", does not approach the cemeteries, uses its tail not for the purpose of kindling the fire (like mythological kitsune), but for creating a daze that plunges into illusions. This emphasizes her great "human" nature.

In addition, Pelevin's werewolves are capable of loving spiritually, and not bodily, only in the guise of a person, which also brings them closer to ordinary people. For A Huli, love becomes the guide that made her remember her own not imaginary, but true essence and mission. Thanks to love, she became overreact and realized that truth is in love; it is love that turns out to be the "key" to the heroine for understanding the essence of things and the world that she was looking for two thousand years. V. Pelevin again reinterprets the traditional myth about foxes, who appear as evil demons, granting the heroine not only the ability to philosophize, the ability to deeply love, but also a sense of remorse: "The fox feels the full weight of his dashing deeds; a stream of remorse, horror and shame for what was done" (Pelevin 2007, p. 179). Thanks to love, Fox A gains inner freedom, and therefore enters the Rainbow Stream with a lightened soul, and not with sorrowful experiences.

Werewolf Alexander (Sasha Gray) also appears more human than the "beast". His ability to werewolves acquired, so the human remains in its essence in a larger volume: he is simultaneously brave, responsible, independent, cruel and cunning. After the heroine's kiss, an amazing metamorphosis takes place: although he gains abilities that make him more powerful, a kiss does not bring him happiness. The prose writer, and this obviously, beats and "reduces" here the famous fairy tale motif of turning a monster into a prince from *The Scarlet Flower* and the motive of the resurrecting force of a kiss, subordinate, however, to the logic of reversibility from *Tales of the Dead Princess* - A brute Aulic essence, the cruelty of Alexander is replaced by despair, a balanced fury, which even more transforms him into a beast: "Love does not transform," Alexander says bitterly. "She's just tearing off the masks. "I thought I was a prince. But it turned out ... Here it is my soul" (Pelevin 2007, p. 283).

The image of Alexander with all evidence refers to the characters of Scandinavian mythology, personifying the elemental forces. Firstly, to the monstrous wolf Fenrir - the creature of Locke, an eerie beast from the Nordic bestiary, who was once tied up by the gods and put on the magical chain of the Gleepnir, but when he breaks free, he will swallow the sun, and this will mark the death of the gods. Secondly, the allusion to the werewolf Sasha Gray is the dog Garm - the mythological twin of Fenrir, who, in the final battle, fought with the god Tyr: "Garm barking loudly / at Gniphaheller, / the leash will not last - / the Greedy <...>" (The Elder Edda: The Epos 2001, p. 33). At the same time, the destructive forces of the mythological wolf and dog are intertwined with the qualities of Alexander the Werewolf and Alexander the Man, as a result of which the image of the dog P...as a watchman of Russia appears in the novel. Drawing a parallel between Garm and Fenrir as chthonic monsters and the dog P...ts, Pelevin emphasizes that in essence they are all guards (Garm - the underworld, P...ts - Russia), and with the onset of hard times will bring the same outcome. However, the dog will have a different fate from Pelevin than Garm or Fenrir: if Fenrir is killed in the last battle of the gods and giants ("The son comes here / the Father of Victories, / Vidar, for battle / with the beast of the corpse; / sword he pierces / for his father, he / Hodrudung's son rages in his heart" (The Elder Edda: The Epos 2001, p. 36)), the dog P...ts will come "to the offending country, and then fall asleep again in the snow, as the super-werewolf is immortal. Dog P...ts takes over the duties of both Fenrir and Garm, promising that he will change the world until he changes completely or dies himself. Alexander stubbornly searches for the truth, tries to understand things that are inaccessible to him, but when secret knowledge is ready to open to him, the hero turns out to be loyal to other values: the loyalty of the "pack" and the public duty becomes fundamental to him. Alexander as a demonic creation serves good, but resorts to unworthy methods. There is no desire to sacrifice everything for the sake of harmony for oneself and others, he is not able to distinguish love from selfishness or experience joy for another, and therefore can not enter the rainbow stream and acquire that higher knowledge that is accessible to A Huli. In the final of the novel, thus, it is emphasized that both wolves and foxes, and Alexander and A Huli have a different fate. Therefore, love between them is

impossible - it is tragic and knowingly doomed. However, it is love (the Christian postulate "love your neighbor as yourself" becomes dominant for the *Sacred Book of the Werewolf* written by the hero-werewolf) helps the heroes to comprehend their true self.

## 5 Summary

Thus, in the novel *Numbers*, a reinterpretation of animal images from various mythological traditions (the Meowth mass culture character and the cat from Egyptian mythology, the dualistic image of the donkey, the goldfish from folklore of Finno-Ugric peoples, the wolf) through postmodern techniques (irony, play, intertextuality) leads to V. Pelevin constructing his own author's neo-myth, not just possessing a "set" of myth-poetic archetypes, allusions and reminiscences, but offering the reader a holistic myth-poetic image a part of which becomes Stepa as a new mythological hero, passing through a series of trials and striving for higher "knowledge".

In the novel *The Sacred Book of the Werewolf*, the rethinking of myth by means of postmodern methods leads not only to playing with meanings, but also to a completely new understanding of archetypal images and motives. Through the playing of the motives and images of the Chinese (the motif of werewolves, the images of werewolves) and North German mythology (the images of the dog Garm and the Wolf Fenrir ironically bifurcating in the images of the dog P...ts and the main character of Alexander) Pelevin creates his own author's neo-myth, allowing, firstly, to comprehend the philosophical and cultural opposition East-West, "remove" the differences between which only the power of love is capable; secondly, the "eternal" problems of good, evil, love, death, and thirdly, to reconsider one of the key themes of his creativity "inter-transitions" between worlds.

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**Primary Paper Section: A**

**Secondary Paper Section: J**

## SEX-BASED DIFFERENTIATION OF MENTAL REPRESENTATIONS OF STUDENTS'

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The paper was developed with support under APVV project no. C-15-0368 called "Practice in the Centre of the Subject Field Didactics, Subject Field Didactics in the Centre of Practical Training".

**Abstract:** Every individual's knowledge is based on a semantic network that connects individual concepts into branching mental concepts. The submitted study deals with mental representation of curriculum content in students through conceptual mapping in teaching. Visualisation of students' internal systems of knowledge supports learning with comprehension and prevents mechanical teaching. The variable researched here was how students' sex influenced the resulting mental representation illustrated through their conceptual map...

**Keywords:** conceptual map, mental representation of curriculum content, semantic network, operationalization parameter.

### 1 Introduction

There is still only an insufficient number of experts examining the mental representations of students. This area either is subject to rather sporadic research or is analysed as part of other research activities. We believe that the current didactics and its specialised areas must be enriched using psycho-didactic, constructivist, cognitive, neurocognitive and neuropsychological disciplines. Such approaches allow us, as students create their mental maps and their interpretations, to observe not only how they structure acquired knowledge but also what their processes are for understanding curriculum content. In the current constantly changing world students must be able to individually construct and modify their knowledge structure.

#### 1.1 Learning

Learning consists of creating knowledge structures capable of receiving and storing new information. This process is activated when potentially meaningful material enters the field of cognition. It is then incorporated through a subsequent interaction into a higher-level conceptual system. When knowledge is placed into suitable cognitive structures at an adequate level, it is stored and usable in the future. If its placement is not suitable, new knowledge will be forgotten. Individuals with well-organized cognitive structures tend to store the information for long periods of time.

Every teacher should primarily focus on identifying how his/her students learn, remember information, plan their learning and retrieve information from their memory, make decisions, think and use individual cognitive processes. Leslie O. Wilson (2005) recommends considering several principles if we want to increase the effectiveness of students' learning. In particular, learning requires sufficient time, involvement of both cerebral hemispheres, suitable environment, adequate structure of information, respecting students' different learning styles, group work and practical activities in class.

Teachers cannot understand how students think, learn, and remember things if they merely stand in front of the class and explain the teaching material for 45 minutes. If we teach students how to understand information, think critically, contemplate and analyse subjects in broader contexts, we can help them throughout their lives.

#### 1.2 Preconcepts

Each student seeks meaning in things or facts through understanding. Gavora (2012) claims that understanding is based on knowledge about the world, skills and cognitive competencies. Reading with comprehension has gradually become one of the main means of collecting information since

students, consciously or often even unconsciously, interrelate different materials.

Comprehension stems from the knowledge acquired by a child throughout his/her life about the world, based on his/her previous experience. Knowledge represents a certain semantic network, where every piece of information has its own place and system. If learning is not based merely on repetition but is meaningful, then each new piece of knowledge will be incorporated into a child's existing knowledge structure. A piece of information is incorporated into the system once it is received. However, in many cases it is adopted inaccurately.

Hejny and Kuřina (2015) point to the fact that often information is only received but not grasped and included into one's knowledge structure. It is not easy to differentiate between these terms since there is a very thin line between storing and grasping. The structure of mental imaginations has been studied by Kosslyn (1994), Glasgow and Papadias (1992) Wong, Lu and Rioux (1989) and others.

Thagard (2001) offers an explanation of how we learn and understand concepts. He holds that concepts are a type of mental representation; however they cannot be seen as sets of typical features, but rather as an attempt at finding coherence between them and the world. This may, potentially, explain why certain students are not able to recall the logical sequence of the material. What if in their thinking they find a different coherence between concepts and the world? In such cases students' concepts will not overlap with the teacher's, and the material may not be understood, or potentially there may be misconceptions.

#### 1.3 Mental maps

Visual systems have been used in learning processes to capture and display knowledge from ancient times. Since 1972, one such system has been used as an instrument for examining significant changes. In the European geopolitical space, mental maps were first mentioned in 1965 by the German educator Richter, who examined structuring of teaching material.

Recently, experts have attempted to find a common term for the diverse approaches to structuring curriculum material. Terms such as cognitive maps, semantic maps, spiderwebs, and mind maps have been gradually replaced by the term of concept map for the output and concept mapping for the activity. Some authors, including Fisher (2004), Buzan (2011), Veteška (2009), prefer the term mental map.

The most significant contribution of social constructivism, as represented by L.S. Vygotsky, was to explain the relationship between mental structure and the socio-cultural environment. In didactics, cognitivism gave rise to concepts of developmental learning and scaffolding (Zankova, L.V., El'konina, D. B. and Davydova, V.V.), concepts of meaningful learning (Ausubel, D. P., 1967), inquiry-based instruction and discovery learning (Bruner, J., 1965), and prior knowledge assessment theory (Dochy, F. J., 1992, 1996).

Concept mapping was presented by Novak and Gowin in 1980. It is based on a theory of propositions that posits that all teaching material is constructed of hierarchically ordered propositions. A proposition is a knowledge unit presenting a connection between two concepts. Additionally, the text in the curriculum material is structured in a unified hierarchical scheme, where the most general concepts are in the upper part of the map and those at lower levels have a more specific character. Newer and increasingly elaborated concepts of mapping continue to be developed.

Teachers in a modern school should present their students the broadest array of possibilities that can assist them in their learning. For example, they can use concept mapping in

instruction. It is generally known that specific knowledge presented in isolation, without logical connections, that cannot be associated with other elements in the curriculum material, is the most difficult to remember.

The school environment primarily draws on the left cerebral hemisphere that dominates analysis, words, numbers, linear sequence and various types of progression. Our educational system continues to rely heavily on arranging chairs in rows; the notes primarily consist of words; exercise books routinely use lined paper, and students usually make their notes in bullet points and lists, and learn them by heart. All these processes rely more on the left hemisphere, which impoverishes the brain's potential. Working with mental maps is a necessary exercise since it helps one to assign new pieces of information to all information already stored in the brain more easily. The concept map helps to sort both new and old information naturally; moreover when creating a mental map one engages both hemispheres – the left for logical sequencing, words, concepts and numbers; the right for imagination and visualisation. It is precisely the activation and use of both cerebral hemispheres in one's brain that contributes to simpler remembering and more effective learning. Novak (1990) claims that the map serves to capture the meaning of certain concepts through a graphic representation of their mutual relations. It also must be noted that mental maps are a dynamic rather than static structure.

## 2 Differences between boys and girls in the educational system

Male and female brains demonstrate small but observable differences, which are often overrated or misinterpreted since the scientific research of differences between males and females is almost always accompanied by heated discussions. There are two major lines of interpretation of this issue. One group of experts explains the differences in male/female behaviour and intelligence mainly through cultural influence and the socialization process. The second group attributes those differences mainly to biological factors and chromosomes.

Male and female brains demonstrate subtle differences that probably emerge in the pre-natal period as a result of sex hormones that lead to an individual brain's masculinisation or feminisation.

However, many studies hold that the differences in behavioural and cognitive functions in men and women are barely identifiable. Stereotyped thinking claims that men are usually more aggressive and are better in mastering tasks involving spatial skills; women tend to be more empathetic and outscore men in more demanding verbal memory and language skills tasks.

Women often point to a number of both social and educational barriers that continue to exist even in the 21st century, preventing them from establishing themselves in technical areas dominated mostly by men.

Tindall and Hamil (2003) have identified main reasons why women tend to choose to study humanities rather than technical subjects. This choice is mainly influenced by social factors, stereotypes, traditional gender roles, and a relatively higher level of empathy and sensitivity. Those determinants tend to be mentioned in the context of women's choice to stay away from predominantly male disciplines. This work follows up on Heffler's conclusions (2001) on existing differences in the way men and women learn. The author claims it is evident that traditional education does not support diverse learning styles of students depending on their sex.

Research in education focused on students' learning styles primarily concentrate on identifying the relation between a student's learning style and the material, or between the learning style of a student and instruction style of a teacher.

So far, little research has examined the impact of brain development on one's learning style and his/her preferred learning strategies.

Severiens and Dam (1997) used ILS questionnaires (Inventory of Learning Styles) to examine the level of identification of a student's learning style with his/her biological sex. Androgynous individuals, typified by their high level of femininity as well as masculinity, were characterized by a high level of effort to understand the meaning of the curriculum material. Their learning strategy was to immerse themselves in the curriculum material; they were independent, and interested in the subject. Masculine individuals acted more self-confidently and ambitiously, and mostly with internal motivation. Feminine types had a tendency to double-check knowledge while learning, perform more thorough analysis during the learning process, and rely on external regulation. Both those extreme types expect to be pushed into learning by external factors, i.e. external motivation was significantly predominant.

Lorenzo et al. (2006) describes seven basic teaching strategies that will allow the teacher to help his/her pupils to balance out the differences between boys and girls in instruction. Those mainly include integrating everyday life experiences and student interests (of both sexes) into instruction; using basic knowledge and working with students' existing preconcepts; an interactive environment enhanced through cooperation and communication; activities aimed at enhancement of students' understanding; activities developing key competencies in both sexes; alternatives in discussions among groups resulting from differences between sexes; and structuring of material and accepting diversity in the frequency of responses of both sexes.

## 3 Research

The research was carried out between October and November 2017 at a secondary grammar school in Nitra ("gymnasium"). During the research period, we analysed students' mental representations through concept mapping. The sample consisted of 115 students (four classes of the second year at a four-year secondary grammar school), of whom 49 were boys (43%) and 66 girls (57%).

### Research methods and measurement of research data

The research instrument was a test of concept mapping. We examined five parameters of operationalization: number of key concepts in the map – PKP, frequency of concepts – FP, number of hierarchies – PH, quality of hierarchies – KH, and consistency – KONZ; the higher the score in any category, the better the results. The students had to develop their concept map on a thematic area of history (humanities).

The differences in outputs of concept maps made by boys and by girls were assessed using profile analysis. Profile analysis is a multi-dimensional statistical method, equivalent to a multivariate analysis of variance (MANOVA) for repeated measurements. The prerequisites for profile analysis is a multidimensional normal distribution of the vector of variables in the considered groups (boys, girls); homogeneity of variance – co-variant matrices between groups; and linear dependency between the variables.

Canonical correlation analysis was used to examine correlation relevance among variables from the LSI questionnaire and variables resulting from concept maps. Calculations were made in the R programme ([www.R-project.org](http://www.R-project.org)), using profileR, CCA, ggplot2, MVN, and corrgram programme packages.

### Profile analysis

The research goal was to verify if there are statistically significant differences between boys and girls when it comes to successful mastering of a text with concept maps. The first step was to verify whether profile analysis was an appropriate research method.

Equality of variance-covariance matrices in boys and girls was verified through Box's M-test. Results of this test do not reject the hypothesis on equal variance-covariance matrices ( $F(15;42796,37)=0,72; p=0,766$ ). Bartlett's test of sphericity was used to test the hypothesis on the variables' unit correlation matrix. The latter results lead us to reject this hypothesis ( $X^2(10)=370,06; p<0,001$  due to sufficiently strong linear correlations between the variables).

The correlogram in Figure 1 shows correlations among five variables. We can see that all the correlations are positive, statistically important and relatively high.

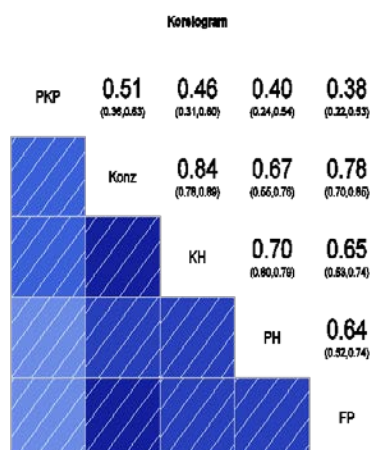


Figure 1: Correlogram

The profile analysis results of lead us to reject the hypothesis on the linearity of profiles  $F(4;110)=3,19; P=0,019$ ). The hypothesis on linearity of mean values of variables for boys and girls is, however, not rejected ( $F(1;113)=1,89; p=0,172$ ), since the differences between boys and girls are not statistically significant. The third hypothesis on the flatness of the profiles ( $F(4;111)=396,79; p<0,001$ ) is rejected.

Table 1: Descriptive statistics of variables in test of concept mapping by sex.

Sex	Concept maps	Average	SD	Median	Min	Max
Men (n = 49)	PKP	2.6	1.3	3	0	5
	FP	33.1	20.1	27	6	84
	PH	5.1	2.8	5	0	10
	KH	2.7	1.3	3	0	5
	KONZ	4.8	2.6	4	1	10
Women (n = 66)	PKP	3.0	1.2	3	0	5
	FP	36.2	18.2	31	9	87
	PH	5.6	2.6	6	0	13
	KH	3.5	1.2	4	0	5
	KONZ	6.3	2.3	6.5	1	10

(SD – significant deviation), FP (frequency of concepts), PH (number of hierarchies), KH (quality of hierarchies), KONZ (consistency)

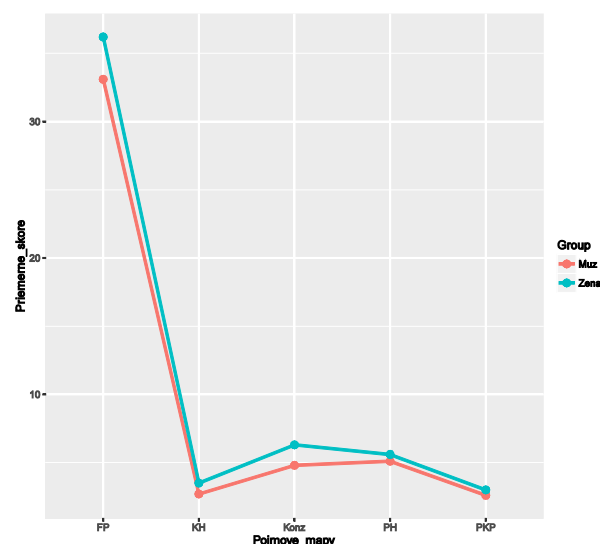


Figure 2: Profile graph for boys and girls

The above graph in Figure 2 Profile graph for boys and girls illustrates that the differences between boys and girls in making concept maps are not statistically significant. However, from the pedagogical perspective there are several important deviations that need to be considered carefully.

Development of common concepts is a relatively lengthy process with an emotional background, occurring under the impact of individual experience. On the other hand, development of scientific concepts starts with their verbal definition and subsequent operations with the given concept, ultimately resulting in understanding a logical relation among concepts adopted. The most significant differences we observed related to the parameter of operationalization of concept frequency (FP) where it is observable that the girls incorporated more concepts into the concept map than boys. This item included the absolute number of concepts in students' mental representation (related to the given teaching material – including inter-disciplinary concepts or those directly related to the curricula but not mentioned during instruction). This may, in our opinion, be explicable by the girls' more robust vocabulary. Any student, in order to define the material's main concepts, must penetrate into the content of the text through profound analytical activity. He/she should, first of all, understand the links among individual pieces of information and integrate them from different parts of the text.

Concept definition does not facilitate sufficient comprehension of reality. Correct definition of concepts does not necessarily mean that the student has understood the curriculum material. All students' answers must be analysed in more detail – in this case, subjected to further parameters – such as placing concepts into hierarchy and their consistency.

There was no significant difference in number of hierarchies (PH) between the two genders. For structuring concepts into hierarchies, we assessed the level of links/relations, i.e. the type of link between lower and upper (mutually related) concepts. The students may use hierarchy to express links between individual pieces of information within one topic that is the subject of a concept map.

Interestingly, boys were able to sort a lower number of concepts into approximately the same number of hierarchies as girls; the girls had a much higher number of concepts to structure and systematize. However, the lower number of concepts listed by the boys had a negative impact on other operationalization parameters. When making hierarchies, one must realize individual concepts and identify links between them. Practically, he or she must find the concepts, and compare and connect them.

Such text interpretation requires a higher level of independent consideration of a student, and therefore he/she must use information from the given material but also from other sources.

The conclusion may be that although the girls managed to list more concepts, their sorting into hierarchies was more challenging. This could be the result of a lower level of understanding of the links among concepts, or of not understanding the meaning and content of individual concepts. For a student to be able to create a hierarchy and identify the most important links, he/she needs to have the highest operational level of knowledge: evaluation and synthesis.

Further, the mutually related parameters - quality of hierarchies (KH) and consistency (KONZ) were examined. The quality of hierarchy, in our context, represents the level at which the concepts are connected into a hierarchy: their mutual links and connections, as well as connections with key concepts. Consistency represents the quality of a concept map created by a student. In both parameters of operationalization the girls scored higher, i.e. their assessment was better.

The mental representations of the girls as captured through concept maps represented the curriculum material in a comprehensive way, while the maps of the boys more often only captured elementary information about the material. The girls' concept maps summarized not only the current teaching material, but also material from the previous thematic areas. Therefore, the overall quality of concept maps created by the girls (considering individual criteria of a given parameter) was at higher level.

New knowledge is meaningful for a student only when it is incorporated into previously existing knowledge structures. The depth and scope of adoption of a concept is an important factor. This process was more prevalent in girls in our research.

Students differentiate based not only on the quantity, character of the knowledge and information they bring to school, but also on how they receive the new knowledge and incorporate it into the knowledge structures. Equally, it is important to consider the uniqueness of understanding the teaching material. From the teacher's perspective it implies a need to diagnose what creates the basis of a student's knowledge. Also, the teacher should respect student's independent perspective on the curriculum material. The material itself plays a significant role in the process: the content and stimulation of the text, and its scope and complexity from the student's perspective.

If the teacher accepts the individual differences among students that can manifest themselves through their learning style and use of strategies for material comprehension, and respects and knows the level of students' preconcepts, it can be said that such a teacher positively supports the perception of students' skills. Our research did not find statistically significant differences between the two sexes, however the teacher should strive to encourage the thinking of each student, confrontation of different interpretations, and the drawing of conclusions.

#### 4 Conclusion

This research aimed at analysing and reviewing the ability of students to capture mental representations of content in certain curriculum material through concept mapping with respect to their gender. The research offers interesting findings for pedagogical practice, since concept maps seem to be a suitable method for identifying the level of knowledge in students. Therefore, they can be used as a reflective tool for a teacher or a self-reflective tool for students.

Students must be taught how to independently create their own mental representation of a certain thematic area, or of information, that has a stable place in their knowledge structure. Each person is unique, with an individual learning style and unique way of processing information. The teacher as organizer

of instruction should take those factors into consideration regardless of whether students are boys or girls.

We believe it is important to enable students to use their own ways of explaining, interpreting and collecting facts, to work with different types of information of their choice, compare and analyze acquired knowledge, and encourage them to reflect critically on their own activities.

It is important that each student understand a given subject, is able to link it with acquired knowledge from other study areas, work with it, and apply it in everyday life. If a teacher demonstrates to the students how to structure their knowledge simply, it will have a positive impact not only on the quality of the knowledge, but also on their attitude towards learning.

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#### Primary Paper Section: A

#### Secondary Paper Section: AM

## QUANTIFICATION OF EDUCATIONAL PROCESS PARAMETERS USING NEW TECHNOLOGIES

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Scientific Paper elaborated within the framework of the projects KEGA 026 EU-4/2018.

**Abstract:** One of the criteria for a student's acceptance into our university is his/her success in the entrance testing. The aim of this work was to create a model for measuring the effectiveness of the pedagogical process using IT support. Utilising the mentioned model we hope to create an educational system aimed at the reduction of disparity in educational habits and skills from the chosen areas of economic studies targeting quantitative methods. The entry test is needed for the subjects of mathematics as well as economics and foreign languages. In this article we have proven that there exists a correlation between the entrance test results and the evaluation results in the subject of mathematics for the winter semester of the first year of the bachelor studies

**Keywords:** model, Blended learning, teaching, effectiveness, mathematics, education

### 1 Introduction

Universities are also influenced by new trends in education. The content and type of subjects are ever changing and adjusting to the demands of the students and the companies which are perspective employers of the graduates. Education is a complex process representing more than just a change of information between the teacher and the student. Measurement of added value in education has recently become a sought-after tool for quantitative assessment of educational institutions. The added value expresses a degree of knowledge that a student has acquired over a period of time by actively participating in the teaching process of that educational institution. The quality of education determined by this method is quite often discussed (Harris 2011, Krpec and Burda, 2011, Mura 2017, Radu 2018, Anyakoha 2018, Kaclik et al. 2015). The measurement of added value consists in the fact that before and after completing the educational process, the knowledge of the given student, respectively, groups of students in a suitable form of test, the content of which corresponds adequately to the curriculum. The results obtained are then compared and evaluated on the basis of a statistical model. The desired conclusion is the information indicating the "scope" of newly acquired knowledge (Braun 2005, Rogers et al. 2011, Buleca 2014). The continual monitoring of various parameters of the process (using more or less sophisticated models and/or using IT systems) is currently a normal part of the management support in many organisations. With its help it is possible to discover critical places in the processes and subsequently to take measures to eliminate its negative influence. A similar situation exists in the educational process as well. In today's information loaded era of addiction to computers and the internet it is necessary to adjust the educational process so the student is able to use his/her knowledge without any problems in everyday practice. The use of computers, mobile phones or other technologies is taken as a matter of course by the younger generation. Applications like Facebook, Viber or Whatsapp are considered a commonplace communication channel. But the companies require something more from their employees (Žulová, 2018). They have to be able to search and manage the information in the shortest time possible, so they have to navigate around the internet quickly and effectively. They have to present their results and they have to work in teams which implies learning the job division and responsibility for the other members of the team. One of the possibilities for how to prepare a student for managing real life situations is to include informative technologies in the syllabus. The advantages of a computer supported syllabus (Bajtoš, 2006; Hic & Pokorný, 2004; Turek 1996):

Studying at one's own pace

Chance to offer immediate feedback

Option to go over the same materials and exercises many times according to one's need

Mistake notification. A student feels psychologically less offended when during their learning process the mistake notification comes from a computer programme than from a teacher or a classmate

Objectivity of grading

It is notable that the use of technology in the education process does not guarantee the success of it per se. It is necessary to find the right extent and the best way of incorporating these technologies.

It is also important to understand that upon entry into the university the students do not have great skills in the use of informative technologies for their self-education and the internet is more the means of fun and relaxation for them.

One of the basic methods utilised in the educational process is e-learning. The new e-learning software products allow the monitoring of the individual phases of student's learning on an individual level. They enable interactive testing of his/her skills and knowledge. With appropriate models it is subsequently possible to design such educational processes which can help the student in the most effective way to understand the explained part of syllabus. There are significant differences observed in the readiness of the applicants of various technical and economic universities (Rozsa, 2018). Different departments have noticed a decreasing trend in exam results in the field of mathematics. Regarding the area of quantification methods, scientific and technical developments as well as the current developments in economics have resulted in increasingly higher demands on a university student's knowledge. The number of lessons in mathematics or informatics (or other quantitatively oriented subjects respectively) differ in various types of secondary schools.

E-learning represents a method of education, or propagation of information, via informative technologies. At the same time it offers a database of information in the form of educational materials available through this learning. It can have several forms and thus can be tailored to the individual needs of the student, groups and organisations. The most acclaimed type of e-learning is the so-called asynchronous e-learning. It includes the self-study of the students who can choose what information, when, and at what pace they are going to receive it. The student adjusts the learning process to his/her needs and habits. Horton defines e-learning as the means of using the electronic technologies to acquire educational experience, i.e. how is this experience formed, organised and created. Graham sees the main advantage of e-learning and the expected benefit being based on the greater accessibility of information considering two aspects (time and space). E-learning is education enabling free and unlimited access to information. Blended learning is a special form of education combining the presentative form of teaching with the electronic and web applications, mostly e-learning with the aim to suppress its negatives and to reach a synergy of benefits from both approaches. Blended learning is the subjects of many recent scientific works (Garrison & Kanuka, 2004; Schroeder & Oakley, 2005; Dziuban et al., 2004; Osguthorpe & Graham, 2003; Graham, 2006; Eger, 2005; Lewis et al., 2006). Graham (2012) presents the existing models of blended learning and discusses the importance and usefulness of BL for the present and future. He states three reasons why people use to choose this method: To improve pedagogy, Easy access and a high degree of flexibility, Cost effectiveness.

### 2 Empirical background

This experiment was inspired by several things. The first was the results of the entrance exams for the academic year 2017/2018.

Compared to the previous year the students worsened by 2.25 points which could be reflected on the quality of our subject (mathematics). Our decision was not to submit and decrease the demands of the subject which would lead to a decrease in quality in other subjects. Because this subject was taught by two teachers it is not possible to devote individual attention to every student in a way corresponding to his/her needs and knowledge. That means that when we wanted to add new methods into the syllabus we had to consider not only the quality of education but the demand on time from the teacher's perspective.

A mentioned earlier, the analysed subject is taught in the first semester of the first year. It means that the students do not have enough time to create groups where they can work together and help each other. The majority of students are still strangers to one another and the process of adaptation can take up to several weeks so the student is left to his/her own devices, at least in the beginning.

The other reason for this experiment was to prepare the students for their further studies and job practice. During the studies at our faculty the students are required to participate in various projects - they have to be able to choose partners, divide tasks, prepare the time and work schedule, research the necessary information, present their results and also carry the responsibility for themselves and other members of the team.

The first phase was focused on the secondary school mathematic skills observed within the entrance exam and mathematics itself. From this phase we can already evaluate the first results of our work. We worked with two groups of students where we monitored and compared their results from the entrance exam and subsequently from the subject of Mathematics listed in the first semester of the first year of the bachelor studies. To obtain the most accurate results we considered only the students who qualified with these two conditions: firstly they underwent the entrance exam in that academic year and became our students. Secondly, they had participated in the subjects during the whole length of the semester. We disregarded the students' evaluations who were at the entrance exam but did not become students of our faculty. That is the reason the students' numbers in the further data analysis are the same. The students entering our faculty had different levels of knowledge at the beginning of their study. The first group of students was tested as to whether the level of their knowledge from the entrance exam was directly connected to their results in the subject of Mathematics. It was the entrance exam for the academic year 2016/2017 and the subject Mathematics was taught during the winter semester of that year. The second group of students underwent the same testing but in the academic year 2017/2018.

### 3 Metodology

To help the students reach the required performance we decided to employ certain innovative methods using mostly computer support this academic year. At the first lesson of the class the students were divided into teams. Formation of the team was within the competence of the teacher and the main objective was heterogeneity. Every team consisted of students who were stronger and weaker in mathematics, according to their entrance exam results. Then a course was created in the environment Moodle, enabling the communication between the teacher and each student at the same time and also between the students themselves. The first step towards better results was the student's 'self-testing'. Beginning with the second lesson of the semester, every student was weekly given a series of tasks to solve, pertaining to the week's lesson. After marking the correct answer the student could continue with another task. Marking the incorrect answer lead to 'penalty tasks' aimed at practicing the problem more. The student was able to educate himself/herself at home without any time stress. At the same moment, the teacher got feedback about which tasks were causing the most problems and thus enabling a better choice for further lessons.

We also employed the teams differently. Every team was regularly given a certain task. They always had two weeks for it.

The subject Mathematics had two 45min lessons a week for a period of thirteen weeks (so-called 'lab classes'). This was extended by two additional 45min lessons in the form of a lecture every week. All students were there together and there they presented their results. The teacher's responsibility was to evaluate and grade the work and to intervene only in case the students could not help themselves. The tasks were of various natures. Some focused on expanding the lesson, some were an example from real life or to practice the problematic areas learning. The third compulsory part was to solve a certain number of mathematical sums. Their amount varied according to the difficulty of the topic - sometimes it was only two or three. Considering there were 124 students, the acquired database of tasks per each topic was significant. On top of that, under the teacher's supervision, they were able to discuss it with the author of the solution about his/her used procedure, to point out the mistakes or to suggest a different solution and also to ask the teacher for help.

### 4 Data analysis and results

The students come to our faculty from various schools and towns. Most of them have graduated from secondary school that year but there are some who graduated several years before. Trade academies (a type of secondary school) do not even require a final exam in the subject of mathematics. All of this contributes to the different starting level for each student, which can be an advantage or disadvantage for his/her further study. In the first part of our research we deal with the question of whether there is a connection between the results of the entrance exam from Mathematics to the results of the subject during the first semester. In both cases (the entrance exam and the final semester evaluation) a student could receive 14 points. We monitored seven criteria awarded them with 0, 1 or 2 points. If a student received 0 points it meant that he/she did not meet the required expectation. The acquisition of 1 point meant that he/she did meet them and 2 points represented overachieving success, managing the problem to its full extent. This point system also corresponds with the demands of the accreditation of our faculty and is included within the system of international accreditation AACSB. AACSB's View of International Accreditation is that faculties with an economic and managerial focus voluntarily determine entry into the process. As a result of this voluntary process, obtaining AACSB International Accreditation is an important public statement that their leadership, educators, staff and students have decided to be responsible for the above expectations. They publicly express their willingness to undergo continuous self-evaluation and an external review process. Basically, they declare their intentions to use this process to ensure continuous improvement, quality and appropriateness of the teaching methods used.

There were 131 students participating in this analysis, all of whom underwent the entrance exam and also studied Mathematics in the academic year 2016/2017. The results are stated in Table 1.

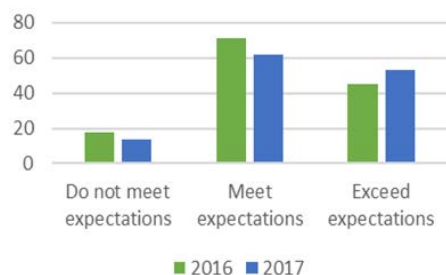
Table 1. Descriptive statistical indicators of continuous performance for the year 2016

	Entrance exam	Mathematics 2016
Sample size	131	131
Mean	7,40	8,08
Standard error	0,252	0,283
Median	8,00	7,00
Mode	7	7
Standard deviation	2,884	3,239
Variance	8,320	10,493
Skewness	-0,575	-0,508
Kurtosis	0,935	0,419
Range	14	14
Minimum	0	0
Maximum	14	14

Source: own processing

We decided to adjust our usual teaching methods based on the above-mentioned analysis and the fact that the point average for the entrance exams of 2017/2018 was 5.15 point, which represented 36.8%. In that academic year we evaluated 124 students and the results are stated in Table 4 and Fig. 1.

Figure 1. Results from Mathematics for the years 2016 and 2017



Source: own processing

Table 2. Chi-square test of independence – The comparison of the total continuous performance for the year 2016, N=131.

Mathematics		Entrance exam			Sum
		Do meet expectations	Meet expectations	Exceed expectations	
Do not meet expectations	NP	12	4	0	16
	NO	2,2	10,9	2,9	16,0
	NPr	75,0%	25,0%	0,0%	100,0%
	SR	6,6	-2,1	-1,7	
Meet expectations	NP	5	62	4	71
	NO	9,8	48,2	13,0	71,0
	NPr	7,0%	87,3%	5,6%	100,0%
	SR	-1,5	2,0	-2,5	
Exceed expectations	NP	1	23	20	44
	NO	6,0	29,9	8,1	44,0
	NPr	2,3%	52,3%	45,5%	100,0%
	SR	-2,1	-1,3	4,2	
Sum	NP	18	89	24	131
	NO	18,0	89,0	24,0	131,0
	NPr	13,7%	67,9%	18,3%	100,0%
		$\chi^2(4) = 86,938, p < .001$			
		Cramer V = ,576, p < .001			
		rS = 0 ,611, p < .001			

Source: own processing.

N<sub>P</sub> – observed frequency, N<sub>O</sub> – expected frequency, N<sub>Pr</sub> – relative observed frequency,  $\chi^2$  – chi-square test of independence, SR – standardized residuals, Cramer V – power indicator, rS – Spearman's correlation coefficient, p – value  
 $1.96 \leq SR < 2.58$  ( $p < .05$ );  $2.58 \leq SR < 3.29$  ( $p < .01$ ),  $SR > 3.29$  ( $p < .001$ )

We compared the overall performance score of students in Mathematics in 2016/2017 with their overall score of Entrance exam v using Student's t-test for two dependent selections. Based on its results, we found that there is a statistically significant difference between the overall performance score of Mathematics students in 2016/2017 and their overall score in entrance exam 2017/2018,  $t(130) = 3,600, p < .001$ . In particular,

it has been shown that students achieved entrance exam (AM = 8.08, SD = 3.239) significantly higher than entrance exam (AM = 7.40, SD = 2.884).

However, it should be noted here that, despite the point difference, students in both subjects achieved on average a performance that met expectations ( $5 \leq AM \leq 9$ ). Thus, the statistically significant difference found is not significant in practical terms. The results are summarized in Table 3.

Table 3. Student's t test on two independent samples – The comparison of the total point evaluation from Entrance exam and Mathematics for year 2016, N=131

	Description			Student's t test on two independent samples		
	AM	SD	SE	t	df	p
Mathematics	8,08	3,239	,283	3,600	130	<,001
Entrance exam	7,40	2,884	,252			

Source: own processing.

AM – arithmetic mean, SD – standard deviation, SE – standard error of estimate, t – Student's t test on two independent samples, df – degrees of freedom, p – significance level

From all this we conclude that after the experiment (which is a part of a project of our faculty) it is evident that the level of students' knowledge form mathematics increased without any further requirement necessitating an additional extent in weekly lesson time. This experiment led the teaching team of our faculty to develop or to modify the existing models focusing on the quantification and monitoring of the effectivity parameters of the pedagogical process.

Table 4. Descriptive statistical indicators of continuous performance for the year 2017

	Entrance exam	Mathematics 2017
Sample size	124	124
Mean	5,15	8,21
Standard error	0,241	0,274
Median	5,00	8,00
Mode	4	8
Standard deviation	2,662	3,081
Variance	7,085	9,493
Skewness	0,130	-0,449
Kurtosis	0,106	0,023
Range	13	14
Minimum	0	0
Maximum	13	14

Source: own processing

## 6 Conclusions

Each school should have its own quality management system, focusing on all learning processes. It is the employees who should be actively involved in the realization of the changes taking place on the campus. The school should provide regular improvement, in the form of various training and consultations, which should contribute to improving the learning process and improving students' knowledge. Only then can we consider the level of education of teaching staff to be effective if students are regularly trained in their field and bring positive benefits to society.

Improvement in the results of the subject of Mathematics by incorporating new pedagogical processes leads us to further our efforts in the implementation of the same for the subjects of Microeconomics, Operative analysis and Econometrics.

The creation of complex teaching materials accessible via the portal Moodle. The easy accessibility of the portal Moodle (without any necessary expenditure) is the precondition for further development of the experiment's focus and also for the cooperation between the faculties exchanging of monitoring information. The problem of very heterogeneous and ever decreasing knowledge of university applicants, mostly from mathematics, is a problem to face for the majority of Slovak economic faculties in the very near future. The result of our research can be the foundation for the cooperation between the universities but also for the relationship between universities and secondary schools. The results are usable for other subjects in the future, wherever the development of a students' skills is important for economic and trade practice. Because they require the graduates' ability to work actively with the information in any form, it suppresses the extent of memorisation of the information taught. The benefit will also be the appearance of publications which aggregate the individual theoretical and experimental outputs of our research. Last but not least will be the added bonus of the development of the student's self-evaluation system, designed for their internal testing. The student will be able to verify his/her extent of knowledge individually by a simulation of the exam conditions. Quantification of the process' effectivity will enable the teachers to actively use IT support for the creation of all parts of the pedagogical process. It will help them to eliminate ineffective administrative activities and focus their attention on the pedagogical process itself.

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# TRILOGY OF EXISTENCE: A STUDY OF VIRGINIA WOOLF'S MRS. DALLOWAY

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**Abstract:** This paper aims to analyze the trilogy of existence revealed by Virginia Woolf in *Mrs. Dalloway* from the perspective of the theory of existentialism. Focusing on the subjective individual, Søren Kierkegaard divides life into three existence spheres: the aesthetic, the ethical and the religious. The first two parts of this paper deal with two main characters of *Mrs. Dalloway* "Richard Dalloway" as the representative of aesthetics and "Clarissa" as the representative of ethics in this novel. Finally, the possibility of religion is to be investigated which is divided into three parts based upon Kierkegaard's philosophy: The religious A, the Religious B and death as the brightest point of religion. The outcome suggests the limitations of each sphere for human being. Furthermore, it shows that the characters in *Mrs. Dalloway* cannot get any salvation by focusing on just one sphere and overlooking the others spheres.

**Keywords:** Virginia Woolf, *Mrs. Dalloway*, Existentialism, Søren Kierkegaard

## 1 Introduction

Virginia Woolf (1882–1941) wrote experimental novels notable for their expressive form and poetic language. "While her primary reputation is that of an experimental novelist, her collected essays and her two book-length essays, *A Room of One's Own* (1929) and *Three Guineas* (1938), establish her importance as a feminist and cultural critic" (Shaffer 401). Her experimental aesthetic, her founding of the Hogarth Press (along with her husband, Leonard Woolf), and her membership in the Bloomsbury Group, placed her at the center of British modernism in the first 40 years of the twentieth century. The form of *Mrs. Dalloway* (1925), Woolf's second experimental novel, makes use of focalization that is handed off like a baton in a relay between characters who hear the same sounds or view the same sights over a single day in London. In this way, the novel formally echoes the thematic balance between the intimacy of love and friendship that connects individuals with both the necessity and the ache of isolation. In her diary, Woolf wrote, "I want to give life and death, sanity and insanity; I want to criticise the social system, and to show it at work, at its most intense" (Woolf 2: 248).

*Mrs. Dalloway* offers a narrative structure that employs multiple voices through which it tends also to foreground ontological issues such as "What is the mode of existence of a text? and what happens when different types of world are placed in confrontation?" (Smith 149) Focusing on the subjective individual, Søren Kierkegaard divides life into three existence spheres: the aesthetic, the ethical and the religious. "What he is trying to communicate through his doctrine, however, is that there are only a finite number of values in human life. So while people may live their lives, their values, systems are uniquely, distinctly tailored to their own personalities and lifestyles, there are only a limit number of fundamental values Commitments and organized ideas" (Valone 10). The relation of these three spheres to each other is hierarchical, with the individual striving to move from the esthetic, where "life is typified by the figure of dandy or seducer to ethical which is best observed in the kind of serious commitment one might make in marriage" (Abrams 215), and on to the highest stage, the religious. In the move to the religious sphere, as in *Either/Or*, "The stage is achieved when the individual personality finally chooses itself or receives itself" (Kierkegaard 181). This paper at first two parts will deal with two main characters of *Mrs. Dalloway* "Richard Dalloway" as the representative of aesthetics and "Clarissa" as the representative of ethics in this novel. Finally, the possibility of religion is to be investigated which will be divided into three parts based upon Kierkegaard's philosophy: The religious A, the Religious B and Death as the brightest point of religion.

## 2 The Aesthetic Sphere

The aesthetic life is defined by pleasures, and to live the aesthetic life to the fullest one must seek to maximize those pleasures. Francis Lescoc states that "One having no fixed principles, except that he means not to be bound to anything. He has but one desire, which is to enjoy the Sweetest of life, whether it is purely sensual Pleasure or more refined" (34). However, the aesthetic life-view is characterized by subjectivism, hedonism, and nihilism. It seeks personal pleasure, but lacks any integrating narrative or ultimate meaning. "The paradoxical round-robin of characters in *Mrs. Dalloway* creates a "ghostly" quality in the way that it applies indirect communication" (DeMeester 651). Thoughtless traditionalism and unthinking political conservatism of Richard Dalloway—as the central character of aesthetics in this novel—reveal that he is actually a ghost-of-a-man in relation to both political world and his wife. He is a man driven primarily by convention and appearances, not a man of action. Therefore, natural state of the aesthetic sphere of Richard Dalloway in this section is to be analyzed in his public and private lives and to be compared with his love rival Peter Walsh.

The first relationship to be investigated is that of Richard Dalloway in relation to the public sphere (his political life). Specifically, though one might think that Richard's position as political figure would place him in an emblematic role within the ethical sphere—the sphere associated with duty and social obligations—Richard Dalloway's thoughtless traditionalism and unthinking political conservatism reveal that he is actually a ghost-of-a-man in relation to both the political world and his wife. His lack of traction in life places him into the company of those who fail to exhibit "the courage to be as a part" (Tillich 84). He is a man driven primarily by convention and appearances, not a man of action, thus, his profession of political discourse is highly ironic. Insofar as he "shrinks from devoting [himself] to [the ethical sphere]," (Kierkegaard 112) Richard Dalloway is a character that resembles an individual who remains confined to the aesthetic sphere. This resemblance finds "representation in his public life by way of his politics tinged with self-interest" (Zwerdling 71). An example of this sort of collectivist thinking occurs when Richard Dalloway hears from Dr. Bradshaw of the suicide of Septimus Smith. Richard's response is not one of compassion toward the man or his family; Richard instead resembles one acting within the aesthetic sphere, addressing the issue by refracting it through politics: he refracts the issue through an abstract conversation about a "provision in [a] Bill...concerning the effects of shell shock," (Woolf 200) one of which is the suicide of Septimus Smith, who was a person, not an abstract effect.

With regard to the tensions within the narrative voices of the novel, Richard's distance from Septimus Smith in his tragedy stands in counter-point to his distance from Clarissa in her tragedy. Thus, Richard Dalloway's ghostly nature is represented further by his failure in the personal sphere. His spectacular moment in the novel is his failure to say "I love you" to Clarissa. Richard Dalloway's presence in the life of Clarissa and in the lives of those around him is most notable as an absence—he is a ghost-of-a-man. Julia Watkin notes, Kierkegaard believes that the person in "unconscious despair is for a time, superficially happy in a life directed toward temporal goals such as making money or achieving political power. When the goals begin to fail to satisfy, that person tries to deal with the problem as something external needing to be fixed" (Watkin 65). In the sense that he fails to see the significance of his place in the life of Clarissa, Richard Dalloway resembles the individual who in unconscious despair occupies himself with trivial details and fails to consider deeper issues relevant to the ethical-religious possibilities.

Richard thinks of telling Clarissa that he loves her, "in so many words" (Woolf 98) in reaction to his remembering Peter Walsh once having done so. His reactionary and romanticized version of Peter Walsh connects him to the person in despair who lacks of a true sense of self.

Peter Walsh! All three, Lady Bruton, Hugh Whitbread, and Richard Dalloway, remembered the same thing—how passionately Peter had been in love; been rejected; gone to India; come a cropper; made a mess of things; and Richard Dalloway had a great liking for the dear old fellow too. Milly Brush saw that; saw a depth in the brown of his eyes; saw him hesitate; consider; which interested her, as Mr. Dalloway always interested her, for what was he thinking, she wondered, about Peter Walsh? That Peter Walsh had been in love with Clarissa; that he would go back directly after lunch and find Clarissa; that he would tell her, in so many words, that he loved her. Yes, he would say that. (Woolf 115-16)

Peter Walsh has not played the role in Clarissa's everyday life that Richard has, but Richard fails to see that. Peter Walsh and Richard Dalloway are diametrically opposed characters in that Peter has been a "presence while being absent" (Kierkegaard 63) and Richard has been an "absence while being present" (Kierkegaard 63). In contrast to the security of self one experiences within the ethical sphere, Richard Dalloway's wanting to tell Clarissa that he loves her in reaction to Peter Walsh, in Kierkegaardian terms, identifies him more with characteristics of an individual who remains confined to the aesthetic sphere than with the emblematic role of a faithful husband.

In short, Kierkegaard believes that within the aesthetic sphere "What is demonic wants to shut itself up in itself and isolate itself from the threat of the good" (Watkin 63). Within the context of the personality that is limited by being confined to the aesthetic sphere, Richard's acting in resentment toward others might ultimately become a covert way of sabotaging his potential to become a concrete personality. Richard has lost his success in his both private and public lives by keeping himself in just aesthetics. He is the man of appearance not a man of action; this is what brings him failure.

### 3 The Ethical Sphere

The importance of the aesthetic is acknowledged, but it is also presented as an immature stage. "The aesthete is only concerned with his or her personal enjoyment, and because aesthetic pleasure is so fleeting, an aesthete has no solid framework from which to make coherent, consistent choices" (Cole 74). Eventually, the pleasures of the aesthetic wear thin, and one must begin seeking the ethical pleasures instead. The ethical life actually offers certain pleasures the aesthetic life cannot. The aesthetic life must be subordinated to the ethical life, as the ethical life is based on a consistent, coherent set of rules established for the good of society. Kierkegaard puts this sphere in terms of "exteriority" which relates to the external and social world. Clarissa faces paradox with regard to the limit of the ethical sphere of existence, by serving as the mediating point in the contrasting roles of the other primary characters.

Most significant of these contrasts is her double-bladed relationship to Peter Walsh, her adventurous suitor, and Richard, her less-than-adventurous suitor-then-husband. In moving beyond "defining herself narrowly in relation to limitations set forth by her earlier rejection of Peter Walsh or her marriage to Richard Dalloway" (Schiff 371), Clarissa acts as one who chooses herself within the context of Kierkegaard's ethical sphere; she recognizes that she is not "Mrs. Dalloway", nor is she the interpretation of herself into which she is tempted to fall in reaction to her declining health. "She stands in the position of the individual who faces the existential limit of her interpretation of self" (Henke 384). She faces a situation similar to the individual who confronts the limit of the ethical sphere and the finite nature of human existence, and she thus reaches a

place where an individual might embrace the possibility of making a leap to faith that takes shape within the religious sphere.

In resembling one who has reached the limit of Kierkegaard's ethical sphere, Clarissa also confronts the double-bladed nature of her relationship to both Sally Seton of the past (While she was young) and Sally Seton of the present (at her present age). Sally Seton of the past represents the Romantic escapism characteristic of Kierkegaard's aesthetic sphere, in other words, "Sally Seton symbolizes for Clarissa what she never had the courage to become" (Cui 179). In a way that resembles Judge William's exhorting the aesthete of *Either/Or II* to embrace the existentially rewarding responsibilities that life within the ethical sphere might offer, the idealized Sally Seton of the past is disrupted as the real Sally Seton re-enters Clarissa's life. Sally Seton of the present has "five sons and is a married woman in her fifties, Lady Rosseter, wife of an industrialist (Woolf 204). Sally Seton of the past, this ghostly memory to which Clarissa retreats on occasion, represents Clarissa's failure to find lasting meaning within her occasional retreats to the aesthetic sphere. Sally Seton of the present, on the other hand, is, for Clarissa, a metaphor for personality associated with the responsibilities of motherhood—with facing one's place within the ethical sphere of existence. Such an example of a connection with the ethical might lead Clarissa naturally to thoughts of Elizabeth Dalloway, Clarissa's link to the future.

Lastly, Clarissa must face the double-bladed nature of her interpretation of self in relation to Septimus Smith. This too brings her symbolically to the limit of the ethical sphere in that she identifies herself with Septimus when she learns that he has just died:

Somehow it was her disaster—her disgrace. It was her punishment to see sink and disappear here a man, there a woman, in this profound darkness, and she forced herself to stand here in her evening dress. She had schemed; she had pilfered. She was never wholly admirable. She wanted success. Lady Bexborough and the rest of it [...]. (Woolf 202)

Clarissa, in thinking that she was "never wholly admirable" (Woolf 202) and in identifying herself with Septimus Smith's finitude, paradoxically, faces a situation similar to the individual who, in Kierkegaard's schema, confronts her own limit within the ethical sphere of existence. For Kierkegaard, recognition of guilt before the Eternal—the limit of the ethical sphere—is ultimately a gift of God's grace. Kierkegaard believes that "Man is guilty, but he is also redeemed from this guilt" (Hubben 48).

In brief, Clarissa connects the sense of duty and obligation, characteristic of the ethical sphere, to the beauty and precious moments of life, but this connection arises from her recognition that, soon enough, life will have passed. Double-bladed nature of her interpretation of self in relation to Sally Seton of the past and present and Septimus brings her symbolically to the limitations of the ethical sphere.

### 4 The Religious Sphere

Kierkegaard considers the religious life to be the highest plane of existence. The religious sphere is the relationship between God and an individual standing before God. According to Kierkegaard, the religious sphere is divided into Religiousness A and B. Religiousness A applies to the individual who feels a sense of guilt before God. Religiousness B is transcendental in nature. Finally, with paradoxical optimism, Kierkegaard sees "death for the Christian as the point at which God's light shines brightest" (Webb 287). *Mrs. Dalloway* symbolically represents the limitations of the ethical sphere and the limitations of what Kierkegaard refers to as Religiousness A. Based upon Kierkegaard's belief, a good person, such as Clarissa cannot arrive at the salvation under her own power. In this section, finally, the possible existence of religiousness in the characters

will be analyzed based upon the three layers of religion mentioned above.

"Kierkegaard believes that Religiousness A involves an individual striving toward concrete actualization of self within the context of a primordial choice that prefers good to evil and that acknowledges the place of at least one other individual" (Pattison 174). For Kierkegaard, the limitations of the ethical sphere imply the need for a leap to faith that extends beyond these limitations, a leap to faith that takes shape within the religious sphere. Septimus Smith's wife Rezia arguably represents also the limit of Kierkegaard's ethical sphere's duty and responsibility, in that she acts nobly in terms of Religiousness A but ultimately fails to prevent Septimus from committing suicide. In Kierkegaard's view, it is only the leap to faith that takes shape within the religious sphere that ultimately overcomes the overwhelming power of death and the dread associated with recognizing one's finitude. For Kierkegaard, whose ultimate concern is what it means to be a Christian in Christendom, "God's grace is the way by which the individual in faith ultimately finds victory over the power of death" (Shaffer 191).

On the other hand, Religiousness B—which Kierkegaard identifies specifically with Christianity—involves the individual accepting God's grace, involves her or him accepting that "The individual's inability to fulfill the ethical demand requires God's saving grace and forgiveness" (Watkin 79). Clarissa sees herself as somehow connected with Septimus Smith, and he represents for her a powerful symbol of the power of death, while he also serves as a compliment to her concept of the self in dissipation. For Kierkegaard, such a recognition by the individual of the personality's need to ultimately identify passionately with something that transcends self might ultimately offer an opportunity—though it is not realized in Clarissa's case—for the leap to faith that takes shape in the religious sphere.

Lastly, like the phenomenon of freedom from which human self-consciousness and human recognition of the inevitability of death arises, the phenomenon of death transcends self in an archetypal sense: It is impossible to avoid the archetypal nature of death in that death confronts all individuals. With paradoxical optimism, Kierkegaard sees death for the Christian as the point at which God's light shines brightest: In a journal entry from 1844, Kierkegaard remarks, "There is a beautiful expression which the common man uses about dying: that God or our Lord 'brightens' for him" (107). Although death is a potentially ugly physical reality—as becomes gruesomely apparent in the suicide of Septimus Smith (Woolf 200)—Kierkegaard sees death for the Christian as being the point at which God shines brightest.

To sum up, Kierkegaard believes that a good person, such as Clarissa, cannot in the context of what it means to be a Christian ultimately arrive at salvation under her own power; what it means to be a Christian in Christendom is to ultimately make an appeal to God's grace. Therefore, the religious sphere of Kierkegaard also suggests that sticking himself to this sphere, human being faces several limitations, which cannot guarantee his success and salvation.

## 5 Conclusion

*Mrs. Dalloway* is Woolf's first successful experimental novel, in which she achieves radical transformation of her novelistic art in the light of her own theory of novel as she stated in her essay, "Modern Fiction: the depiction of myriads of impressions, a luminous halo, a semi-transparent envelope," and the atoms as they fall upon the mind in the order in which they fall [...] however, disconnected and incoherent in appearance" (Woolf 105). In the era of competitive experimentation, alongside Joyce and Proust, Woolf shapes her novelistic art in accordance with her own individualistic aesthetics and succeeds in dismantling the traditional novel as it was handed down to her by eliminating the "Scaffolding and bricks of conventional plot and the 'effort of breaking with strict representationalism'" (Woolf

313). Focusing on the issue of existence, Woolf tries to suggest her own situation in her novel by characterizing several people.

This study was an attempt to analyze *Mrs. Dalloway* from the perspective of Søren Kierkegaard as a forerunner scholar in theory of Existentialism. This study was divided into three parts of "the aesthetic sphere", "the ethical sphere" and "the religious sphere." In the first two parts of this paper, Richard and Clarissa as the representative of aesthetic sphere and ethical sphere, respectively, were analyzed. In the last part of this study, the religious sphere was applied to two characters Rezia, as the representative of Religious A, and Clarissa, as the representative of Religious B and finally, death, as the final layer of religious sphere was applied in general. The outcome suggests the limitations of each sphere for human being. Furthermore, this study shows that the characters in *Mrs. Dalloway* cannot get any salvation by focusing on just one sphere and overlooking the others spheres.

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# APPROACHES TO EDUCATION IN THE FIELD OF MANAGEMENT, MARKETING AND ENVIRONMENTAL CONSULTING

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The contribution is part of the scientific project VEGA no. 1/0380/17 "Economic efficiency of electro mobility in logistics", conducted at the Faculty of Commerce of Economics in Bratislava.

**Abstract:** By their nature, consulting companies – as operators of the consulting services market – represent professional firms. Strategy for education and personal development of consultants should be a part of the consulting company strategy. Educational activity in the field of management, marketing and environmental consulting represents a continuous process that is factually and logically linked to other corporate processes. It requires strategic and systematic approach.

**Keywords:** consulting, education, strategic approach, consulting skills.

## 1 Introduction

The effect of environmental issues on companies' activities and solving these issues are the most debated topics of today. Issues related to environment lead, on the one hand, to the increase of business costs. On the other hand, they create new business opportunities and possibilities for creative and innovative companies to enter new markets.

Companies can address these issues individually or use the services of external consulting companies. In addressing environmental issues they can use the services of economic consulting (e.g. environmental accounting or accounting for sustainable development), services of management (e.g. circular business models) and marketing consulting (environmental marketing [5], [16], environmental attitude and behaviour of consumers, environmental marketing strategy, environmental marketing audit, environmental product, its packaging and trademark, environmentally oriented price, reverse distribution, environmentally oriented communication, circular marketing, eco-innovations, start-ups etc.) and/or environmental consulting services (assessing strategic documents, assessing the effect of business activities on the environment, environmental audit and due diligence, environmental management, environmental planning, environmental monitoring and the like).

The aim of this contribution is to point out the importance of strategic and systematic approach to education and individual development in the field of consulting while focusing on the approach of consulting companies towards the education of consultants in the field of management, marketing and environmental consulting.

## 2 Strategic planning model of education in consulting

### 2.1 Principles of education in consulting

In general, consulting means providing services and/or passing on the know-how in some field by qualified experts or by specialized consulting companies. It is carried out on the basis of the rigorous systematic and conceptual procedure using the diagnosis of relevant fields, activities and problems and consequent assessment of different options of solving the given problem or task.

Consulting is a profession with the following essential characteristics:

1. Existence of a systematic theory which serves as a base for practical dimension of a profession – this means that acquiring a profession is connected to the mastering of the adequate theoretical preparation. Graduation from a university is the inevitable requirement for pursuing a profession. A certificate testifying the obtained

qualification (a diploma) is the inevitable requirement for granting a privilege (a permit, a license etc.) to carry out professional experience.

2. Professional authority – it is based on mastering such expert knowledge which an ordinary person (a layman) does not have. An expert is able to specify what is good for a client, what decision should be made etc. In the given field, experts have monopoly on competence.

Consulting services and individual consultants represent consultancy and provide consulting services. As professionals, consultants monitor major trends in theory and practice. At the same time, they create specialized group with its own approach to work, individual set of behaviour standards and working procedures. Consultants diagnose, analyse, plan, assess, suggest, manage, implement and coordinate. To manage all these tasks on a professional level, they have to complete the corresponding university education based on mastering a systematic theory.

By their character, consulting companies, being the operators of the consulting services market, represent professional companies which are characterized by 4 features [14]:

1. More than 50 % of employees are professionals.
2. Great emphasis is put on professional intentions including altruistic solutions of clients' problems.
3. High respect of professional standards is being shown.
4. Great emphasis is put both on producing and application of knowledge.

Consulting activities have their own requirements on expert education and professional development. Many consulting companies earn their good reputation exactly thanks to quality education of their consultants based on strategic and systematic approach.

### 2.2 Strategic framework of education in consulting

It is obvious that the strategy of education and personal development of consultants has to be a part of corporate strategy of a consulting company. Together with knowledge-based strategy, they form part of the human resources management strategy.

#### *Strategic aspects of corporate education in consulting*

Human resources management strategy as a superior strategy provides an answer to the question whether there are corresponding posts established in the organizational structure of a company and in what ways the incongruity between the demand for posts and the real qualification of staff has been and will be solved [3]. Human resources management strategy is a starting point for strategic management of human resources which is a process of decision-making on intentions, goals and methods for their achievement, concerning people as a substantial part of an organization [6]. Strategic management of human resources can be therefore considered as an approach for solving long-term matters concerning people. It deals with those personal activities which serve as a support for competitive strategy of a company [1].

Education and development of employees is a planned effort with the aim of teaching employees to behave in a way that would lead to the increase of their performance. The education itself is goal-oriented, based on experience, it influences the behaviour and learning and changes it brings are relatively stable [22]. Mihalčová characterizes education as a continuous process during which a person not only acquires, but also develops new knowledge and skills and simultaneously adapts to changes of work behaviour [13]. Koubek perceives the education of company's employees as a personnel activity that includes adaptation of employees' occupational skills to requirements on a post – deepening the qualification (further training); increasing the employability of employees on different posts – expansion of occupational skills; retraining processes (retraining); adapting

occupational skills of new employees to specific requirements of the given post, used technique, technology, work style in a company – employee orientation (adaptation); forming of employees' occupational skills at work exceeding the limits of professional competence [10].

In current modern practice of human resources management, a distinction is sometimes made between education (that concerns the development of skills needed for better performance at the current job) and development (that is more extensive and often beneficial for the future professional growth not only in the company but also out of it). In some publications, both concepts are being referred to with the term corporate education [6].

Education of employees is an inevitable need of every company, but its extent, depending on the need of a company, always differs. However, it has to create appropriate conditions for organized and systematic education carried out in a repeating cycle. This cycle of education and development of employees includes activities: identification of needs and goals of employees' education and development, planning the programmes of employees' education and development (methods, supervisors, equipment, and venue), implementation of employees' education and development using specific education programmes and methods, monitoring and evaluation of employees' education and development [9].

#### *Substance and specifics of corporate education in consulting*

We define corporate education as a summary of education activities arranged by a company or its department assigned to that. The aim of corporate education is to pass knowledge and skills on to employees and upgrade their qualification, experience and competence. However, it should not be aimed merely at changes in the structure of knowledge and skills leading to higher efficiency of work performance. It should also be focused at changes which lead to the creation of conditions allowing self-realization or development of personal and work potential of employees and which result in using the possibilities of continuous development as the most effective motivational and stimulation tool.

People forming consulting teams are engines of a consulting company and have an impact on its success. Because of that, corporate education in the field of consulting focuses on the preparation of consultants in a way that would increase their capability to effectively reach the set goals, approaches and processes. Individual goals for self-realization of each individual consultant are closely connected to that.

Corporate education of consultants includes not only work-based training – internal type of education, but also outside the workplace, i.e. external type of education. Its primary and determining intention is to bring the qualification structure of consultants into accord with current requirements of professional activities and practice. In that sense, corporate education is one of decisive strategic personnel processes that is, in successful consulting companies, connected to other personnel processes. According to Tureckiová, those processes are [19]:

- Human resources planning.
- Acquisition and selection of employees.
- Formation and deployment (internal mobility) of employees, i.e. particularly by motivating, stabilization and changes in working positions.
- Employee evaluation and remuneration.
- External mobility.

Prusáková summarized some motives for corporate education in a similar way [17]:

- Expected change – e.g. hiring new employees, implementing new management' approaches.
- An opportunity that presents itself – e.g. a budget for education.
- Maintenance of strong points – motivating employees, strengthening strong points of a company.
- Education is required and mandatory.

From the point of view of strategic approach, corporate education is regarded as being an investment into people's development in a consulting company. It significantly helps to reach the elementary goal of strategic management of human resources, i.e. attract, prepare and keep highly qualified and motivated consultants in a consulting company who are moreover eager to align their own personal goals with the goals of a consulting company they work for. In that sense, corporate education fulfils not only the function of education and development, but also orientational, adaptation, integration and retention function. It is a tool that jointly affects to the benefit of fluctuation measures and leads to the development of performance, effectiveness and competitiveness of a consulting company as a whole, to the development of employability of individuals, and not only within the internal, but also external mobility. That is why it is possible to view the corporate education in the context of the lifelong education of consultants.

Strategy of education and development of employees depends on the human resources management strategy. Numerous authors present many approaches to the classification of this strategy. One of such approaches, which we consider as the most relevant from the point of view of education and development of employees and their employment in a consulting company, is the classification of the strategy of employees' education and development according to three lines [8]:

1. Line: Organizational development strategy – Strategy of individual's development. Development of an organization and its people lead to higher performance of a whole company. It is not possible to separate them, focus at one and eliminate the other.
2. Line: Differentiation strategy – Strategy of integration. Differentiation supports achieving high performance, whereas integration focuses on creating a space for common sharing, knowledge and skill building and sense of responsibility.
3. Line: Big jump strategy – Strategy of continuous improvement. Their choice decides how the change, that learning in an organization brings, will be reached.

Human resources management strategy influences the knowledge strategy. Its character depends on skills that are preferred by a company. In case of codification knowledge strategy, explicit knowledge, that means formalised and such which can be formalized, is being worked with. Personalized knowledge strategy is based on tacit knowledge that can be formalized with difficulty. It is applicable in cases where a company is oriented on meeting individual, unique and original needs of clients. A combination of both knowledge strategies is convenient for consulting companies whose focus changes according to current preferences of consultants and their clients.

#### **2.3 Implementation of the education strategy in consulting**

Every strategy needs to be put in practice. Corporate education strategy has to be devised in a way that would help it to be implemented in corporate environment, accepted by all interest groups (owners, management, employees, clients) and has to be compatible with the whole-company strategy and objectives in all activities of a company. Its correct implementation is a base for reaching higher performance and desired changes in consulting companies.

The following systematic algorithm is a precondition for successful implementation of the corporate education strategy:

- Allocation of sources (financial, human and technical).
- Identification of key tasks, necessary for ensuring the success of the strategy.
- Planning the priorities in the field of education strategy.
- Adaptation of the organizational structure to the needs of a new strategy.
- Drawing up the standard of the new working procedures.
- Implementation of new elements of a corporate culture linked to the new strategy.

- Creation of new elements of personnel agenda, particularly motivational system, adaptation programme and forms of employees' supervision and evaluation.
- Provision of relevant information system and mechanisms to support the processes.

For the sake of implementation, it is necessary to specify the corporate education strategy, namely the operational steps, tasks and programmes and choose appropriate implementation tools. Main tools of the education strategy implementation include [3]:

- Competency models.
- Managing according to competence.
- Managing the work performance.
- Balanced Scorecard.
- Knowledge and talent management.
- Project management.
- Incentive mechanisms.
- Career management.
- A learning organization etc.

Corporate education strategy needs to be monitored and evaluated. For this purpose, consulting companies can use the following tools [3]:

- Management methodology according to competence.
- Process of managing the work performance.
- Balanced Scorecard methodology.
- Application of competency models and tools for measuring the competence level.
- Methods and techniques of evaluating the employees and their work performance.
- Management methodology according to objectives.
- Methodology of tools for 360° feedback.

In this process, intuition, creativity, the knowledge of educational and developmental needs of a consulting company, as well as needs of its clients, play their role.

## 2.4 Education system in the field of consulting

Educational activity in the field of consulting represents a continuous process that is factually and logically linked to other processes in a company and consists of the analysis of educational needs and their identification, planning, implementation and evaluation of the educational activity. Education system is based on a corporate strategy of a consulting company, its objectives, sources and organizational needs, as well as requirements for the education of its consultants (diagram №1).

Diagram 1: Education system in a consulting company



Source: authors' own processing

Analysis and identification of educational needs. It is the most important stage of the education planning in a consulting company. At the same time it is a stage with the highest error rate from the point of view of planning activity in the area of education and personal development of consultants. It is based on collecting information on the current state of knowledge in a consulting company, competence and skills of consultants as company's key employees, performance of individual consultants as well as consulting teams. The data obtained are being compared with their desired level.

Identification of educational needs. It answers the following three questions:

1. Is the employee motivated enough to apply required competence and skills?
2. Does the management support the required behaviour of consultants?
3. What barriers do exist in the area of consultants' performance?

Planning the educational activity. It concerns planning the specific educational events and programmes. Its result is the education plan that should include not only planned activities, but also consider potential problems and barriers in the field of consultants' education. Education planning consists of several stages:

- Preparation stage – includes specification of needs, analysis of participants in the educational activity and setting the objectives.
- Implementation stage – represents processing the individual stages of educational process into specific educational projects. It contains determination of a process that will be followed in the course of education of consultants and suggested forms, methods and techniques, by means of which the education will be carried out.
- Optimization stage – includes continuous evaluation of the individual stages of educational programmes in relation to the given objectives and correction of deficiencies.

Implementation of educational activity. It means using appropriate tools, methods and forms of education of consultants. Trainings represent an important tool in the field of education and personal development of consultants. They play a significant role at the time of taking up the employment and adaptation on the one hand and during the employment as such on the other. Training and lifelong education is important not only for newly recruited, but also for experienced long-time consultants. The aim of such trainings should be continuous improvement of necessary occupational skills and boosting consultants' loyalty to the employer. At the same time, trainings fulfil a significant communication function that is important particularly during the adaptation process, but also later after consultants' integration into a regular work routine.

Coaching is another important tool used in the field of education and personal development of consultants. It represents long-term instruction, explanation and notification of remarks. Regular supervision of a coachee is the part of it. The point is continuous incitement and guidance of a coachee to reach the desired performance and take his/her own initiative. The aim is to make a coachee look at his/her own behaviour in a different light. Coaching activates person's ability to increase one's own performance of its own accord. As opposed to other educational methods, coaching focuses on attitude and is directed at the character of a person. Coaching focuses on the future – past serves for the development of the future solution only. Coaching is a kind of guidance "on the road", while the coach gets to know the coachee and supports his/her own individuality. Coaching creates an atmosphere of openness and cooperation, it makes people develop, be competent and apply their own decisions.

In the context of educational procedure in consulting, it is also possible to come across the term supervision. It represents a method, which, by means of mutual interaction between a supervisor and the person supervised, makes people revise their work and helps improve the professional competence of their work and performance. In the area of consulting, supervision plays an important role in the improvement of their consulting competence and skills.

Facilitating means supporting the processes or activities focused on improving the performance. It represents targeted management and guidance of negotiations, meetings or discussions of smaller or larger groups. In connection with consulting, it can be applied in the consulting process itself, during business negotiations of the consulting contract, when solving the subject matter of the consulting etc.

Evaluation of the educational activity. It concerns comparison of the objectives with the results in the field of education. A consulting company should decide on the progress of it already during the planning stage. It is a complex process the goal of which is to measure the effects of the specific educational activity in the field of andragogy (pedagogical and didactic), as well as in the field of economy. The evaluation of the corporate education is a process that determines whether a problem was solved. It is the integral part of the corporate education.

## 2.2 The contribution of education and its tasks in consulting

One of the key tasks of consultants' education is providing them with longitudinal and transversal flexibility. The majority of activities aimed at the improvement of consultants' professional competence focuses on self-education in their own field. It is this exact area which creates a common base for further consultants' professional growth and development. Many further-training and development activities in consulting companies are focused precisely on this objective. Practice has shown that initial training, of beginner consultants in particular, is just a first step in the development of the know-how of the respective consulting company. The second is the preparation of the development of consultants' career that comes with the need to apply broader approach and improve new professional competence of consultants in other fields as well.

In consulting, an individual holds the main responsibility for his/her professional growth and development much more often than in other professions. Probably no other group of professionals is confronted with information explosion to such an extent as consultants are. Professional growth of a consultant develops individually and the results achieved will depend mostly on his/her own ambitions, determination, perseverance and intellectual capacity. For consultants, learning is a life-long work and a categorical obligation. A consultant can at least of all express the opinion that old methods and procedures are still useful.

Consultant's task is to help the client implement progressive changes in his/her company. All proposals and changes, suggested by a consultant, should directly or indirectly contribute to the improvement of the quality of managerial work and performance of the company. Reaching these goals promote a complex of knowledge, abilities, skills, experience and characteristics, known as professional competencies. This term was used for the first time in 1982 by Boyatzis for defining personal qualities, motives, experience and behaviour characteristics according to different classifications [4]. Competencies are soft skills which differentiate the effective performance from the ineffective [23]. They represent the ability to perform some activity, the know-how and the qualification in the respective field. Consultants are competent in case they meet these three requirements [12]:

- They are mentally equipped with characteristics, knowledge, skills and experience which they inevitably need for such behaviour.
- They are motivated to behave that way, i.e. they regard such behaviour as valuable and they are eager to make effort to follow this direction.
- Have an opportunity to behave that way in the given environment.

It has to be emphasized that consultants are competent when they meet all three requirements.

Competencies are classified differently in the bibliography. One of the approaches, relevant also for consulting competencies, is the classification into two categories according to the performance of the specific post [18]:

1. Threshold competencies – also called basic competencies. Every employee needs them as a minimal base for performing the given post.
2. Differing competencies – also known as high performance competencies. They differentiate above-average performance from the average performance.

In connection with the consulting profession, it is appropriate to mention another classification of competencies, mentioned by Tyron [12]:

- Management competencies – conflict resolution, negotiation, time management etc.
- Interpersonal competencies – communication skills, presentation skills etc.
- Technical competencies – collection and analysis of data, diagnostics, creation of a budget etc.

Successful consultants are experts who manage the consulting process to make clients achieve measurable results. They should be equipped with every single competence we listed and which we specify as follows:

- Intellectual ability – the ability to learn quickly and easily, observe, select facts, good judgment, creative imagination and original thinking.
- The ability to work with people – tolerance, politeness, networking and the ability to anticipate people's reactions [7].
- The ability to communicate, persuade and motivate – being able to listen to other people and express oneself well. One of the preconditions of a good relationship between both participants of a consulting process (consultant – client) is communication and the ability of a consultant to use it in a consulting process. In the field of evaluating the expert and professional ability of consultants, communication skills and competencies are required. Communication skills comprise a summary of levels of verbal speech, emotional competencies and knowledge. Besides speaking, reading and writing, also listening and perception of a non-verbal communication are regarded as key communication skills [21] (Vymětal, 2008). Communication skills mean the ability to read and write with comprehension, express one's own thoughts so that others understand them, listen actively and observe critically.
- Presentation skills – An inseparable part of professional competencies of a consultant carrying out his function are presentation skills, also known as communication skills [15], primarily because the aim of the presentation itself, besides sharing information with participants, is obtaining a (positive) feedback. Another reason is the fact that the form of communication, i.e. the way of sharing the subject of presentation, represents one of the key factors of the successful presentation. Presentation is the most common part of the consultant's work and reflects the level and nature of the whole consulting process, as well as the relation between a consultant and a client, while the importance of the presentation constantly grows.
- Intellectual and emotional maturity – independence and impartiality at formulating conclusions and recommendations, self-control and self-restraint, flexibility, the ability to adapt to changed conditions.
- Creative competencies – consultants commonly use routine knowledge and skills and achieve desired results this way. Such work approach is reliable and effective, but far from sufficient. Consultants can rely on standard solutions less and less. That is why they should be equipped with a specific competence, which will allow them to find new ideas and unconventional solutions – creativity [11]. Creativity in consulting is related mainly to the process of changes, which bring many new information and also risk and uncertainty. Changes management is typical for proactive approach, mainly based on looking for new work methods. Strategy of changes is, on the other hand, the implementation of such a strategy, which introduces new patterns of behaviour, thinking and approaches of the key groups in the client's company. A strategic change is based on proposing, managing and maintenance of fundamental changes in a strategy, concerning the mission, products, markets, people, organizational structure and further attributes, resulting in new compliance of the client's company with its environment.

- Coaching skills – coaching is very often used in the process consulting, where client looks for the consultant's help to improve his/her own performance. The principle is that a consultant – in the role of a coach – observes and supervises individual performance of a client, provides him/her with a feedback on problems or behaviour stereotypes that constitute barriers to working efficiency and prevents a change to which a consulting process is oriented towards. At the same time, it helps the client gain new knowledge and skills which the character of his/her work requires.
- Management competencies – within consulting, one of the key roles is being played by the project management as well. It is a process, which uses specific principles and techniques. In current consulting practice, project management has a prevailing tendency. Consulting companies should have experienced consultants whose results and abilities qualify them for the posts of project managers. Their competencies also include negotiations on the preparations of new projects, preparation of initial overview of a client, coordination of the preparation of an offer for a client and finally, preparation of their own project. Interdisciplinary consulting projects should have been managed by experienced consultants and functional projects, on the other hand, by experts in the respective field (marketing, finances, production etc.). As it is time-consuming, high self-discipline and self-control is immensely significant in project management [20]. Besides project management, the ability of a consultant to manage and organize time, i.e. time management, is very important.
- Decision-making competencies – there are many more skills and competencies which create or should create a part of professional equipment of every consultant. We mention decision-making competencies that are important for a consultant regarding his/her own performance and services provided to a client, as one of them. Consulting process is constantly accompanied by the growth of number and complexity of decision-making problems which have to be rationally and effectively solved. Besides generally known complexity and demanding character, those problems are characterized primarily by inconvenient structure, lack or complete absence of unbiased information, weak ability to get formalized and uniqueness – in a sense they can not be repeated. Usually there are several options how to solve the given problem. It depends on the consultant's abilities and skills to pick the solution that would be the best for a client and beneficial for his/her company. By means of a decision, the consultant can achieve the situation that is desired. Within consulting, delegative decision-making can be applied. In that case, a consultant passes the decision-making competence and authority on to a client. Consultant's conclusions have the character of recommendations. In such cases, he/she usually acts as an external decision-making subject.

Consultants are innovators and creative professionals who have acquired the newest knowledge, technologies and trends and are aware of different approaches towards achieving desired goals.

### 3 Research in the sphere of consultants' education in management, marketing and environmental consulting in Slovakia

#### 3.1 Research project

Education of a consultant as a provider of consulting services definitely does not end with a basic university graduation. Many consulting companies have created a corporate education strategy based on systematic and continual effort to improve qualification, professionalism and professional competencies of their teams. We focused on the above mentioned in our research that we carried out in 2018.

Our research dealt with the education of consultants in the field of management, marketing and environmental consulting, whereas in case of marketing consulting we drew from its classification into general (i.e. consulting on a strategic level, e.g. marketing audit, marketing diagnostics, marketing strategy

etc.) and specialized consulting (i.e. consulting on operational level, e.g. marketing communication, marketing survey, online marketing etc.).

In the field of environmental consulting, we worked with two types of its providers:

- Consulting companies which have been providing it within the management and marketing consulting (e.g. circular business models, environmental marketing etc.).
- Consulting companies which have been providing it on the technical basis only (e.g. assessment of the impact of the building works on the environment, environmental monitoring of noise, air etc.).

A part of the sample was comprised of a group of consulting companies which provide consulting in all fields we mentioned (combined consulting). The research was carried out in two stages.

#### 3.2 Quantitative survey

In the first stage, that took place in February and March 2018, we initially carried out a quantitative survey. We reached out to 200 companies, providing services in management, marketing and environmental consulting in the territory of the Slovak Republic. In the survey, 146 companies (n=146) of the following structure (table №1) took part:

Table 1: Overview of respondents according to their specialty

SPECIALTY	QUANTITY
Managerial consulting	48
Marketing consulting, specifically:	38
General marketing consulting	12
Specialized marketing consulting	26
Environmental consulting (technical activities only)	24
Combined consulting (all three fields)	36
<b>In total</b>	<b>146</b>

Source: authors' own processing

Respondents were executive directors or directors of the addressed consulting companies. All respondents who marked management consulting (48) and marketing consulting (38) as the core business in the questionnaire stated that they also deal with environmental aspects of management and marketing. Those who marked the environmental consulting only (24) stated that when solving environmental tasks within their consulting activities, they only deal with technical activities. Combined consulting services in all three fields of our research were provided by 36 consulting companies.

Regarding the size, microenterprises (employing 9 people at maximum), small businesses (with 10 to 49 employees) and medium-sized businesses (with 50 to 100 employees) were represented in the sample, as shown in the table №2.

Table 2: Overview of the respondents regarding their size

CATEGORY	QUANTITY
Microenterprise	27
Small business	81
Medium-sized business	38
<b>In total</b>	<b>146</b>

Source: authors' own processing

From the total sample of 146 respondents, 103 were Slovak consulting companies and 43 were foreign (those included branches and affiliates of foreign consulting companies) structured as follows (table №3).

Table 3: Overview of the respondents according to the country of origin

SPECIALTY	ORIGIN	
	Domestic operators	Foreign operators
Management consulting	33	15
Marketing consulting, specifically:	28	10
General marketing consulting	10	2
Specialized marketing consulting	18	8
Environmental consulting (technical activities only)	17	7
Combined consulting (all three fields)	25	11
<b>In total</b>	<b>103</b>	<b>43</b>

Source: authors' own processing

The aim of the quantitative survey was to explain and assess what approaches do companies which provide consulting services in management, marketing and environmental issues have towards the education of their consultants as representatives and providers of such services.

On the basis of the abovementioned, the main research problem was formulated: *What is the condition and level of education of consultants providing services in the field of management, marketing and environmental consultancy?*

By means of the structured genesis and on the basis of the main research problem, the following partial descriptive research problems were formulated:

Q1: What is the attitude and approach of consulting companies towards the education of their consultants?

Q2: Within the education of their consultants, what professional flexibility and competencies do consulting companies pay higher attention to?

Q3: What expectations do consulting companies have from learning and development activities for their consultants?

When formulating conclusions, we relied on hypotheses we determined on the assumption that consulting companies as professional companies perceive the education of their consultants as one of their strategic tasks and a source of potential competitive advantage.

Following the abovementioned we determined the following descriptive hypotheses, which were formulated in relation to the descriptive research problems:

H1: Consulting companies consider their consultants' education being a strategic objective.

H2: Consulting companies put emphasis on the development of longitudinal, as well as transversal flexibility.

H3: Consulting companies expect that regular education of consultants will ensure their effective consulting performance.

### 3.3 Summary of the main results of the quantitative survey

Questions in the questionnaire were focused on the following areas:

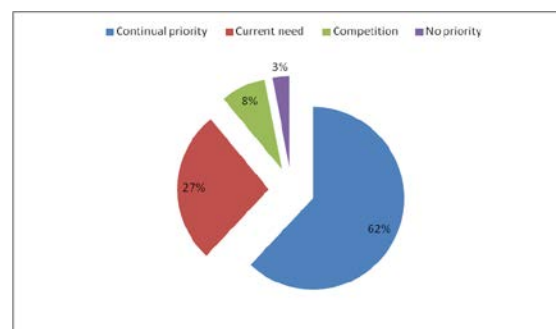
- System of the consultants' education in consulting companies and its implementation in practice.
- Specialty of consulting companies in the field of consultants' education.
- Expectations and results in the field of consultants' education.

#### *System of consultants' education in consulting companies and its implementation in practice*

All respondents (n=146) stated that education of their employees – consultants – is one of the key strategic objectives of the company.

Regarding internal company processes and systems, 62% of companies stated that the education is one of continuous priorities of strategy planning; 27% of respondents said that while creating the education system, they draw on current needs of their company, the market and the environment (e.g. change of laws); 8% of respondents stated they try to follow the competition and 3% that this area is not systematically involved in their processes (graph №1).

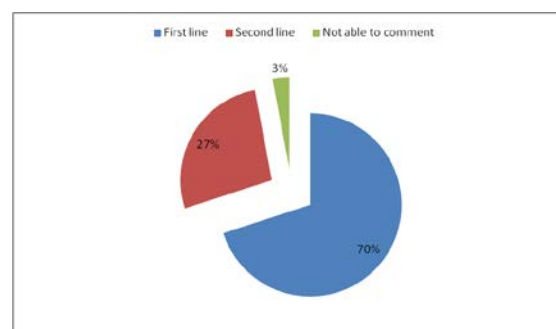
Graph1: Education as a priority



Source: authors' own processing

Majority of consulting companies that took part in the survey (70%) stated that within the education system of consultants they use the first line strategy (strategy of organizational development – strategy of individual's development); 27% of respondents stated they use the second line strategy (strategy of differentiation – strategy of integration). Only 3% of respondents were not able to comment (graph №2).

Graph 2: Education strategies

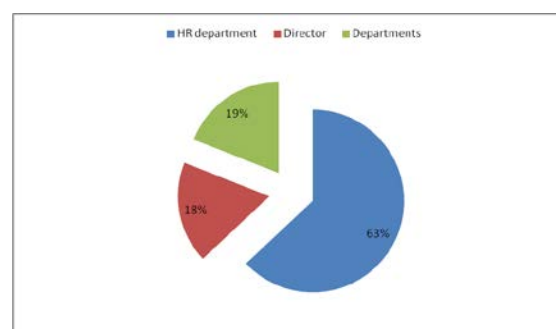


Source: authors' own processing

Almost half of the respondents (48%) have an education strategy worked out, while 80% of them stated that in creating this strategy, they draw on results of relevant analyses, clients' and market's needs (n=38).

The field of education, implementation and evaluation is within the competence of HR departments (63%) and directors of consulting companies (18%). 19% of respondents stated that this activity is within the competence of each department according to its specialty and needs (graph №3).

Graph 3: The field of education



Source: authors' own processing

Respondents listed the following as being the main tools for implementing the education (the respondents had multiple choice questions; table №3):

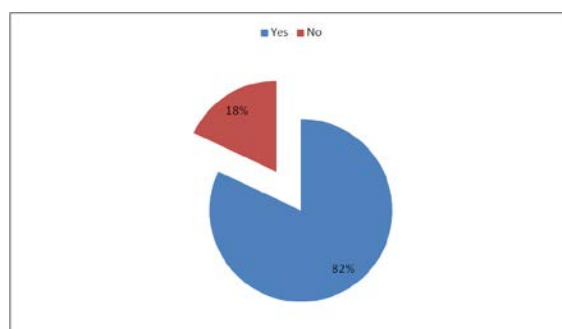
Table 3: Tools for education implementation

TOOLS	QUANTITY (%)
Competency models	87
Managing according to competence	12
Managing the work performance	65
Balanced Scorecard	7
Knowledge and talent management	12
Project management	100
Incentive mechanisms	100
Career management	92

Source: authors' own processing

What emerged from the answers is that almost 82% of the addressed consulting companies reassess the education system annually and 18% stated that they routinely repeat activities which proved to be useful in the past.

Graph 4: Evaluation of the education



Source: authors' own processing

Respondents (n=120) listed the following as being the methods of evaluating the education (the respondents had multiple choice questions; table №4):

Table 4: Methods of evaluating the education

METHODS	QUANTITY (%)
Management methodology according to competence	27
Process of managing the work performance	31
Balanced Scorecard methodology	7
Competency models	87
Management methodology according to objectives	69
Methodology of tools for 360° feedback	12

Source: authors' own processing

The most common form of education are trainings (92%).

#### *Specialty of consulting companies in the field of consultants' education*

All respondents (n=146) stated that within the consultants' education, they engage in the development of managerial, interpersonal, as well as technical skills. Among the managerial skills, project management (100%), business negotiations (92%), time management (58%) and decision-making (47%) prevail. In case of interpersonal skills, respondents most commonly referred to the education in the field of communication and presentation skills. Education on technical skills differed depending on the specialty of individual consulting companies.

#### *Expectations and results in consultants' education*

Almost all representatives of consulting companies we addressed agreed that they expect improvement and consolidation of the knowledge base, information and higher work/consulting performance as the result of their consultants' education. They assume that consultants will be able to respond to trends and competition and will be better than competitors. They also assume that consultants' work comfort, satisfaction and loyalty will be improved.

The validity of hypotheses has been confirmed.

### 3.4 Qualitative survey

In the next stage (in May 2018), we carried out a qualitative survey, using the interview method on a sample of 40 respondents out of those representatives of consulting companies who participated in the quantitative survey.

In the qualitative survey, we chose the procedure of constant comparison of the examined phenomena in which we did not establish the hypothesis. We wanted to know more about the frequency of consultants' education in the three fields we mentioned and how the education focus of consultants involved in management, marketing and environmental consulting differs.

Within the interview, the so-called selective recordings were made. To support the validity of the qualitative survey, we chose the following triangulation:

- Two research methods: interview and observation.
- The situation examined had been observed by two researchers.
- We assessed the obtained results with respect to consulting companies and clients' needs.

The interview was based on the prepared scenario. Recordings were initially processed individually (a set of selected "representative" interviews was analyzed by means of qualitative analyses – generating codes using the GTM method), then, all interviews (n=40) were analysed and structured once more to provide comparable results. For data analysis, contingency tables with Pearson's chi-squared test were used.

### 3.5 Summary of the main results of the qualitative survey

The results showed significant differences regarding the focus of educational activities of consultants in the fields mentioned (management, marketing and environmental consulting). While managers and marketing consultants attend educational activities in their field of specialization as well as in cross-sectional fields equally, environmental consultants are primarily involved in education in the technical and legislative fields.

Within cross-sectional fields, management and marketing consultants primarily engage in learning languages, interpersonal competencies and legislation, whereas environmental consultants learn managerial competencies and languages.

The frequency of education differs according to individual consulting companies. It is based on existing strategies, consultants' personal development plans, development of the external environment and the interest of consultants on topical issues. They also respond to the needs and demands of their clients in solving their tasks and consulting projects.

The results of the survey encourage suggestions for further research in the field of education and consulting. They enable meaningful conclusions to be drawn for both consulting companies and universities, and their focus on the training of consultants already during higher education.

### Summary

Consulting activity is multidimensional and complex. It has to be efficient and effective, and therefore provided by highly qualified professionals. This requires strategic and systematic approach to the education of consultants.

Consulting companies in Slovakia pay attention to the education of their consultants as an integral part of their strategic planning. They are aware of the necessity of this process and its benefits for their own activity, as well as for their clients.

In spite of the positive attitude towards educational activities in the examined field, it is worth to point out certain limits and barriers that eliminate potential effects resulting from the educational activity in the field of consulting. We believe that in our conditions it will be necessary to increase the professional competencies of consultants in their field of activity. In case of consulting companies, there are obvious possibilities for

systematization of learning processes and better and more intensive use of educational and development tools. Also, universities can play an important role here, which together with consulting entities can contribute to the enhancement of basic university studies for future consultants, as well as to their further – specialized training aimed at expanding and deepening of consulting competencies.

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**Primary Paper Section: A**

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# ASSESSMENT OF THE INNOVATED STATE EDUCATIONAL PROGRAM IMPACT ON TECHNOLOGY LITERACY OF LOWER SECONDARY EDUCATION PUPILS (ISCED 2)

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**Abstract:** The paper deals with realization of technology education in Slovakia on the level of primary and lower secondary education - so called basic schools. (ISCED 1, ISCED 2). At the first part of the paper, there is analysed impact of the curriculum reform from 2008 and innovated State educational program from 2015 on the scope and content of technology education. Consequently, in the second part of the paper there are presented results of a research aimed at the impact of the reform and innovated State educational program on the level of knowledge acquired by pupils 7<sup>th</sup> grade of basic schools in frame of teaching the school subject *technology*.

**Keywords:** Technology education. Technology literacy. Primary and lower secondary education. School subject *technology*. Pupils' learning achievements. Curriculum reform. Innovated State educational program. Content and performance standard.

## 1 Introduction

Technology has always constituted an important part of culture in each type of society. On the other hand, progress of technology has influenced, even determined, further development of any type of society. Application of technology knowledge in practice has created preconditions of the society prosperity, and not only the recent ones but also the next ones. As the main initiator of any application of technology knowledge, technology innovation or change has always been, and still will be, a man. That is why beside creative educated people in general each society needs also creative educated technicians and engineers. And that is why technology education has always been an integral part of school education, although in different types of societies and different countries this education has been carried out in different ways. In some countries we can find it to be taught incorporated within the scope of science subjects while in others we can find it incorporated within the school curricula as an independent school subject.

In Slovakia technology education has always been an integral part of general education. Before 1995 technology education was carried out within a freestanding school subject called *work education* which was taught with the lesson allocation 2 lessons per week at each grade of the second stage of basic education (relevant to lower secondary education – ISCED 2). This situation was changed twice, at first in 1996 and secondly in 2008. At the first change the name of the subject *work education* was changed to *technical education* and the number of lessons allocated for its teaching was decreased from 2 lessons per week to 1 lesson per week, still in each grade of the lower secondary education. The next change was done within the curricular reform which came into operation through enactment of the new Law on Education in 2008 (Law No 245/2008).

The most significant feature of the curricular reform in 2008 was introduction of so-called State educational program and School educational programs. As to the technology education, in frame of the curricular reform the school subject *technical education* was renamed to *technology* and was incorporated into the educational area *A man and the world of the work* comprising of three subjects: *manual training* (primary education ISCED 1: 4<sup>th</sup> grade, 1 lesson per week), *world of the work* and *technology* (lower secondary education ISCED 2, both subjects taught equally: in 7<sup>th</sup> grade 0.5 lesson per week and in 8<sup>th</sup> grade, 0.5 lesson per week). This means that the lesson allocation for technology education (subject *technology*) was cut from 1 lesson per week to only a half of a lesson per week taught already only in 7<sup>th</sup> and 8<sup>th</sup> grade, or the school could determine the grade in which the subject has been taught.

## 2 Background of the research

Standards-based initiatives in Slovakia have arisen after 1989, when an effort to measure students' learning achievements has started.

Standards describe the goals of schooling, the destinations at which students should arrive at the end of some milestones of their school attendance. They are usually composed of statements that express what a pupil or student knows, can do, or is capable of performing at a certain point in his/her learning progression.

In the above mentioned definition of standards two kinds of standards are referred to -- content standards (also called learning standards, subject matter standards or academic standards) and performance standards. Content standards indicate what students should know and should be able to do. At the same time the content standards describe the knowledge, skills, and other understandings that schools should teach in order for pupils or students to attain high levels of competency in challenging subject matter, i.e. they reflect the ideas, skills, and knowledge in each discipline that are important enough for everyone to learn. They are elements of declarative, procedural, schematic, and strategic knowledge that, as a body, define the specific content of an educational program. Performance standards (sometimes identified as indicators) measure how well (at which level – basic, proficient or advanced) a pupil or student's work meets the content standard, i.e. they define various levels of competence in the challenging subject matter set out in the content standards.

The genesis of educational standards in Slovakia started with a gradual liberalization of pedagogical documents in the Educational Research Institute (now-a-days the National Institute for Education) in Bratislava. In the second half of the year 1991 the Educational Research Institute started to deal also with issues of norms related to basic school (primary and lower secondary education) pupils' knowledge and skills. The goal of these efforts was to develop and introduce into the practice educational standards to selected school subjects. However, the school subject *work education* (subsequent *technical education*) was not included among the selected school subjects. In 1995 the Educational Research Institute prepared *Project of experimental verification of educational standards for the 1<sup>st</sup> and 2<sup>nd</sup> stage of the basic school* (basic education, i.e. primary and lower secondary education) but the school subjects *work education*, neither *art education* and *music education*, was not included in the project.

The first proposal of the *technical education* educational standards was prepared in 1995 by the subject committee of the technology education, the commission of the National Institute for Education as the *Content and performance standard of technical education for 5<sup>th</sup> – 8<sup>th</sup> grade of the basic school* (primary and lower secondary education, ISCED 1 - 2). In 1997 the elaboration of the *technical education* standard continued, in particular there was carried out verification of the standard for the core and alternative subject matter of *technical education* and its respective parts. Beside the standard, questionnaires for head teachers, teachers and pupils as well as didactic tests were elaborated.

The educational standard came into force on September 1<sup>st</sup>, 2000. The standard consisted of two relatively independent parts, content and performance standard. Each of them included three chapters according to the subject segmentation into the particular parts: *technical education*, *plant cultivation works* and *family education*. Subject matter of *technical education* was divided into the core and alternative subject matter. The educational standard for the alternative part of the subject matter in its technical part followed the requirements stated in the core

educational standard. The core educational standard consisted of 11 topical units:

1. A man and technology.
2. Technical materials. Raw materials, production, energy. Communication in technology.
3. Electric power, simple electric circuits. Electrical appliances.
4. Simple machines, force and motion transmission.
5. Operations and tools for technical materials processing.
6. Means of mechanization.
7. Elements of housing installation.
8. Electro-assembly operations. Electronic automation and control elements.
9. Housekeeping chores.
10. Technical electronics.
11. Technical, economical, ecological and aesthetical rateability of household investments.

In the content part of the particular topical units of the standard there were stated content components falling into the core subject matter of the respective topical units. These were parts of the subject matter, with which all pupils were to be acquainted. The performance part of the standard was entitled *Requirements on pupils' knowledge and skills*. This part included the part of the subject matter which was to be learnt by all pupils but on different qualitative levels. Expected level of mastering the given topical unit was expressed through a percentage proportion of fruitfulness at each of them. A disadvantage of the performance standard was that it was not prepared for the particular grades but it was done to the topical units.

The last standard of technical education from this period, which conceptually elaborated the educational standard from the year 2000, came into force on September 1<sup>st</sup>, 2002. In this standard the previous one was eked with exemplificative tasks, which elaborated range and level of the requirements put on the pupils' knowledge and skills. The educational standard from the year 2002 was structured, alike the previous one, according to the topical units. It included the performance standard (already without the expected percentage fruitfulness of the respective topical units) complemented by exemplificative tasks and suggestions for practical activities. It also contained a brief recommendation how to use the standard. The role of the content standard was fulfilled by the subject curriculum.

The State educational program approved in 2008 was a result of the transformation process of the Slovak system of education. Content of education in basic schools was divided into eight educational areas according to the key competences. Technical education at the 2<sup>nd</sup> stage of the basic school was incorporated into the educational area *A man and the world of the work*. This area was characterized as follows:

- The area *A man and the world of the work* contains a broad range of working activities and technologies, leads pupils to acquire basic user skills in different areas of human activities, and helps to the develop pupils' personal life and professional orientation.
- Conception of the educational area *A man and the world of the work* follows specific life situations in which pupils come into a direct contact with human activity and technology in its diverse forms and wider contexts.
- The area *A man and the world of the work* is focused on adopting working practices and it ekes the whole basic education with an important component necessary for employing a man in future life and society. In this aspect the area differs from the other ones and in some way it represents a particular counterbalance to them. It is based on creative cooperation of pupils.

Objectives of the educational area were to be achieved by means of three school subjects - *manual training* taught at the 1<sup>st</sup> stage of the basic school and *world of the work* and *technology* taught at the 2<sup>nd</sup> stage of the basic school. Technical education of pupils started in 3<sup>rd</sup> grade of the basic school, one lesson of *manual*

*training* per week, continued in 4<sup>th</sup> grade, as well one lesson per week, and then a pause from two to three years followed. Consequently, technical education was scheduled in 7<sup>th</sup> and 8<sup>th</sup> grade of the basic school, through the only school subject *technology* taught with the lesson allocation of 0.5 lesson per week devoted to topical units:

- Man and technology,
- Graphical communication,
- Materials and technologies,
- Electric power,
- Technology – household – safety.

In practice the subject was taught one lesson per week either in 7<sup>th</sup> or 8<sup>th</sup> grade. The cut of technical education at 2<sup>nd</sup> stage of the basic school led to underestimation of the *technology* subject importance by school managements, what led in practice to liquidation of classrooms (workrooms) specialized for teaching technology (technology education) and delegating *technology* teaching to teachers without qualification for this subject teaching (school leaders did not employ teachers with this specialization).

On the other hand, the reform brought also some positive facts. One of them were so-called disposable lessons. These were lessons number of which was different for each grade and the school could decide about the subject teaching of which would be supported by these lessons. In this way schools were given a possibility to profile themselves according their own decision. The intention was to enable to schools to respond to pupils' interests, particularities of their region (district), material-technological facilities and teaching staff qualification composition. Some of the schools used the disposable lessons just to reinforce the *technology* subject teaching. Mostly they added in frame of the School education program one more lesson for teaching *technology*, but the content of the taught topics varied considerably.

The subject committee for the educational are *A man and the world of the work* of the National Institute for Education, academics, scientists, researchers, professionals and experts did not accept this state and called for continuity of technology education from 1<sup>st</sup> up to 9<sup>th</sup> grade of the basic school. The need or necessity to do something with technology education carried out at basic schools was proved at the secondary vocational school reform and dual system of vocational training introduction. Secondary schools pointed out to pupils' disinterest in technical study fields as well as to their low knowledge level and mainly insufficient level of skills with which the pupils came from the basic to secondary vocational schools (i.e. from lower level of secondary schools to upper level of secondary schools).

As the State educational program evoked a great criticism not only in relation to teaching *technology*, but also in relation to the other school subject teaching an innovated State educational program was prepared, which came into force on September 1, 2015.

Design of the innovated State educational program for the educational area *A man and the world of the work* followed preferentially requirements of practice, put on knowledge and practical skills of the basic school graduates. But at the same time it made provision for pupils' attitudes and their professional interests.

From the point of view of technical education carried out at basic schools the innovation of the State educational program from 2008 meant a return, coming back to the lesson allocation of one lesson per week continually from 3<sup>rd</sup> to 9<sup>th</sup> grade of the basic school. What is very important is the fact that one started to talk about the problems connected with technical education at schools, mainly about the problem of the material and technical equipment necessary to ensure its realization. Criticism of the lack of the relevant material and technical equipment at schools resulted in two national projects aimed at improvement of this

situation. Within these two projects, known as *Creative Workrooms I* and *Creative Workrooms II*, 226 schools were equipped with teaching aids and devices supporting natural science and technical subjects teaching at schools and at the same time teachers were trained to their use (ŠIOV, 2013 - 2015; ŠIOV 2015).

Increase of the lessons was accompanied by changes of the subject content. According to the innovated educational standard the subject *technology* is divided in two topical areas, which are *Technology* and *Household economy*. Both of them have declared their own content, but a greater emphasis should be on the topical area *Technology*.

According to State educational program from 2013 a duty to teach at least two thirds from the total number of lessons allocated for the subject *technology* from the topical area *Technology* in each school year. Content of the topical area *Technology* is as follows:

- A man and technology,
- A man and production in practice,
- Utility and gift items,
- Graphical communication in technology,
- Technical materials and operating procedures of their processing,
- Electric power, electric circuits,
- Simple machines and machineries,
- Machines and equipment for household,
- World of the work,
- Electrical appliances for household,
- Technical electronics,
- Technical creation,
- Housing installations,
- Machine processing of materials,
- Creative activity.

### 3 Research questions and methodology of the research

In 2018 the innovated State educational program was in the third year of its realization, what means that the subject *technology* had already been taught according to this program in grades 5<sup>th</sup> – 7<sup>th</sup> of the basic schools. The aim of the presented research was to assess knowledge level of pupils of 7<sup>th</sup> grade resulting from teaching *technology* according to the innovated version of the State educational program.

Following the goal of the research, two research questions were stated:

RQ1: What is the knowledge level of pupils in 7<sup>th</sup> grade of the basic school resulting from teaching *technology* according to the innovated State educational program?

RQ2: Are there any changes in pupils' knowledge in comparison with the previous period?

In frame of the research following null hypothesis was tested:

H0: Pupils' knowledge level resulting from teaching *technology* identified in 2018 is the same as the one identified in the previous period (2010).

The null hypothesis was tested on significance level  $\alpha = 0.05$ .

Research sample consisted of 102 pupils of 7<sup>th</sup> grade attending basic schools in the city Nitra. Selection of the schools was done on the basis of the previous co-operation with basic schools in Nitra, approachability of the schools and agreement of the school management to co-operate on the monitoring of pupils' learning achievements. Under the previous co-operation it is understood here a similar monitoring of pupils' learning achievements (in the subject *technology*) done at these schools in 2010.

To test knowledge level of the pupils a didactic test of our own design was constructed. The test consisted of 11 tasks, following subject matter included in curriculum of *technology* for 7<sup>th</sup> grade

of the basic school. A principal requirement was that the relevant subject matter had already to be taught (before the monitoring). Each of the test tasks of the test was consistent with the content and performance standards of the subject. In this way the content validity of the test was ensured. At the same time great attention was paid to the content of the created task also from the aspect of the content of the tasks used in previous monitoring, i.e. content of the created tasks had to be relevant to the content of the tasks used in the monitoring done in 2010. From the 11 tasks of the newly created test 6 tasks were based on choice of answers, 3 tasks were of matching questions character and 1 task was of an open-ended character.

#### Description of the particular test tasks

- T1 – Purpose of the test item T1 was to find out whether the pupils know some Slovak inventors. The task of the pupils was to write correctly at least one name of a Slovak inventor. It was not necessary to write what s/he invented.
- T2 – Purpose of the test item T2 was to find out whether the pupils know the phases of a product creation and whether they are able to put the particular stages into the correct order. The answer was correct if all phases were assigned to the numbers in the correct order.
- T3 – The test item T3 was focused on the pupils' ability to read information and data from a simple technical drawing. The task of the pupils was to find dimensions included in a technical drawing. There were two dimensions in the given picture and the pupils were expected to encircle both of them.
- T4 – The test item T4 was focused on wood structure in its cross-section. The task of the pupils was to write into the given picture numbers connected with terms (notions) identifying the particular parts of the wood. The answer was correct only if all parts were assigned correctly.
- T5 – Purpose of the test item T5 was to find out whether the pupils understand content of the term *ecological*.
- T6 – Purpose of the test item T6 was to find out whether the pupils know what are the right clothing and shoes to be worn into the workrooms.
- T7 – The test item T7 was aimed at metals harmful to human health. The pupils were expected to choose from the given ones those that are harmful.
- T8 – The test item T8 dealt with the pupils' understanding of the term *thermoplastics*.
- T9 – Purpose of the test item T9 was to find out pupils' knowledge related to the area of the use of different technical materials, in particular expanded (sponge) polystyrene.
- T10 – The test item T10 was focused on the pupils' knowledge of technical material characteristics. The task of the pupils was to order four kinds of materials according their hardness. The answer was correct only in case that all four materials were ordered correctly, independently on the fact whether it was done in an ascending or descending way.
- T11 – The test item T11 was aimed at the pupils' knowledge of electrotechnic symbols. The task of the pupils was to identify symbol of a bulb within a given picture.

For each correct answer the pupils were given one point.

### 4 Research results

Results of the monitoring of the pupils' knowledge level regarding teaching the subject *technology* are summarized and compared in a graphical form in Figure 1.

As Figure 1 shows, with exception of the test task T4 and T6 pupils achieved better results at all tasks in the current monitoring (2018) than in the previous one (2010). To confirm the working hypothesis

H0: Pupils' knowledge level resulting from teaching *technology* identified in 2018 is the same as the one identified in the previous period (2010).

t-test for sets of data with the same variance. Before that, to find out whether the variance of the sets are really the same, F-test was used. Results of F-test (Table 1) proves that there is no significant difference between the set variances ( $p = 0.09$ ). Consequently, based on the results of t-test (Table 2) the null hypothesis was rejected ( $p = 0.00005$ ) on the significance level  $\alpha = 0.05$ .

Table 1: F-test results

	2010	2018
Mean	5.92	7.41
Variance	4.38	6.01
Observations	60	102
df	59	101
F		1.37
P(F<=f) one-tail		0.09
F Critical one-tail		1.48

Table 2: t-test results

	2010	2018
Mean	5.92	7.41
Variance	4.38	6.01
Observations	60	102
Pooled Variance		5.41
Hypothesized Mean Diff.		0
df		160
t Stat		3.95
P(T<=t) one-tail		0.00005
t Critical one-tail		1.65
P(T<=t) two-tail		0.00
t Critical two-tail		1.97

Rejection of the null hypothesis  $H_0$  means, that there has been proved that there is a statistically significant difference between the results achieved by pupils in 2018 and 2010. The difference is in benefit of the pupils in 2018, what confirms also the means of the achieved score (average number of points achieved by the pupils in the respective years: in 2010 – only 5.92, in 2018 – increase to 7.41).

The test task T4, in which pupils in 2010 achieved in average a higher point score than pupils in 2018, was focused on knowledge of technical materials, in particular wood. Solving of the task bears relation to the lowest level on Niemierko's taxonomy (Niemierko, 1979), as well as the task T6, at solving of which the pupils were more successful in 2010 (the task focused on the right clothing and shoes in the workrooms, difference between the means achieved by pupils at this task in 2010 and 2018 was minimal 0.87 vs. 0.83 respectively).

The biggest difference of the results was recorded at the test task T5 (0.32 vs. 0.80), which tested the pupils' understanding of the content of the term *ecological*. As this term has been used in common and pupils can meet it also in other subjects teaching (e.g. in biology), this results is quite surprising.

#### 4 Discussion of the results

The research results proved that the innovation of the State educational program of *technology* education has brought improvement of pupils' quality education. But it should be under investigation whether also the pupils' skills have been improved proportionally to the knowledge increase, so as the secondary vocational schools require it. However, pupils' skills strongly depend on material-technological equipment of schools and investigation of different researches show that *technology* teaching supporting equipment of schools is very poor (Hašková, Bánesz, 2015).

As to the scope and content of technical subjects taught at basic schools, after 10 years of basic school reformation we have come

back nearly to the level as we had before the reform. Almost, because five years of the reform was enough for basic schools to disappear the classrooms specialized for technical subjects teaching (workrooms) and with them also the appropriate equipment, devices, tools, teaching aids and materials necessary for pupils' practical training activities.

Due to the national projects *Creative Workrooms I* and *Creative Workrooms II* a 226 of the basic schools obtained material-technological equipment appropriate to ensure *technology* teaching, from the total number of 1400 schools in Slovakia it has been only a very small part (ŠIOV 2013 - 2015; ŠIOV 2015).

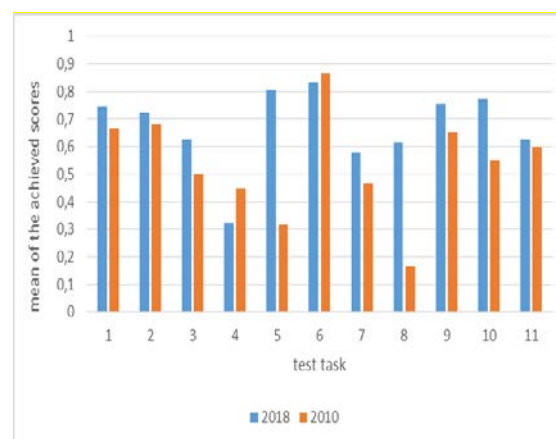


Figure 1: Comparison of the pupils' results achieved at the particular test tasks in 2018 with results from 2018

It is necessary to mention that based on an intervention of the respective section of the Ministry of education, science, research and sport of the Slovak Republic, into the innovated educational standard there was introduced an additional part topically focused on household economy. This was done at interest of 33 lessons per year, previously allocated to *technology* teaching. Under a direction of the Ministry it was recommended to schools to teach at the most 11 lessons per academic year in grades 5<sup>th</sup> - 9<sup>th</sup>. Professionals assess this step as a very inappropriate, enabling to schools not to fulfil in the whole range requirements put on them through the valid innovated educational standard of *technology* (Pavelka, Kuzma, 2017).

#### 5 Conclusion

Current state of teaching *technology* at basic schools offers a hope that due to the introduction of the innovated educational standard for *technology* there will be created in successive steps appropriate conditions for technical education development and support. Otherwise, one can hardly expect that in the forthcoming years pupils' interested in studying technical branches will be increased.

On the other hand, not only the professionals point to a need of further updating of the innovated State educational program to adapt it to the current requirements of practice and society. In current form the innovated State educational program is only at the half of its way to be a decisive document determining content of education, and its further innovation is necessary (Papuga, 2015).

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**Primary Paper Section: A**

**Secondary Paper Section: AM**

## ACTIVE AGEING AND ACTIVE OLD AGE IN THE EDUCATIONAL CONTEXT

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The study presented here was published within the research task VEGA of the Ministry of Education, Science, Research and Sport of the Slovak Republic and the Slovak Academy of Science no. 1/0001/18 called *Preparation for ageing and old age - possibilities of andragogical intervention*.

**Abstract:** The study analyses the concepts of active ageing and active old age, comparing them to usual ageing and usual old age. In the first chapter the author deals with the concept of active ageing, its attributes and influencing factors by means of several transnational documents. He also pays his attention to the role of age management in active ageing and active living of the old age. The second chapter is focused on the relationship between active ageing, active old age and social inclusion of older adults and seniors from the educational point of view.

**Keywords:** (active) ageing, (active) old age, social inclusion, older adults, seniors, education, age management.

### Introduction

Ageing, old age and retirement often provoke worries of young and older people. Also seniors are worried about this life period. They often think about its course, what it will look like, whether it will be according to their expectations or whether it will fulfil their required criteria of quality.

It is evident that several factors influence the life in the old age (e.g. Tokárová, 2002; Balogová, 2005; Heřmanová, 2012; Zimermanová, 2012a, 2013, etc.). People can influence some of these factors so that they are beneficial for them. However, many respondents (clients of institutions for seniors) stated that health problems<sup>1</sup> and also their age are the key factors with a negative impact on their need or interest in further education (Hátár, 2014b, p. 42). Despite this fact, it is necessary to say that physical and mental activity play a very important role if they respect the health and age limitations of people (more in detail: Čornaničová, 1998; Štilec, 2004; Krivohlavý, 2011; Gracová, Selecký, 2017 etc.).

The aim of this study is to define the concepts of active ageing and active old age comparing them to the traditional perception of ageing and old age. R. Čevela, Z. Kalvach and L. Čeledová (2012, p. 28) state that ageing and old age can have three basic forms: 1) *successful ageing and healthy (active) old age*, 2) *usual ageing and old age* and 3) *pathological ageing*, and we would also add *pathological old age*. The subject of our study is to compare these forms of ageing and old age, focusing more on the active ageing and active living of the senior age. We understand these concepts of active ageing and active old age as tools of social inclusion of older adults (pre-retirement age) and seniors because these age groups are often at the risk of being socially excluded. We look at the topic of active ageing and active old age mainly from the educational point of view.

### 1 (Active) ageing and (active) old age - conceptual and relational analysis

#### 1.1 Ageing versus Active Ageing and Old Age versus Active Old Age

There is a difference between ageing, which is considered to be a natural and lifelong process, and the old age, which is a period of life and the result of ageing<sup>2</sup>. If we perceive this difference, then it is necessary to differentiate also between the concepts of active ageing and active old age. This is not a usual point of

view in English literature and legislation (compare, e.g.: *Active Ageing: A Policy Framework*, 2002 or *Active Ageing Index for 28 European Union Countries*, 2014). Also the Czech sociologist J. Hasmanová Marhánková (2013, p. 17) or I. Tomeš and L. Bočková (2017, p. 47) probably understand these concepts as synonyms. However, in our study we will strictly differentiate the concepts of ageing and active ageing as well as the concepts of old age and active old age, though these concepts can overlap in the last periods of life (when people are in the senior age and they continue getting older).

R. Čevela, Z. Kalvach and L. Čeledová (2012, p. 20) define the concept of *ageing* as a complex of involutionary, morphological and functional changes whose beginning is gradual, with a significant interindividual variability. At the same time, it is also a heterochronic process after reaching the sexual maturity. The human body has to adapt to these changes. According to these authors, the process of ageing is dissociated, disintegrated and asynchronous, partially encoded genetically and partially developed by coincidental phenomena, mistakes and disorders.

The above mentioned definition of the process of ageing is more physiological, or medical. In order to complete this definition, it is important to say that ageing is "a process of gradual involution with accompanying biological, psychic and social changes in the human organism and personality" (Hotár, Paška, Perhács et al., 2000, p. 421). Nowadays, the spiritual changes / aspects in the personalities of older people also belong to frequently discussed topics (more in detail: Balogová, 2005; Ondrušová, 2011; Kováč, 2013; Kaminská, 2017 etc.).

R. Čevela, Z. Kalvach and L. Čeledová (2012, p. 19) perceive *old age* as "the last developmental stage which closes the human life. In general, this is an expression and result of involuntary functional and morphological changes. They have a specific speed and significant interindividual variability. These changes lead to a typical form designed as *the phenotype of the old age*. This phenotype is modified by the influence of surroundings, health condition, lifestyle and socioeconomic and psychical factors".

As we have mentioned above, we consider it relevant to differentiate not only the concepts of ageing and old age, but also the concepts of ageing and active ageing and the concepts of the old age and active old age. We perceive active ageing and active old age as a higher level of the attitude of people to their own ageing and old age. This attitude is not a passive approach, but it is characterized with a meaningful activity. We could compare the relationship between ageing and active ageing and between the old age and active old age to the difference or relationship between the education and self-education. The prerequisite for the self-education is a mature personality which has a high level of autoregulation (Perhács, 2011, p. 95). In the same way, active ageing and active old age represent a certain "top" of human effort.

In the specialised literature there we can find several concepts or forms of the so called desirable ageing. P. Vanhuysse (2012, in: Repková, 2012a, pp. 12 – 13) mentions four key concepts: *the concept of active ageing*, *the concept of healthy ageing*, *the concept of productive ageing* and *the concept of successful ageing*. According to the definition of the WHO (2002), *the concept of healthy ageing* is about the ability of people to keep going even though their physical functions are becoming weaker. *The concept of productive ageing* focuses on the economic contribution of seniors that is measured with their paid work or voluntarism. *The concept of successful ageing* is related to a low predisposition to diseases or chronic disorders, as well as to a high cognitive and physical capacity and active participation in different areas of life. P. Vanhuysse (2012) explains that the concept of active ageing is based on three key pillars: health, participation and safety as they were defined by the WHO (in: Repková, 2012a, pp. 12 – 13).

<sup>1</sup> In specialised literature there is often used the concept of *polymorbidity* that means cumulation of illnesses (more in detail: e.g. Haškovcová, 2010, p. 251).

<sup>2</sup> The mentioned definition of ageing and old age was stated in the Swiss *Information platform of human rights* (<https://www.humanrights.ch/de/menschenrechte-themen/alter/problematik/>).

The WHO states in the document *Aktiv Altern: Rahmenbedingungen und Vorschläge für politisches Handeln* (2002, p. 12) that active ageing is characteristic of individuals as well as groups of population. "The word *active* is related to incessant participation in social, economic, cultural, spiritual and civic life. It does not mean only the possibility to stay physically active or included in the working process" (*Aktiv Altern: Rahmenbedingungen und Vorschläge für politisches Handeln*, 2002, p. 12). It is also written in this document that older people can participate actively in the life of their families, peers, surroundings and country even though they are not active in the working process anymore, or they can have some kind of disability.

I. Tomeš and L. Bočková (2017, p. 46) say that the *Index of active ageing* introduced the new perception of active ageing into the practice: "Active ageing refers to situations when people continue with their participation in the labour market and they are involved in other non-paid activities as well (e.g. providing healthcare within a family or voluntarism). They live in a healthy, independent and safe way during the time they get older". The mentioned index of active ageing is based on four attributes:

1. *employment* (indicators: the level of employment at the age of 55 - 59, 60 - 64, 65 - 69 and 70 - 74);
2. *participation in the society* (indicators: voluntary activities, care about children and grandchildren, care about older adults and political participation);
3. *independent, healthy and safe life* (indicators: physical activities, approach to healthcare, independent life, secure financial situation, physical safety and lifelong learning);
4. *capacity and favourable environment for active ageing* (indicators: remaining length of life after the age of 55, length of healthy life after the age of 55, mental well-being, usage of ICT, social relationships and acquired education) (*Active Ageing Index for 28 European Union Countries*, 2014, pp. 14 - 15; Tomeš, Bočková, 2017, pp. 46 - 47).

According to the propagation material *Active Ageing* compiled by A. Račková and R. Ochaba (2012) on the occasion of the *European year of active ageing and solidarity between generations*, this active ageing is based on four principles: active participation in the labour market and communitarian life, active work in the household and active spending of leisure time.

J. Hasmanová Marhánková (2013, pp. 18 - 19), inspired with the work of K. Boudiny (2012), mentions three approaches to active ageing. The first, one-dimensional approach is typical of the social politics of the European states. Active ageing is defined there in the economic context as the participation of seniors in the labour market. The second, multidimensional approach defines several levels of active ageing, including the active spending of leisure time. Unfortunately, this approach tends to divide the leisure time into active and passive one and this leads to the exclusion of certain groups of population from the category of actively ageing people (e.g. groups with unfavourable health condition). The third approach does not look at active ageing only from the point of view of activity and behaviour of people. It perceives the active ageing as "a life situation that enables people to stay self-dependent, providing them satisfactory conditions for the personal development. However, this conception makes active ageing impossible / unreachable for those who are already dependent on other people due to their worsened health condition" (in: Hasmanová Marhánková, 2013, p. 19).

*Participation in social life* is one of those three principles of active ageing mentioned in the definition by WHO. This participation is divided in three following areas:

- 1) *Offer of educational and formational possibilities in every age* (basic education and minimal knowledge in healthcare, lifelong education in different areas, such as ICT, new agricultural techniques, etc.);

- 2) *Active participation of older people in the economic development by means of formal and informal work relationships and non-paid work according to their needs, preferences and abilities* (fight with the poverty and possibilities to earn money, formal and informal work, non-paid activity);
- 3) *Full participation of older people in family and communitarian life* (transport, involvement of older people in planning, realization and evaluation of healthcare, recreational and social programmes; society for all age groups; real and positive view at the process of ageing; supporting of the access of women to all possibilities of active participation; organizations for protecting the rights and interests of older people) (*Aktiv Altern: Rahmenbedingungen und Vorschläge für politisches Handeln*, 2002, pp. 51 - 52).

Referring to below mentioned authors, J. Hasmanová Marhánková (2010) says that this activity gradually gets the character of the so called "*universal good*". This concept is based on the gerontological works which present the advantages of active lifestyle in the old age (Katz, S., 2000). On the other hand, this connection of activity with the life in the old age is in opposition to the traditional perceiving of the old age characterized with the decrease of physical and psychological functions or passivity (Hazan, 1994; Katz, 1996). The author agrees with the opinion of M. Andrews (1999) that "positive images of ageing often blend with the images of the productive age or youth and all specific features of the old age are ignored" (in: Hasmanová Marhánková, 2010, p. 216). For this reason, it is indispensable to understand the concept of activity in the senior age in a correct way when we compare it to the activity in the pre-productive and productive age.

Several factors influence active ageing. The WHO divides them in the following way:

- 1/ *health condition and social care* (supporting of health, prevention of illnesses, nursing care, long-term care, care about mental health),
  - 2/ *influence of behaviour* (smoking, physical activity, healthy diet, care about the oral cavity and teeth, alcohol, medicaments, iatrogenia, consistent observance of the therapy),
  - 3/ *personal factors* (biological and genetic factors, psychological factors - e.g. intelligence and cognitive abilities),
  - 4/ *surroundings* (safety of surroundings - e.g. wheelchair access, safety at home, risk of falls, clear water and air, safe food),
  - 5/ *social factors* (access to social help and care, protection against violence and exploiting, possibilities of further education),
  - 6/ *economic factors* (income, work, social insurance),
- whereas *culture* and *gender* are perceived as universal factors (*Aktiv Altern: Rahmenbedingungen und Vorschläge für politisches Handeln*, 2002, p. 19 - 32).

Based on our experience and quoted literature in our study, we would like to say that, in general, *active ageing* (as an integrated unit formed of two key words: active and ageing) represents a *conscious or unconscious process occurring during all the life (or only in a certain phase) which influences all (or only selected) personal features and human body (i.e. physical, psychical, social and spiritual aspects). This process is accepted or not accepted by the ageing person and its basis consists of exclusively voluntary or involuntary human activity (not passivity). This point of view takes into consideration all possibilities and limitations of the given person.* On the other hand, *active old age* (as an integrated unit formed of two key words: active and old age) represents a *conscious or unconscious period of life which is accepted or not accepted by the senior. The basis of this life period lies in exclusively voluntary or involuntary human activity (not passivity) that respects the possibilities and limitations of the senior* (Hátár, 2018).

Z. Bútorová et al. (2013b, p. 13) mention the creation of three important documents in Slovakia in the year 2013 that support

the idea of active ageing. This idea was fully accepted and substituted the prevailing attitude to older people as object of protection. Documents such as *The Strategy of active ageing (Stratégia aktívneho starnutia)* and *The Action plan of fulfilling the strategy of active ageing (Akčný plán naplnenia stratégie aktívneho starnutia)* were created within the national project *Strategy of active ageing (Stratégia aktívneho starnutia)*. "They were aimed at detailed analysis of connections between the demographic ageing, the labour market and the retirement system. They were based on the analytical work of experts dealing with demographic, legal and sociological aspects of the given problematic area" (Bútorová et al., 2013b, p. 13). They also created an additional document to this *Strategy of active ageing - The national programme of active ageing for the years 2014 - 2020 (Národný program aktívneho starnutia na roky 2014 - 2020)*. In its introduction there is stated that "this is a new and comprehensive programme document aimed at supporting of human rights of older people with their active approach by means of public supportive politics. It does not deal only with the employment and employability of older people (the Strategy of active ageing primarily focuses on this area), but also with the area of supporting their lifelong education, civic and social activities excluded from the formal labour market, independence, dignity, economic and social security, including the protection against the bad treatment in all social areas and relationships" (Národný program aktívneho starnutia na roky 2014 - 2020, 2014, p. 3).

As aforementioned, the topic of active ageing and active old age is often connected with the employing of seniors and their staying at the labour market as long as possible. Here arises a question related to the role of *age management* in this social measure. The age management is understood as managing which takes into consideration the age and abilities of (ageing) employees. It focuses on three levels - individual level (a person), organisational level (a company) and a national or regional level (society) (Cimbálníková et al., 2011, p. 4; Cimbálníková et al., 2012, p. 34). T. Saarelma-Thiel (2011, pp. 15 - 16) describes a model connecting the typical critical changes at workplace from the long-term perspective with supporting managing measures (examples of good practice). This model consists of the following phases of working life: 1. getting used to the working life - a student becomes an employee, 2. promotion, 3. coping with the change in working ability - a healthy employee gets ill, 4. career at the crossroad - the risk of unemployment, change or loss of work, dissatisfaction with work, 5. *leaving the labour market - the right time and way of leaving from work*. Z. Bútorová et al. (2013a, p. 4) say that "two types of reforms, positive and negative reforms, are applied in order to introduce the strategy of active ageing. The positive reform means a complex support of the model of working ability for all generations. The negative reform is based on the prolonging of the age limit for the retirement and restriction of possibilities of the pre-retirement". From their research (Bútorová et al., 2013a, p. 8, 18) it is evident that *the ambition to learn new things, or further education* belong to the important general requirements of employers for their employees. Employees from the age group of 50 - 64 have a negative attitude to their own further education. It is a fact that in Slovakia is a lack of financial support to motivate people to further education. At the same time, the amount of money for lifelong education is decreasing with the increasing age of employees (Bútorová et al., 2013a, p. 19). Therefore, it is important to answer the question how we can support the idea or the general social tendency of active ageing and preparation for active old age by means of education.

### 1.2 Relationship between active ageing, active old age and social inclusion of older adults and seniors from the educational point of view

Nowadays, the concept of educational and social inclusion (e.g. Lechta, ed., 2012; Kusá et al., 2008; Gerbery, Porubánová, Repková, 2005; *Národný akčný plán sociálnej inklúzie 2004 - 2006*, 2004, etc.), is a frequently discussed topic, problem or challenge. In the specialised literature, *the social inclusion* is

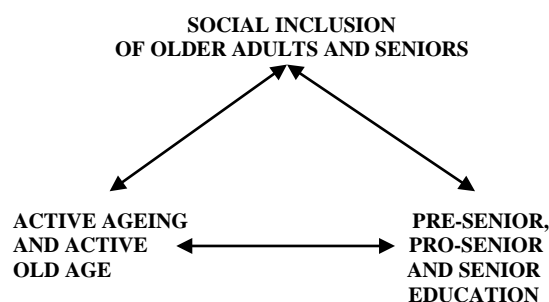
defined as "a process that guarantees that socially excluded people or people at the risk of being socially excluded have an access to such opportunities which help them to fully participate in the economic, social and cultural life. It also enables them to live in a way that is considered to be normal by the given society" (Kusá et al., 2012, p. 8). Social inclusion is often connected with the problem of poverty (e.g. *Národný akčný plán sociálnej inklúzie 2004 - 2006*, 2004; Gerbery, Porubánová, Repková, 2005; Kusá et al., 2012). However, the practice confirms the fact that also adults in the pre-retirement age and mainly seniors are often at the risk of being socially excluded (compare, e.g. § 2, part 2, letter e) of the *Law no. 448/2008 Codex of Law about social services* subsequently amended). Regarding the question of employment compare also Cimbálníková et al., 2011; Vaska, 2014; *Law no. 5/2004 Codex of Law about services of employment* subsequently amended). On the other hand, the *National action plan of social inclusion 2004 - 2006* (2004, pp. 9 - 12) states that other primary groups of population are at bigger risk of poverty and social exclusion (e.g. unemployed people, families with children, Roma population, disabled people, migrants, homeless people, etc.).

L. Cimbálníková et al. (2011, p. 38) say (in the context of the age management topic) that social inclusion is rather "a current phenomenon of the state's social politics", whereas social exclusion "tends to be nonrecurring in many cases and it is very often irreversible. The reason of the majority of cases of exclusion is the insufficient economic, social and cultural capital".

Adult individuals, who are before reaching the retirement age and real leaving from the working life, as well as retired seniors can have an active or passive attitude to their own ageing and old age. They can have different motivation for such behaviour. However, it would be beneficial for these pre-retired people and seniors, and indirectly also for the whole society, if older adults chose the alternative of active ageing and seniors active living of the old age, taking into consideration their own real possibilities and limitations.

Education with different focusing (e.g. cultural-educational, social-educational and professional focusing<sup>3</sup>) is one of suitable tools that can help people to get older (compare, e.g. Aktiv Altern: Rahmenbedingungen und Vorschläge für politisches Handeln, 2002, pp. 28 - 29) and live the senior age in an active way. However, we think that active ageing and active living are also connected with the social involvement of older adults and seniors. This can prevent their social exclusion and other undesirable forms of behaviour. For this reason, in our study we were also dealing with the relationship between the (pre-senior, pro-senior and senior<sup>4</sup>) education, active ageing, active old age and social inclusion of older adults and seniors.

Picture 1: Mutual relationship between social inclusion, active ageing, active old age and education



Source: author's own adaptation

<sup>3</sup> Mentioned division of the subject of geragogy, or focusing of education from the point of view of specializing aspects of andragogy is offered in the work by R. Čornaničová (1998, p. 124).

<sup>4</sup> The quoted division of the subject of geragogy, or education from the point of view of its generation - target orientation is mentioned by R. Čornaničová (1998, p. 124).

At the end of this part of the chapter we will briefly mention the possible ways of social exclusion of older people. R. Čevela, Z. Kalvach and L. Čeledová (2012, p. 111) describe the following ones:

- 1) *pauperization*, i.e. the economic exclusion from the everyday lifestyle and standard of the society,
- 2) *segregation*, i.e. the exclusion of seniors from the mixed-age environment to the environment of the same age, e.g. living in the residences for older people, etc.,
- 3) *ostracism*, i.e. the loss of fellowship with the majoritarian society.

As we have already mentioned, education can play a crucial role in the prevention and solving the problem of social exclusion of adults in the pre-retirement age and seniors. For this reason, it is necessary to pay adequate attention to this education in the theory and practice as well.

## 2 Conclusion

Preparation for active ageing and active old age is an equally important step in the life of people as, for example, the preparation of pre-school children for primary school, or the preparation of graduates from high schools or universities for the labour market. Unfortunately, we have to say that this part of conscious preparation of people is significantly under-evaluated. The practice itself often confirms that many employees in the retirement age have a problem to leave from the labour market and to pay their attention only to themselves, their family and friends. Seniors often perceive their own retirement, when they stop being professionally active, as an empty and meaningless life period because it seldom brings them joy, desire for further development and possibilities of their meaningful participation. However, this is not true. The retirement opens the new "door" for them. The specialised literature calls this phenomenon as the so called second life programme that has to be defined mainly on the basis of knowing the needs of ageing and old people. These needs are related not only to their health condition and material-financial situation, but also to their need of place - home where they feel beloved and respected (Haškovcová, 2010, p. 125).

Education, that is in the centre of our study, has a very significant place in active ageing and active living of the old age. However, we would like to conclude this topic with our opinion that for older adults<sup>5</sup> in the process of active ageing and for seniors in the process of active living their old age *is not important the intellectual performance they will achieve in the education. It is the footprint this education will leave in them that matters the most* (e.g. their old dreams will come true, knowing and meeting new people, social participation, hobbies, relax and self-realization). On the other hand, M. Štílec (2004, p. 14) or Z. Bútorová et al. (2013a, p. 8) point out to the fact that the present time puts more emphasis on the (working) performance, abilities, beauty and youth.

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<sup>5</sup> Based on the aim of this research task, which includes also the presented scientific study, we pay the biggest emphasis mainly on adults in the pre-retirement age and seniors.

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**Primary Paper Section: A**

**Secondary Paper Section: AM**

## THE EFFECTIVENESS OF THE FORMATION OF THE COMMUNICATIVE SKILLS OF ELEMENTARY SCHOOL STUDENTS IN ENGLISH CLASSES

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Background: This study provides an analysis of the results of psychological and pedagogical experiment on the formation of language competence skills in primary school students at English lessons. Methods: The work shows the features of the experiment stages and describes the model of formation of linguistic competence skills. Results and Conclusions: The results of the psychological and pedagogical experiment showed that the linguistic competence skills formed more intensively in students of the experimental class than in the control class students.

Keywords: elementary class, English language, language competence, model, psychological and pedagogical experiment.

### 1 Introduction

Language is the main component of speech used for communicative and cognitive purposes. It is difficult to imagine the development and existence of human society without communication. In modern conditions, great changes are taking place in social relations, calling to improve the students' communicative and linguistic competence [1].

In all developed countries, learning a foreign language is an integral part of elementary education, which is aimed at the students' acquisition of the ability of intercultural communication [2].

It is a well-known fact that in a multilingual world, a foreign language is one of the important and relatively new subjects in the process of development of modern primary school children, which contributes to the formation of the student's communicative skills, general speech development and personal enrichment. One of the most important subjects of the school program is English language, which is a must-know language in this modern world.

As a school subject, English language has following features:

- It is an interdisciplinary subject (The content of speech in a foreign language can be the knowledge from various fields, such as literature, art, history, geography, mathematics, etc.);
- It is a multilevel subject (On the one hand, it is necessary to master various linguistic means, including lexical, grammatical, phonetic means, and on the other hand, one needs the skills in four types of speech activity.);
- It is a multifunctional subject (It can serve as the purpose of learning and as a means of obtaining knowledge in various fields of knowledge).

In addition, the role of any language is determined by its status in the state and society. Primary linguistic education manifests itself as a value in the state, society and individual's relation to it. Thus, from this point of view, we can talk about language education of primary school children as a state, social and personal value [3,4].

In accordance with the state obligatory standard of primary education, the main function of the subjects of "Language and literature" educational field involves the use of communicative approach aimed at the development of skills in four types of speech activity. The content of language subjects is aimed at developing students' interest and positive attitude to learning languages through play and cognitive activities, as well as at forming initial communication skills for exchange of information, ability to work with text as a speech material, understanding the meaning of phrases and expressions and using them in specific situations. That is, students should be prepared and able to communicate with native speakers, taking into account the limited speech opportunities and needs in oral and written forms of communication [5].

The object of research: the educational process in primary school. The subject of research: the process of formation of linguistic competence skills in primary school students. Aim of investigation: to determine the level of formation of linguistic competence skills in primary school students.

### 2 Methods

Based on the goal and objectives of the study, a sample of Almaty primary school was formed in accordance with inclusion and exclusion criteria.

A number of theoretical and empirical research methods were used to achieve the goal of the study.

The research material is based on statistical materials of psychological and pedagogical experiment. A comparative analysis of literature sources (psychological and pedagogical) and educational and methodical documentation was carried out during the research. An educational process in primary school and educational practice was analyzed and evaluated. On the basis of the developed model, a psychological and pedagogical experiment was conducted among Almaty primary school students.

Statistical processing of the obtained data was carried out on the basis of a set of modern methods of automated storage and processing of information in PC using MS Excel and «Statistica» software package.

The initial provisions for building the model were holistic, activity and person-centered approaches to the organization of the educational process.

In our opinion, integrity should correspond to objective logic of the formation of linguistic competence skills; it should be gradual, continuous, and should have phases (quantitative changes) and stages (qualitative changes).

Activity approach to building the models of formation of linguistic competence skills in primary schoolchildren was chosen due to the data established in national psychology, stating that the invariable basis for the development of a man as an individuality is the activity [6, p. 18].

The process of formation of linguistic competence skills is impossible without the account of the needs and capabilities of an individual in the process of education. The implementation of person-centered approach is based on pedagogical situation, actualizing the personal functions of students.

The developed model contains the following components:

- informative,
- operational,
- evaluative and effective,
- pedagogical conditions.

The allocated pedagogical conditions for the formation of language competence skills in primary school students should be realized in the aggregate [7,8].

The result of the investigated process is a high level of development of language competence skills, which ensures productive interaction with members of different culture in the learning process. Within the frames of evaluative and effective component, on the basis of the adequacy of the implementation of linguistic knowledge in receptive and productive types of speech activity, medium and high levels were identified.

*At a low level of formation of language competence skills in primary school students at English lessons, students should be able to write all the letters of the English alphabet, they should know transcription signs, copy down a text; understand the teacher's speech, main content of easy texts; they should be able to ask simple questions from a partner, briefly talk about oneself, make small descriptions of objects, pictures following an example; read aloud small texts.*

*At a medium level, the students should aurally understand the main content of the small texts from audio recordings, read silently, understanding the main content of the text, find necessary information in the text; write greeting and short personal letters relying on an example; conduct a simple etiquettical dialogue, be able to tell about oneself, family, friends, describe the subject, picture at an elementary level.*

*At a high level, primary school students should be able to talk in standard situations of communication, ask a question from a partner and answer it, express own opinion, tell about oneself, family, friends; aurally understand the main content of announcements, native speaker's statements; read texts of different genres and understand their content, using bilingual dictionaries if necessary; fill out questionnaires, write congratulations, personal letters.*

### Research objectives

1. Acquisition of knowledge system in the field of foreign language necessary for communication.
2. Development and application of the formed key competences in receptive and productive types of speech activity, including reading, listening, oral and written speech.

Principles of research: scientific and systematic character, availability, consistency, and clarity of individual approach.

#### 1) Informative component

1. Formation of key phonetic competence
2. Formation of key grammatical competence
3. Formation of key lexical competence

#### 2) Operational component

1. Information-orientative phase
2. Transformative-correcting phase
3. Phase of activity

#### 3) Evaluative and effective component

Integrative criterion: adequacy of realization of language knowledge in receptive and productive types of speech activity, including reading, listening, written and oral speech.

*1. Low level of formation of language competence skills in primary school students at English lessons.*

*2. Medium level of formation of language competence skills in primary school students at English lessons.*

*3. High level of formation of language competence skills in primary school students at English lessons.*

The final expected result: higher level of formation of language competence skills in primary school students at English lessons.

#### 4) Pedagogical conditions

1. Management of cognitive activity of primary school students through individual and group collaboration;

2. Increasing interest and motivation to learn a foreign language;
3. Selection of culturological material.

All levels are uninterruptedly connected to each other. Each previous level is preparatory to the next level, and each of the subsequent levels invariably includes all the previous levels and qualitatively changes them. Based on the above, we provide the model of formation of language competence skills as a certain order of its stages, moving the students up to a higher level of their formation.

### 3 Results

The developed model was tested during the psychological and pedagogical experiment (2017–2018) Experimental work was carried out on the basis of secondary schools in Almaty. The experiment involved students of 3<sup>rd</sup> grade (N=127), including N=58 girls, N=69 boys.

Psychological and pedagogical experiment consists of 3 stages:

#### First – stating stage

At this stage, the control and experimental groups were determined. The purpose of this stage was to study and determine the level of formation of language competence skills in primary school students at English lessons.

At the initial stage, an interview was conducted, which helped reveal the level of students' knowledge. Knowledge of the alphabet, name of flowers, animals, and arithmetic skills were checked. Then the children were offered exercises and tasks, the purpose of which was to identify the level of students' knowledge in four types of speech activity (listening, speaking, reading and writing).

As a result of processing of the accomplished tasks and tests, the levels of students' acquisition of above aspects of language competence were revealed.

#### Second – formative stage

At the second stage of the experiment, a model of formation of language competence skills of primary school students at English lessons was realized. Formation of language competence skills, creative abilities, as well as the overall development of each student was the goal of the formative stage.

At this stage, the educational activities of primary school students were intensified in order to develop skills of language competence. The lessons included action games, visual material and handouts, songs and exercises, educational cartoons, dialogues and monologues in English.

To master speaking skills, a mini-performance in English was created. During the experiment, children learned songs, new words, phrases and sentences, which were then used in the musical performances.

At the lessons, children were provided with more visual material. In addition, thematic cards were used and attentiveness and memory games were played.

In order to improve the level of knowledge and skills in speech activity, particularly in reading, students were asked not only to read the text and understand its content, but also to answer interesting questions.

Also, in order to develop the writing skills, exercises for practicing grammar skills were used.

Apart from exercises and tests for the development of listening skills, the children were shown an educational cartoon in English. Students of the 3<sup>rd</sup> grade watched the cartoon, got acquainted with new vocabulary, reinforced previously learned material, and also aurally perceived foreign speech.

After watching the cartoon or listening to stories, students were asked questions about the content of the cartoon or text to determine whether they understood the meaning and content of foreign speech.

In addition, it was found that there were children in the groups, who had low motivation to learning English. They were inattentive, did not show interest in the subject or had quickly vanishing interest.

However, most of the students were interested in learning English. They sang songs with pleasure, participated in all the performances and games in foreign language. In a casual conversation, some shared their dreams about their future profession. There were students among them who plan to connect future profession with a foreign language, for example, to become an English teacher at school or to be a traveler.

The developed model included active ways of organizing the educational process, modern approaches and pedagogical conditions, which, in case of effective interaction, contribute to the motivated and effective acquisition of a foreign language by primary school students.

Table A. Relative share of formation of language competence skills in primary school students

Aspects of linguistic competence	Beginning of experiment (P%±m%)		End of experiment (P%±m%)	
	Control group	Experimental group	Control group	Experimental group
Listening	42.6±1,0	50.5±1,2	43.6±1,0	78.5±3,6
Speaking	50.7±1,2	54.3±1,3	46.7±1,0	79.3±3,8
Reading	51.2±1,2	50.0±1,2	48.2±1,0	77.8±3,5
Writing	53.5±1,2	48.3±1,0	51.4±1,2	76.9±3,2
Level of statistical significance ( $p < 0.0001$ )				

The results confirm that the students of the experimental class develop language competence skills more intensively compared to the students of the control class. Thus, students of the experimental class are much more interested in learning a foreign language ( $F_{cr}=6,268$ ). Accordingly, there is a positive dynamics of development and formation of communication skills among the students of this group.

#### Third – control stage

At this stage, the tasks and tests aimed at identifying the level of students' knowledge in four types of speech activity were re-applied. The analysis of tasks at the beginning and the end of experimental work allowed to establish that results of formation of language competence skills in primary school students of experimental group surpass results of the control group.

Thus, relative share of formation of language competence skills in primary school students at the beginning of the experiment in the control group on listening was 42.6% and increased by 43.6% by the end of the experiment.

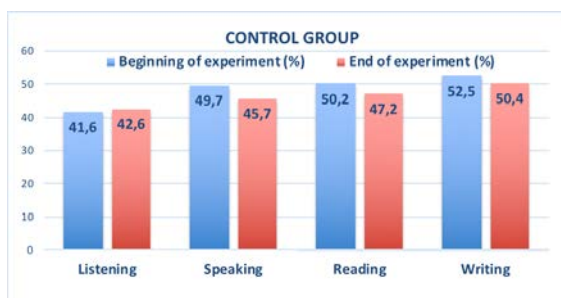


Figure A. Relative share of formation of language competence skills in primary school students of control group.

While on the other three indicators of the aspects of language competence the group shows a decline, i.e., speaking was 50.7% and it decreased to 46.7%, reading was 51.2% and it decreased to 48.2%, and writing was 53.5% and it also decreased to 51.4% (Table A, Figure A).

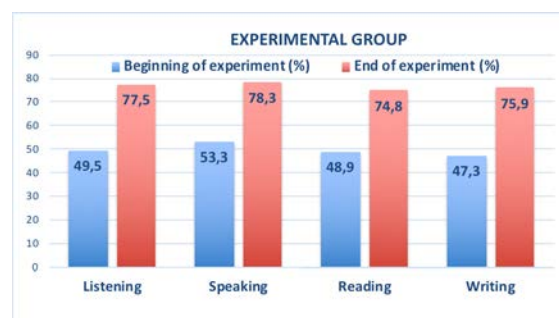


Figure B. Relative share of formation of language competence skills in primary school students of experimental group.

As for the indicators of the linguistic competence aspects of the experimental group, we see a positive development. Thus, at the beginning of the experiment relative share of formation of language competence skills on listening in primary school students was 50.5% and it increased to 78.5%, on speaking it was 54.4% and it increased to 79.3%, on reading it was 50% and it increased to 77.8%, on writing it was 48.3% and it also increased to 76.9% (Table A, Figure B).

The results of this work let record qualitative and quantitative changes in the degree of formation of language skills in primary school students. The analysis and generalization of the results obtained in the course of the experiment showed that the methods of language activities used in the classroom let us better study individual students, awaken their interest in learning, achieve absolute contact in interaction with primary school students, create an atmosphere of goodwill and active creative work, ensure active participation of each student.

To teach children communication, it is necessary to form and support their motive of communication. Therefore, everything should be motivated at the lessons, including the perception of educational material, and transition from one activity to another, one type of speech exercise to another.

### 3 Conclusion

In conclusion, results of formation of language competence skills in primary school students of experimental group surpass results of the control group. Thus, during repeated exercises in the experimental group, speaking improved by 25%, listening improved by 28% ( $p < 0.0001$ ). In addition, there is an improvement in reading by 25.9%. Writing skills improved by 28.6% by the end of the experiment ( $p < 0.0001$ ).

While implementing models of formation of primary school students' linguistic competence skills, it was revealed that it is necessary to include activities like watching cartoons in English, listening to authentic text, action games, exercises with elements of foreign language speech, visual handouts, cards into lessons. This model helped to improve primary school students' language competence skills at English lessons.

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**Primary Paper Section: A**

**Secondary Paper Section: AM**

## AUTOMATION OF BUSINESS PROCESSES AT THE ENTERPRISE DURING A BRAND FORMATION

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**Abstract:** The modern market economy requires quality products and strong brands from enterprises. Being the basis of the company's capitalization, effective brands help to increase profitability and profitability, both for economic entities in particular, and for economic activities in general, therefore, it can be concluded that today's modern market is a brand market and, in turn, "fate". The company (manufacturer/seller) directly depends on the "fate" of the brand. It should be noted that in these realities, the formation and management of a brand are necessary not only for the consumer market but also for almost all participants in the process of developing, producing and selling an innovative quality product.

**Keywords:** business process, brand formation, brand value, management.

### 1 Introduction

All this knowledge should be embodied in products for both production and consumer purposes. At the same time, there will be an increasing need for deepening and expanding scientific knowledge and ideas in the field of effective optimization of business management, which is able to provide solutions to the tasks set. One of the effective ways is the creation and development of a strong brand through the optimization of business processes in the enterprise since this optimization allows to improve the quality of products, which in turn directly affects the formation of the brand in the "minds" of consumers.

Before considering the main approaches to optimizing business processes, it is necessary to clarify the definition of the term "brand", which is practically unknown in Soviet economics, but

the root for the entire terminological paradigm of branding. Moreover, this task is not nationally inherent only in post-Soviet economics. So, aptly stated on this issue fifteen years ago, "It's funny, but one of the hottest points of disagreement between experts is the definition of a brand," sounds, oddly, as relevant as if it were said today. (1, p9) Moreover, this task in light of the networking of the globalizing economy can be considered - starting with the period of the emergence of "empathic marketing" - central to a significantly modified marketing theory, where "the emphasis of both practical actions and theoretical generalizations are transferred from "Competitor" to "Buyer"". (2) The buyer's influence on the brand value (statistically subjective indicator), reflected in the form of integrated feedback of the proposed CCVB branding model (Figure 1), increases significantly and rapidly with the development of social networks on the Internet. Social networks have long been considered to be exclusively influential tools that shape the attitudes and behavioral intentions of customers and have an increasing influence on the perception of brand value. (3)

Assessing the essential characteristics of social networks in branding, it is important to note that social networks are a universal platform for informal and official public communication, differing in a complex social structure based on the interaction of groups of nodes, social actors and objects that implement social and economic relations and by them.

Thus, the generalization of a number of concepts, models, and provisions belonging to the modern theory of branding, led to the following definition of the concept of the brand. A brand is a multidimensional coded signal (economic, functional, emotional, culturological) that carries a message (promise) designed to identify goods under this brand and/or the owner/user of this brand, assign ownership of this brand to the owner, also cause a cognitive resonance in the target market, associated with the generation of positive associations generated by previous consumption experiences and/or expectations of a real-virtual community forming a specified market, the result of which is expected, to one degree or another, the following results: (4)

- 1) the willingness of the target market to pay for this brand (brand product) more than for the products-analogs of competitors or former own goods;
- 2) preservation/expansion of the target market within the life cycle of this brand (up to the recession phase);
- 3) the emergence of this brand as brand capital and, accordingly, the transformation of the brand into an object of sale or lease. (5)

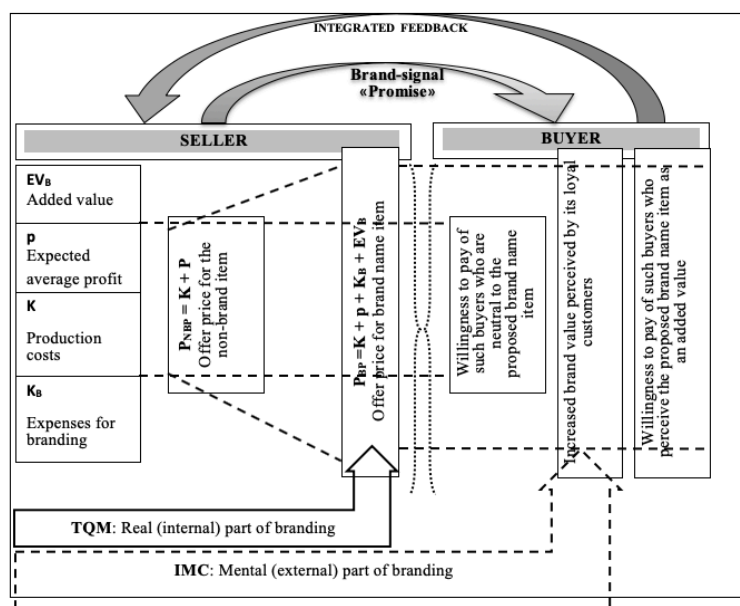


Figure 1. Complex Cost Value Branding Model – CCVB-model

Keyword: TQM – Total Quality Management; IMC – Integrated Marketing Communication.

Source: Cherenkov and Vereteno (6)

So, optimization gives advantages that allow an enterprise to stay afloat such as compliance with the market, optimization of operations, risk reduction, efficient use of resources, quality, end-to-end-visibility. Examples of optimization can be the optimization of the processes of the company's structural divisions, improvement of communication, forecasting of changes.

## 2 Materials and Methods

Business process optimization is often mixed with other concepts, such as business process improvement or business process automation.

Business process automation is an approach in which organizations assign as many continuous business process tasks to systems as possible to increase efficiency, reduce costs and reduce the volume of documents. Business process management involves managing complex organizational processes through a combination of different methods. An example of a successful business process optimization is Safaricom, which successfully brings together customers, employees, suppliers, and processes to increase profit growth. Safaricom sells telephones, contracts, and airtime through an extensive dealer network. Transformations: a partnership with IBM, Safaricom, replaced existing Oracle E-Business Suite R12 and Oracle Fusion Middleware applications, and automated manual processes, such as payments. Safaricom and IBM decided to re-deploy their existing Oracle environment to provide a clean run and expand it with new applications. Results: accelerated processing of payments, the transition from several days to several minutes. Safaricom decided to implement automation to speed up operations, reduce manual labor, improve business control and improve the quality of its financial information and other critical parts of the business. (7)

The rapid growth has led to the fact that Safaricom manual business processes were under pressure and risked dealer relationships. To increase customer loyalty while improving service delivery, the company attracted IBM® Services to deploy Oracle, an integrated application suite that provides effective automation of processes and increased customer satisfaction.

To solve optimization problems, you can apply the following methods such as dynamic programming, maximum principle, calculus of variations, linear programming, nonlinear programming.

The optimization task is of the form (general formulation of the problem):

$$\text{Max or Min} \quad n Z = f(x) \quad (1)$$

subject to the constraints,

$$g_j(X) \geq \leq 0, \quad j=1,2,3,\dots,m \quad (2)$$

where,

$$X = (x_1, x_2, x_3, \dots, x_n)^T \quad (3)$$

In general, such tasks are called mathematical programming problems. The function in (1), which must be maximized or minimized, is called the objective function. The conditions specified in (2) are called restrictions. Variables are called solution variables, and the conditions in (3) are called the nonnegativity conditions of the variables. (8)

Thus, any mathematical problem consists of three main part:

- 1) Target function;
- 2) Restrictions;
- 3) The condition of nonnegativity of variables. (8)

Classification of optimization tasks by features:

- 1) Classification by the number of objective functions (one objective function - the problem of single-criterion optimization (programming). Two or more objective functions - multi-criteria optimization (of programming).
- 2) Classification reflecting constraints is a task with constraints, i.e. conditional optimization problem.
- 3) Classification by type of objective function and constraints (the objective function and all restrictions of which is a linear function - a linear programming problem). (9)

Optimization of business processes allows you to transform business processes into business processes with predictable business results. Business processes optimization streamlines

support functions to provide economies of scale, optimized global coverage, strong management, continuous improvement, advanced consolidation approaches, and embedded intelligence in operations.

The process approach is an example of one of the methods of effective enterprise management.

The process approach is based on the improvement of business process indicators. Identify such indicators of business processes that are directly related to the quality of the service or product, or indicators as a financial result and the degree of satisfaction of consumers or customers. The duration of the tasks is also one of the important indicators. For example, in a bank, an indicator of the duration of processing a loan application. (9-11)

Therefore, it is very important to define certain standards and indicators that will directly affect the efficiency of the enterprise.

The criterion for the value of products/goods or services is determined by the market price, which must cover the costs of producing products/goods or services. When estimating the costs of business processes, in a separate business process, the added value can be expressed as a specific indicator. A specific indicator is an indicator that is determined by the ratio of a specific parameter (or a combination of several parameters) to another parameter/parameters. Indicators of the effectiveness of business processes include such indicators as temporary indicators, indicators of material costs, indicators of the cost of marriage, cost indicators for the use of resources per unit of production, process cost indicators, sales per employee. It is important to consider business processes in certain categories, such as the development of products and services, demand generation, satisfaction of demand, enterprise planning and

management. The processes show what kind of work is done and how, where and when it is done and, therefore, they should be considered in terms of such categories like quality, quantity, time, ease of use and money.

An example of improving the efficiency of business processes. Reducing the time and cost of repair and rehabilitation operations, increasing the interrepair cycle.

The calculation of economic efficiency is carried out on the example of the mine PW-1, by comparing the costs of replacing the existing methods of repair and rehabilitation operations with a hydroimpulse one.

The cost of a portion of the repair and rehabilitation operations of mine PW-1 amounted to:

Wells flushing (1BA-15V) 10455 crew hour 17159800 tenge (98 treatments).

Compressor pumping 438 crew hour 801 540 tenge (150 treatments)

When forecasting the operating costs for repair and rehabilitation operations per well within 20,000 tenge per well, the cost of conducting  $(98 + 150) = 248$  treatments will be  $248 \times 20\,000 = 4\,960\,000$  tenge.

Time costs will amount to  $248 \times 5 = 1240$  crew hour.

Time-saving will be  $(10455 + 438) - 1240 = 9653$  hours or 402 days.

Additional income by obtaining an additional amount of metal will be  $402 \times 1,59 \times 2200 = 1406196$  tenge.

Table 1. Data Processing Pumping Wells PW-1 by Using Various Methods

Mine PW-1 Precinct	Compressor processing	Average productivity after repair and rehabilitation operations, m <sup>3</sup> /hour	Processing BA-15V	Average productivity after repair and rehabilitation operations, m <sup>3</sup> /hour	After treatment with a hydrodynamic emitter, the flow rate of the section "North" increased to 8m <sup>3</sup> /hour
Centre		5.2		5.8	
№10		5		5	
South		4.2		5.8	
East		4.4		5.7	
North		4.6		5.4	

The estimated economic effect can be:

$(17\,159\,800 + 801\,540) + 1\,406\,196 - 5\,160\,000 = 14\,207\,536$  tenge/year when using GDI on one PV.

Comparative analysis of unit costs for 1 day of repair and rehabilitation operations of various methods of the interrepair cycle.

Indicators of the cost of repair and rehabilitation operations and losses in production per 1 pumping well per year for 1 day of the interrepair cycle. Indicators of the cost of repair and rehabilitation operations and losses in production for 1 injection well per year for 1 day of the interrepair cycle.

To calculate the cost of 1 unit of repair and rehabilitation operations, we take the average interrepair cycle in the range of 50 days.

Costs for one processing are accepted in the amount of 20,000 tenge.

The processing time of one well is taken at a rate of 5 hours, the metal loss will be  $1.59 \times 5 / 24 \times 2200 = 7\,28$  tg.

The costs will be  $(20000 + 728) / 50 = 414$  tg/day of interrepair cycle.

For comparison, the unit costs for 1 day of the interrepair cycle operations for different types of repair and rehabilitation operations are:

Air impulse - 616 tenge - pumping well, 3189 tenge - injection well

Pumping - 4049 tenge - pumping well, 13714 tenge - injection well

Flushing - 3818 tenge - pumping well, 4066 tenge - injection well

If you take a period of 1 year, on average for the year of unscheduled cleanings of one well is 3 cleanings at a minimum.

One such cleaning costs an average of 2.5-3 million tenge.

Multiply 2.5-3 million tenge by 3 cleanings per year = 7.58-9 million tenge.

We multiply by the current number of wells:  $10,000 \times 7.58$  million tg = 75,000-90,000 million tg per year. This number in million tenge shows savings from unscheduled cleanings (since the introduction of a hydraulic radiator avoids unscheduled cleanings). (9)

This example shows an improvement in business process performance.

Business Process Modeling – is a mapping of business processes oriented by objectives, developed according to certain systematics and form of presentation.

The objectives of business process modeling are aimed at ensuring that business processes of the enterprise can be documented in order to receive data in a timely manner; to represent the actual situation in the organizational unit of the enterprise, transfer business processes to other divisions, regulate work processes and methods through external management mechanism in order to fulfill obligations to business partners or the business community (for example, on enterprise certification), meet current legal norms, train or introduce employees, avoid loss of knowledge (for example, when an employee is fired), support quality management and environmental management. (10)

## 2.1 Business processes modeling

Business modeling methodology is a combination of methods and principles for constructing business modeling models.

Modeling is carried out with the help of graphic elements (a combination of notations) and the rules for their use. Currently, the most common methodologies are IDEF0, ARIS, etc.

The modeling methodology distinguishes such approaches as functional and object-oriented.

In a functional approach to modeling, the main element is a function (operation), and a business process is represented as a sequence of functions that transform process inputs into outputs using certain resources. (11)

In terms of the relevance of the content of the model are divided into:

1. Model “As is” reflects the REAL state of affairs at the time of the description, actually existing, established technology of work.
2. Model “To be” reflects the target state, which is supposed to be implemented in the future. For example, a working model of a newly opened enterprise, or a new (completely new or improved old) procedure for performing any work.
3. Model “Should be” reflects the “idealized” state of affairs (for example, according to regulatory documents, while the actual scheme of work may, in reality, be somewhat different). In practice, the need to build such models is infrequent.

Moreover, these models of the same process can vary quite significantly.

Example. Let's consider an example of improving the business processes of the accounting department based on the introduction of the target model of the mining industry by the example of the implementation of the target model of the accounting process for the fixed assets of the mining industry.

The target model for the accounting of fixed assets of the extractive industry enterprise, which was developed considering the subsequent automation of the process in the accounting system. Detailing the target model is designed to structure and control the completeness of the development and approval of process documentation.

When introducing the above target model for the accounting of fixed assets, the resulting fact is the optimization of the process of the accounting of fixed assets by reducing the processing time of accounting information in the accounting system, reducing the time required to prepare reporting forms for accounting for fixed assets, and also reducing the time for entering accounting information into the data system by a single input information into the accounting system and its mapping in various modules of the system and obtaining operational information from the system by users and the international stakeholders.

Description of the target model for the accounting of fixed assets. Accounting operations and controls for the asset accounting section in the target model while improving the business process are carried out according to the following process maps:

1. Implementation of accounting operations and controls on the site of accounting for fixed assets.
2. Reception of primary documents, their scanning, processing
3. Verification of documents on formal grounds
4. Incorporation of documents into the electronic document management system
5. Preparations for the closure of the fixed asset accounting section.
6. Preparation of information about objects according to accounting data (list, cost)
7. Preparation of information on the technical condition
8. Verification of information
9. Assessment of the amount of impairment of non-current assets
10. Verification of the Fixed Assets Assessment Report
11. Approval of the report on revaluation/impairment of fixed assets
12. Check of completeness and correctness of operations and documents on the site
13. Preliminary depreciation calculation
14. Conducting results of valuation/impairment of long-term assets in accounting
15. Adjusting for proper depreciation
16. Productive depreciation calculation.
17. Analysis of the accounts for the accounting of the unfinished capital investments after the calculation of the cost price
18. The final control of the site for recording non-current assets (fixed assets, intangible assets, construction-in-progress).

## 3. Results and Discussion

### 3.1 Business processes optimization

Consider a method of optimizing business processes (department of the control unit of the mining enterprise), which was developed based on the “target model of the enterprise”. The methodology consists of the following successive steps:

1. Building a model “As is”;
2. Then the analysis is performed;
3. A “Should be” model is being developed, parameters, resources, infrastructure, and workflow of the business process are being rebuilt;

Development of the target model “Should be”. A plan for the implementation of an optimized business process is being developed, the transition to the “Should be” state.

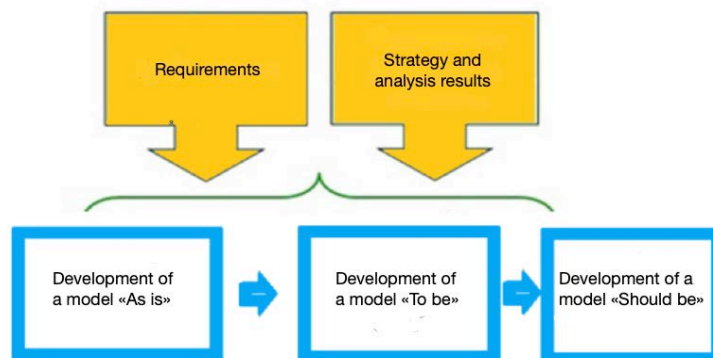


Figure 2. Accounting Processes

As a result of the introduction of the target model,

the whole chain of interconnected business processes will be improved:

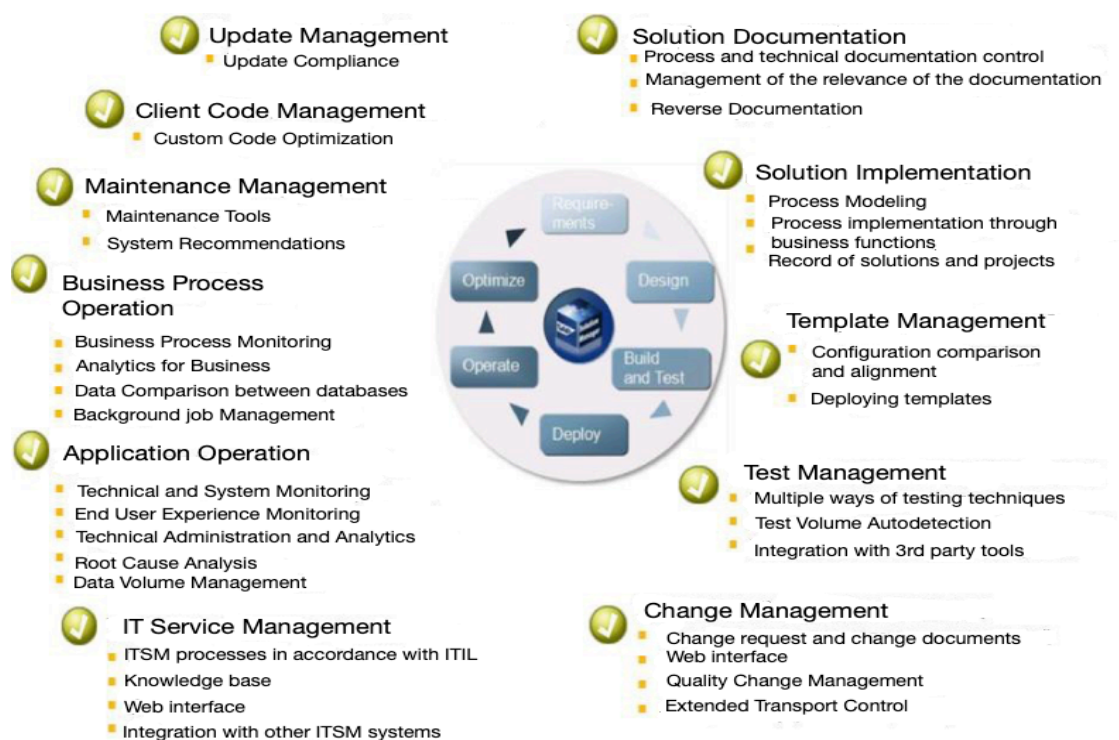


Figure 3. Chain of Interconnected Business Processes

Table 2. Accounting Process. Comparison of the Processes “As is” and “To be” (According to the Target Model)

“As is”	“To be” (according to the target model)
<ul style="list-style-type: none"> <li>- Existing accounting processes are mostly automated.</li> <li>- When consolidating financial statements, some data is adjusted by manual postings, reclassifications are made at the consolidation level.</li> </ul>	<ul style="list-style-type: none"> <li>- Automation of processes is carried out according to uniform principles, which facilitates the process of consolidation of financial statements, initiators of operations are responsible for the correctness of documentation and the timely receipt of data for the accounting.</li> <li>- When consolidating financial statements, the data is unloaded from the accounting systems of subsidiaries and affiliates, formed according to a single principle, which minimizes the number of manual entries and reporting time.</li> </ul>

<ul style="list-style-type: none"> <li>- When a change is made in the legislation, in IFRS, and in accounting principles, an analysis is made of the need to make the appropriate changes to existing GNIs or to develop new GNI.</li> <li>- When approving a new organizational structure, the Regulations on Accounting and Reporting Department and Job Descriptions of the department employees are developed. With personnel changes, there is a risk of errors in the performance of certain operations.</li> </ul>	<ul style="list-style-type: none"> <li>- When a change is made in the legislation, in IFRS, and in accounting principles, a working group is created to make the appropriate changes in the existing GNI, not only in accounting processes but also in general for all business processes affected by the changes.</li> <li>- The regulation on Accounting and Reporting Department and Job Descriptions is unloaded from ARIS, which contains the roles, powers, and responsibility of employees for each process, which maximally excludes non-execution of processes.</li> </ul>
<ul style="list-style-type: none"> <li>- When accounting for mine preparation work, the data in the system are displayed in a single amount without detailing the terms, accounting for components of the mine preparation work (pumps, flow meters, etc.) is conducted on paper by technical performers.</li> </ul>	<ul style="list-style-type: none"> <li>- When introducing the target model and fully automating the processes while considering the mining and preparatory work, the components are disclosed in detail, which makes it possible to keep detailed records of the repair and operating costs of individual units such as components of the mine preparation work.</li> </ul>
Qualitative project benefits and optimization results:	
<b>Quality benefits of the project:</b> <ol style="list-style-type: none"> <li>1. Rationalization of simple routine operations, the transfer of individual functions in the business unit.</li> <li>2. Timely and high-quality preparation of financial statements and accounting information.</li> <li>3. Elimination of processes that do not add value or duplicate.</li> </ol>	<b>Result:</b> <ul style="list-style-type: none"> <li>- Accounting processes are performed in accordance with the target model</li> <li>- Responsible persons are established by the efficiency factor in accordance with target processes and determined target values</li> <li>- Are entered in documents in accordance with the target model.</li> </ul>

Description of target asset accounting processes in ARIS:

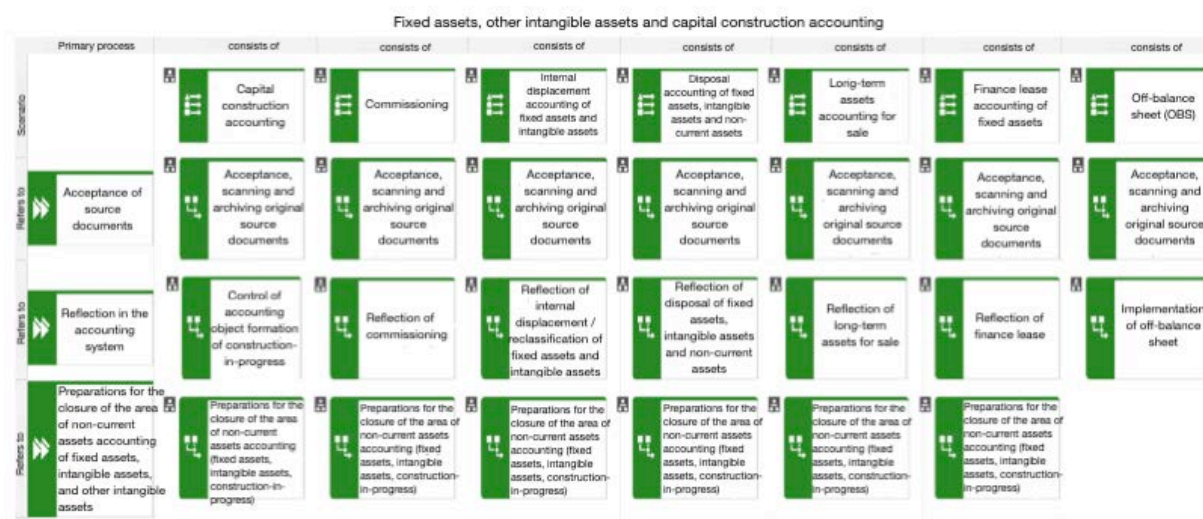


Figure 4. Target Asset Accounting Processes in ARIS

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**Primary Paper Section: A**

**Secondary Paper Section: AE**

## THE RISKS IN THE CASE OF CLUSTER COOPERATION AND WAYS OF THEIR PREVENTION: AS SEEN BY SMEs ENTREPRENEURS

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The paper is related to VEGA project, project No. 1/0918/16 dealing with: "Risk management of SMEs in the context of clusters' involvement activities in the Slovak Republic."

**Abstract:** This paper contribute to the extension of risk management issues in specific form of doing business in case of small and medium enterprises – clusters. The clustering creates new strategies and brings through a shared approach not only various economic and non-economic benefits, but also various risk factors influenced their activities. There is specific typology of clusters in Slovakia. Within this typology we recognize technological and tourism clusters. The largest group of clusters' stakeholders are small and medium enterprises (SMEs). The main aim of the paper is to evaluate the perception of six risk categories by SMEs that have experience with cluster cooperation. In order to address this analysis in this research we used the results of questionnaire surveys. For evaluation of the differences in perception of risk categories between technological and tourism SMEs we used the Mann Whitney's test. The significant risk categories were determined by Pareto analysis. The ways of risks' prevention were presented in register of risks.

**Keywords:** cluster, cluster cooperation, cluster typology, small and medium enterprises, risks, risk management.

### 1 Introduction and Theoretical Background

In today's globalized world, especially in advanced economies, the new paradigm of business based on the cooperation principle is beginning to emerge in regions – clustering. The cluster concept was closer elaborated mainly by M.E. Porter, who defined cluster as a geographically proximate group of interconnected companies and associated institutions in a particular field, linked by commonalities and complementarities. The geographic scope of a cluster can range from a single city or state to a country or even a group of neighboring countries. (Porter, 2000). Clusters represent network groups of various regional stakeholders concentrated in one area, which operate in the particular industry sector. Clusterization as a phenomenon characterizes obvious and structural processes, which will relegate in companies; they can get economic benefits and achieve a business expansion effect. (Navickas & Svazas (2017); Lemańska-Majdzik & Okreglicka, (2015); Razminiene & Tvaronavičienė, (2018)). The existence of clusters proves to be an efficient form of business cooperation in which businesses support each other and improve their own ability to innovate. The clusters are an important factor influencing the regional development of the various countries (Mura & Machová, 2015). Clusters are more and more used from small and medium enterprises as a new opportunity to be a competitive in world economy. According to Svec & Madlenak (2017) there are some concepts, for example phygital concept, for innovative entrepreneurship in clusters.

Various aspects of cluster cooperation were elaborated in the research literature from various points of view: the advantages related to shared costs for infrastructure, the build-up of a skilled labor force, transaction efficiency, and knowledge spillovers leading to firm learning and innovation (Malmberg and Maskell, 2000). Innovations are a basis for clusters possibilities and cluster initiatives. (Fenyvesi, 2015). Another scientist, Zygmunt (2017) write, that the innovation activities are the main reason of innovator countries. Innovation strategies in Slovak and Czech condition are analyzed by Kovalová et al. (2018); Lorincová (2018) or Žižka et al. (2018). Tallman et al. (2004) mentioned the macrolevel phenomenon – cluster based competitive advantage-by disaggregating it and shifting focus from the cluster and its constituent firms to the character of organizational knowledge that resides within the cluster. The cluster encourages country competitiveness to increase (Korauš, Mazák, Dobrovic,

2018), and growing work productivity and employment allows the creation of new additional value throughout the country. (Mészáros, 2018; Horecký, 2018). Cluster strategic fit model shows that both cluster partners competitiveness and country opportunities can form a synergy, which enhance a country's economic potential. (Navickas & Svazas, 2017). Sforzi (2002) and Becattini (2002) dealt with the area of social relations between cluster participants, according to these economists, the social capital of the cluster has a major impact on the development of the whole cluster. Malmberg et al. (1996) dealt with the concept of clusters in terms of urban agglomeration, which includes companies from different segments located in the same urban area, because companies are making similar or related activities. Many other researchers and economists confirmed the positives, but also the shortcomings (Barkley and Henry, 2001) of clusters. Clusters play important roles in competitiveness and regional development. Forming and development of clusters represents huge potential not only for the region, but also for the whole country performance increase. They represent tool for restructuring of the regional economy, the increase of the economic performance of the region and improvement of its competitiveness. (Masárová and Koišová, 2018)

The opportunities for clustering are growing between business and the neighboring community – stakeholders in the regions. The clustering creates new strategies and brings through a shared approach not only various economic and non-economic benefits, but also various risk factors influenced on their activities. Cluster cooperation and a new productive environment, which clusters represent, underlines the role of risk management. If stakeholders involved in clusters work in the same physical space, various activities are no longer under their own control and their activities are affected by a number of other risks, not only related to their own activities, but also to the activity of the whole cluster. The rules' changing and solving of common projects (Adamisin et al., 2018) within a one group will affect all areas of risk management even in the case of clusters. According to Zauskova et al. (2013); Tvaronavičienė (2016) or Kordoš (2015), European Union need dynamism in its economy. It is opportunity for an innovation-driven structural changes and create to clusters initiatives and cluster EU policy. The Influence of Clusters on Economic and Regional Development is very important. There are some studies about a comparative analysis of clusters and cluster policies in member states of the European Union (Cheba, 2015).

Long-term success and prosperity of cluster and the creation of sustainable values are not possible without effective risk management. Risk management is a rational approach to the work with risk and uncertainty with the use of instruments and methods of risk steering. Risk management provides data for proactive decision that is also based on systematic assessment of possible threats of an organization. It defines which risks are important (assign risk priorities) and implement strategy for dealing with them. Assessment of risks is linked with quantification of impacts and with definition of an approach to evaluate amount of risk. (Havierniková, Okreglicka, Klučka., 2016).

Cluster competitiveness most growth them, when exist favorable cluster members. Itself cluster structure is much more progress forward – in the world exist various types clusters, who orient either to benefit aim for business, or to value added creation in scientific research basis. (Navickas et al., 2016) A significant part of the clusters' membership represent small and medium enterprises (SMEs). SMEs operate in the same environment as the large companies, but without the associated benefits such as: capital, access to innovations and results of R&D, access to a wide resource base, access to a qualified workforce, profit less often from economies of scale and many others. Moreover, the highest added value is hidden just in products that are built on

the use of R&D results, high-tech, modern technologies, or practices. (Kordoš, Krajňáková, 2018). On the opposite side, the SMEs are more flexible and adaptable as their larger counterparts. They are more openness towards new ways of operating, their risk taking approach but they are more susceptible to major external powers: the pressure of growing globalization, changing legislation, increasing and wide spreading technologies and innovation. This illustrates that financial and non-financial aspects threaten SMEs' survival. It brings various risks that SMEs must face. Despite this fact, many SMEs do not (or not adequately) apply risk management practices, because they cannot afford to rededicate resources due to their constraints. (Falkner and Hiebl, 2015).

In comparison with large enterprises, the risk management in SMEs in Slovakia is missing. In microenterprises and family businesses, too. (Mura, 2017). The same situation is in clusters. Effective risk management identifies the significant risks that could affect the success or existence of the SMEs. Risks can be identified in internal and external environment of each entrepreneurial subject (SMEs, each clusters' entrepreneurial stakeholders, but also cluster). An entrepreneurial subject is tackled to risks continually and with different intensity. The stakeholders in cluster cooperation are facing the various risks: globalization, loss of reputation, shortening of a product life cycle, new technologies, catastrophic events (natural catastrophes, catastrophes as the impact of man-made activities) and different economic and non-economic risks. The results of the scientific project VEGA No. 1/0918/16 showed that the involvement of SMEs into the cluster can be accompanied by the following risks:

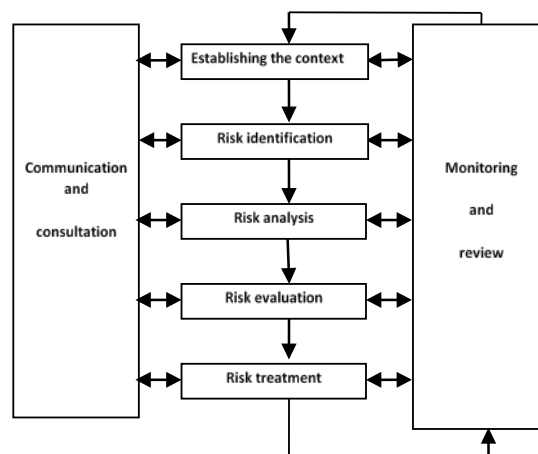
- regional economic problems – clusters are usually organized regionally, in case of regional economic problems, they will be transferred to the cluster and to their cooperating enterprises;
- the government policy - if it was based on cluster support and financial support for cluster-related businesses, and this support was limited/canceled from various reasons; clusters thus lose the benefits and stakeholders the motivation for cooperation;
- industry crisis - this risk can be minimized through the SMEs' involvement into the cluster; enterprises in cluster can respond more flexibly to industry crisis and the synergy of collaboration and transformation can avert the threat of a crisis for an enterprise;
- inability to raise additional capital – the enterprises cooperating in cluster reduce the risks of investors and that's why its connection minimizes the risk associated with the inability to obtain borrowed capital;
- slow innovation – the connection into the cluster brings greater potential to all members in case of the innovation development and strengthens the competitive position of the enterprise and cluster,
- contravention – the dysfunction of partnership also brings risks

All this says about downsizing of entrepreneurial activities and acceleration of those threats existence and operation of an enterprise. The risk management process should be implemented within every managerial decision in an enterprise. Enterprise risk management is a new trend in security and growth of stakeholders' wealth. It is a new integrated approach to management of enterprises risks. Development of enterprise risk management has experienced at advance in all areas and activities of enterprises. (Havierníková, Okreglicka, Klučka, 2016)

The aim of risk management is to identify, analyze, evaluate, solve and monitor risks possibly endangering the company. For managers, the risk management process is one of the most important things which they do in frame of managing the risks. For them it is necessary to know how to apply a systematic risk management process through the putting into action the core five risk management process steps. All risk management processes follow same series of basic steps, although they can be different

in dependency of used standard. The elements of the risk management process are summarized in Figure 1.

Figure 1. Risk management process



Source: A Risk Management (2002)

In general, in the entire risk management process, following the identification of risks, which are significant for an investor's objectives, the risks are assessed, which means that the most significant risks, as well as the risks which are less important for the project, are indicated. (Korombel, Tworek, 2011). Stated above should be implemented also in case of clusters. These were the main reasons for contribution to the extension of risk management' context in these type of doing businesses. The main aim of this paper is the evaluation of selected risks that are identified by SMEs in case of cluster cooperation and to recommend the ways of their prevention. Due to the fact, that there is used specific cluster typology in Slovakia, we focused on two types of Slovak SMEs: technological and tourism. Technological SMEs carry out their activities in the following areas: ICT, creative industry, bio-economic focus, agriculture and food, engineering, energy, electrical engineering, construction, automotive, scientific research, and so on. The realized research has limitation namely that respondents' (SMEs) are member of Slovak clusters or have experience with cluster cooperation.

## 2 Material and Methods

There are more than 20 clusters in Slovak self-governing regions (Bratislava-BA, Trnava-TT, Trenčín-TN, Nitra-NR, Žilina-ZA, Banská Bystrica-BB, Košice-KE and Prešov-PO) divided into two groups according typology of Slovak Innovation and Energy Agency that performs tasks in the area of innovation in which the issues of clustering are also incorporated. This typology was also used in scientific project VEGA. During the duration of scientific project we have identified more than 20 clusters. We have also identified the number of SMEs connected into the clusters. The results are presented in table 1. The environment of the Slovak clusters is very dynamic and clusters that realized activities in 2016 at present are inactive.

Table 1 Slovak clusters and number of SMEs

Region	TE	SME	TO	SME
BA	Danube knowledge cluster	1	-	-
	National energetic cluster	unk.		
	ABC – Academic Business Cluster	unk.		
TT	Automotive cluster Slovakia	14	Cluster Smolenice	unk.

	Electrotechnical cluster - Western Slovakia	unk.		
	Energetic cluster – Western Slovakia	1	Cluster of Regional Development - Western Slovakia	unk.
	Cluster for support of innovative and green technologies	unk.		
TN	Slovak IT Klaster	8	Cluster Váh	unk.
NR	Slovak plastic cluster	14	Association of Tourism – Cluster Topoľčany	4
	Bioeconomy Cluster	6		
ZA	Z@ict	7	Cluster LIPTOV – Association of Tourism	4
			Cluster ORAVA	12
			Cluster TURIEC – Association of Tourism	3
BB	1st Slovak Engineering Cluster	5	Cluster of the border castles	unk.
KE	Cluster AT + R z. p. o.	10	Tourism Cluster Košice	unk.
	Cluster RADAR	2		
	BITERAP	7		
	Košice IT Valley	19		
PO	Cluster EKPK	1	-	-
	Railway transport cluster	1		
Total	18	96	9	23

Source: own research, TE-Technological clusters, TO-Tourism clusters, \*analysis conducted in 2016-2017, data may currently vary.

Qualitative data for this research were collected through the questionnaire surveys. The relevant population of this research are SMEs with experience in cluster cooperation. The population consists of 87 SMEs. With reference to the typology of Slovak clusters, 72 of 96 respondents belonged to the technological SMEs while 15 of 23 belonged to the tourism SMEs. Respondents were asked to evaluate the selected categories of risks that could occur in the case of cluster cooperation and which are significant from their point of view. A subjective perception of risk was assigned by respondents on Likert scale from 0 – the risk does not apply to the business, 1 – very low level of risk, 2 – low level of risk, 3 middle level of risk, 4 – high level of risk, 5 – very high level of risk.

For this paper authors selected risks categories from the areas mentioned in the part Introduction and which are the most important and negatively affect the entrepreneurial activities of SMEs in case of cluster cooperation:

- R1. Macroeconomic problems in regions,
- R2. Trends in economic branch,
- R3. Financial support of clusters from the government,
- R4. Investment,
- R5. Innovation,
- R6. Partners.

To fulfill the main task of the article, we formulated the following statistical hypotheses:

*H0: There are not significant differences between evaluation of risk categories in both groups of respondents (technological and tourism).*

*H1: There are significant differences between evaluation of risk categories in both groups of respondents (technological and tourism).*

To evaluate the statistical hypotheses we utilized the tools of the descriptive statistics (figures and relative frequency).

In order to meet main aim stated, we used empirical research methods (questionnaire), statistical methods (non-parametric Mann-Whitney U test that is appropriate for low research sample), the Pareto analysis, a tool that is used in quality management and statistical software Statistica.

### 3 Results

First we focused on descriptive statistics. In general the SMEs from tourism area perceived risk categories in different way than from technological area (Figure 2). When SMEs from category of tourism clusters (Figure 3) assessed all risk categories on the similar level – mean around 2,0 in technological SMEs the differences in relevance of the risk categories are visible (mean between 2,03 to almost 3,0).

Figure 2 Descriptive statistics of Technological SMEs

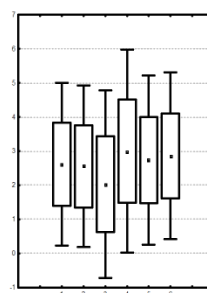
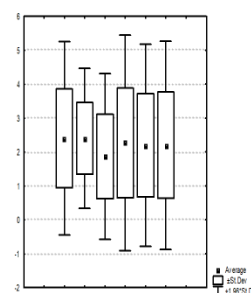


Figure 3 Descriptive statistics of Tourism SMEs



Source: results of own research calculated in program STATISTICA

Following tables show the results of respondents evaluation expressed in % and the value of p - level of the Mann-Whitney U test. In the case where the p - value is less than the level of 0.05, the null hypothesis is rejected, and vice versa.

Table 2: R1 Macroeconomic problems in regions

Likert scale	Frequency (%)		Mann – Whitney U test
	TE	TO	
0	5.6	6.7	p=0.551481
1	13.9	26.7	
2	22.2	20.0	
3	33.3	20.0	
4	22.2	20.0	
5	2.8	6.7	

Source: results of own research calculated in program STATISTICA

This category of risk was perceived by 26,7% of respondents from category of tourism SMEs as a risk with low level and by 33,3% of respondents from category of technological SMEs as a risk with middle level of risk. Only 2,8% of tourism SMEs and 6,7% of technological SMEs perceived this category of risk as a risk with very high level of risk. The results of p –value of Mann-Whitney U test showed, that null hypothesis could not be rejected. It means that there are not differences in the perception of this risk between tourism and technological SMEs.

Table 3: R2 Trends in related economic branch

Likert scale	Frequency (%)		Mann – Whitney U test
	TE	TO	
0	5.6	13.3	p=0.451537
1	12.5	53.3	
2	29.2	20.0	
3	30.6	6.7	
4	18.1	6.7	
5	4.2	13.3	

Source: results of own research calculated in program STATISTICA

In case of evolution the risk related to trends in related economic branch, 53,3% of tourism respondents perceived this risk category as a risk with very low level of risk. On the contrary, 30,6% of technological SMEs perceived this risk as a risk with middle level of risk. If we compare the risk perception of respondents evaluated by value 5 on Likert scale, 13,3% of tourism respondents and only 4,2% of technological respondents evaluated this risk category by this value. The p-value of Mann-Whitney U test confirm null hypothesis. It means, that there are no differences in perception of this risk category between two groups of respondents.

Table 4: R3 Financial support of clusters from the government

Likert scale	Frequency (%)		Mann – Whitney U test
	TE	TO	
0	18.06	13.3	p=0.765878
1	18.06	33.3	
2	25.00	13.3	
3	26.39	33.3	
4	6.94	6.7	
5	5.56	13.3	

Source: results of own research calculated in program STATISTICA

Financial support of government is important factor for existing and functioning of clusters in other economies. In Slovakia, the support is low and clusters rely mainly on own resources. If we evaluate the results of respondents' risk perception it seems, that this risk category is more important for technological than tourism SMEs. However, the level of p-value showed that between perceptions between two groups of respondents are not differences.

Table 5: R4 Investment

Likert scale	Frequency (%)		Mann – Whitney U test
	TE	TO	
0	9.7	20.0	p=0.116995
1	6.9	13.3	
2	15.3	20.0	
3	29.2	20.0	
4	19.4	20.0	
5	19.4	6.7	

Source: results of own research calculated in program STATISTICA

The common investment in clusters is important factor for building competitiveness as well as cluster as well as their stakeholders. For Slovakia is typical the low volume of private investments in research and development and a low level of cooperation of educational institutions with the private sector in research and development. (Fabuš, 2015) If we take into account the evaluation of the respondents on the Likert scale, the value 5 was significant for 19,4% of technological respondents and only 6,7% of tourism respondents. The results of Mann-Whitney test showed, that null hypothesis could not be rejected. It means that there are no differences between respondents' perception.

Individual actors influence the innovative processes and collaboration being necessary for creation and operation of an innovative environment. Collaboration takes place in a number

of ways. It is a support for innovative networks and cooperation, provision of knowledge and information for businesses to reduce uncertainty in their economic activities, a support for incentives structure that will ensure the profitability of innovation in long run and so on (Kordoš and Krajňáková, 2018). The results of realized questionnaire surveys showed, that the innovation are perceived as a risk with very high level of risk by 20,0% of tourism SMEs and only 6,9% of technological SMEs. The results of Mann-Whitney test showed, that we couldn't observe the differences in perception of respondents.

Table 6: R5 Innovation

Likert scale	Frequency (%)		Mann – Whitney U test
	TE	TO	
0	5.6	20.0	p=0.261155
1	11.1	13.3	
2	22.2	20.0	
3	33.3	20.0	
4	20.8	26.7	
5	6.9	20.0	

Source: results of own research calculated in program STATISTICA

We can observe various relationships and hierarchy of them among partners in cluster. For future competitiveness and activities of clusters the relationships among partners are very important. Around 20% of respondents in both group perceived this risk factor as a risk with high level of risk. The result of Mann-Whitney test showed, that there are not differences among respondents' answers.

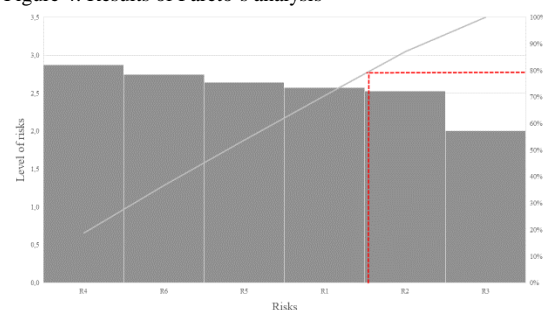
Table 7: R6 Partners

Likert scale	Frequency (%)		Mann – Whitney U test
	TE	TO	
0	4.2	13.3	p=0.113111
1	8.3	26.7	
2	25.0	20.0	
3	31.9	13.3	
4	20.8	20.0	
5	9.7	6.7	

Source: results of own research calculated in program STATISTICA

For risk assessment, we used the tool – Pareto analysis. This technique helps to identify the top 20% of causes that need to be addressed to resolve 80% of the problems. (Erdil and Taçgin). The average values of respondents' answers were used as the baseline data for the Pareto's analysis. With Pareto's analysis, we have identified the most important risk categories for SMEs with cluster's experience that need to be prioritized.

Figure 4: Results of Pareto's analysis



Source: results of own research

Figure 4 showed, that most important risk categories for SMEs are: R4. Investment, R6. Partners, R5. Innovation, R1. Macroeconomic problems in regions.

#### 4 Conclusion

The concept of cluster cooperation is a well-known topic in Slovakia, but the involvement of small and medium-sized enterprises and other regional entities is limited to this form of cooperation. There are several reasons: lack of appropriate legislation, lack of financial support, lack of information and primary negative experiences that have led the business community's mistrust towards clustering, leading stakeholders to risk aversion.

In economic practice of each business entity the various risks occur. For this research we used selected six risk categories of six areas that can affect the activities of SMEs in cluster. The perception of these risk categories by two group of entrepreneurs evaluated in previous part showed, that there are not significant differences in perception of stated risk categories. In this part of paper, authors bring also the risk catalogue that could to contribute to the possibility for SMEs' risks prevention.

Table 8: The risk catalogue

Risk	Causality	Consequence of the risk	Solution
R1	Cyclical economic development	Losses due to the crisis	Focusing on crisis management activities
R2	Lack of interest and loss of customer confidence	Financial loss and loss of competitiveness	Analysis of the economic branch's environment
R3	Lack of cluster legislation and policy	Low interest in clustering and low awareness of cluster cooperation	Common pressure to promote cluster legislation
R4	Inappropriately implemented cluster strategy	Financial loss and loss of competitiveness	Training in the field of investment
R5	Insufficient preparation of innovative projects	Financial loss and loss of competitiveness	Application of the innovation management principles
R6	Partners are not reliable and loyal	Loss of customers and reputation	Determination of contractual terms

Source: own proposal

The results of Pareto's analysis showed that for both groups of Slovak SMEs connected into cluster cooperation the most important risk with which it is necessary to work are: R4. Investment, R6. Partners, R5. Innovation, R1. Macroeconomic problems in regions.

The results of this research present partial evaluation of risk categories and propose possibility for their prevention through the risk catalogue. The implication for following research is to expand the level of analysis of this type of risks.

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**Primary Paper Section: A**

**Secondary Paper Section: AE, AH**

## THE ACTIVITY OF THE UNIVERSITY IN RELATION TO PASTORAL CARE OF UNIVERSITY STUDENTS

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**Abstract:** Since their beginnings, universities have been places where science has been developed and a Christian form of spirituality has been nurtured. Pastoral care for university students is still part of what universities around the world offer today. This article outlines the basic characteristics of pastoral care for university students in Slovakia and in English-speaking countries. The comparison shows that there is a significantly different understanding of this service. The research problem – how participants assessed the educational activity of the university pastoral centre (UPC) compared to the university where they studied – was investigated using a qualitative research method, the in-depth interview, which is the main research method of phenomenological analysis. The research findings suggest that the participants perceived the educational activity of the university pastoral centre and the university as directly contradictory in some areas, in others as neutral. In addition, they suggested they had an expectation of integrating the expert knowledge acquired at the university with their spiritual beliefs. The research also includes facts which are not obvious at first glance and were found during the in-depth examination of the research problem, especially in the form of critical comments that students made, to a greater extent about the work of the university pastoral centre and to a lesser extent about the university where they studied.

**Keywords:** University. University student. Pastoral care.

### 1 Introduction

Pastoral care for university students is as old as universities themselves. From the beginning, these institutions included theological faculties, and the spiritual service for teaching staff and students was part of the basis of their mission. Various modifications of this pastoral care arose over the centuries depending on the traditions of each country.

The educational possibilities of the Catholic Church were considerably limited before the 1989 revolution in the former Czechoslovakia, as in other Eastern Bloc countries, due to communist ideology to varying degrees. In the developed Western states, the influence of religion in public life was weakened by the process of secularization. Sociologists were convinced that this process would gradually spread to other parts of the world after the most advanced countries (Nešpor, 2004). In fact, this illusion was dispelled in the last third of the twentieth century, as religion found its way back into the public sphere, and sociologists changed their theses and began talking about re-Christianisation, re-Judaization and re-Islamification from the grass roots (Kepel, 1996).

With the fall of the communist regime in November 1989, new opportunities for pastoral work opened up for the Catholic Church. Pastoral care for university students is an important element of the Church's regular work. Its specific outcome was the establishment of university pastoral centres.

### 2 Pastoral care for university students

Pastoral care for university students abroad can be of a dual nature. In the countries of the former Eastern Bloc, it could only fully develop after the fall of the individual communist regimes. However, even before the fall of the Iron Curtain, it was not uniform and the conditions in the individual countries differed significantly. While there was no official pastoral care for university students in the former Czechoslovakia, in Poland the church was able to maintain some autonomy, which was also reflected in pastoral activities for university students. In Western countries, rising secularism was a significant constraint. In both cases, individual countries sought their own ways of addressing this area of special pastoral care.

The space constraints of this article do not enable us to offer a detailed analysis of several pastoral models, so we focus on just two. The Slovak model to a certain extent will also reflect some of the other countries of the former Eastern Bloc, most particularly the Czech Republic, and to a lesser extent Poland. The antithesis of this model will be represented by the English-speaking countries, where pastoral care has not only been maintained in the universities but is worked on intensively. The difference is that in many cases it is quite different from the Slovak perception of pastoral service in the university environment.

#### 2.1 The establishment of university pastoral centres in Slovakia

The political changes after the 1989 revolution offered the Catholic Church new opportunities for pastoral activity in Slovakia. Part of its energy was focused on pastoral care for university students. The fundamental motive of the Church's return to the university environment was the essence of the university itself, which is focused on highly qualified teaching of all sciences (Kolář, 2012). The Church's ambition should therefore be a narrowly specialized and highly qualified pastoral service aimed specifically at university students studying in conditions that predestine them to become leading intellectual and spiritual members of society (Petruš, 2010).

Pastoral care for university students is a common practice worldwide. After 1989 within the Catholic Church in Slovakia, a variation of pastoral care was created which was unseen elsewhere. In addition to spiritual service, great emphasis is placed on the free time activities of university students, especially cultural, sporting and charity activities.

The establishment of university pastoral centres was legally based on the *Treaty between the Slovak Republic and the Holy See on Catholic Education and Training* (Zmluva, 2004). Currently, services are offered to undergraduate students by 13 university pastoral centres set up by the Catholic Church and one by the evangelical church.

#### 2.2 English-speaking countries

The English adjective *pastoral* is commonly used in two ways. To indicate land or farms used for or related to sheep or cattle farming. The second meaning is related to spiritual guidance. Though these two meanings apparently have nothing to do with each other, but they are actually integrally related. In the books of the New Testament, we find a richly represented image of Christ as a good shepherd (Hastings, Mason, and Pypers, 2000) who cares for those who have accepted him with faith and seeks to create the best possible lives for them and protect them from perilous danger.

It is natural, therefore, that pastoral care in the university environment originally referred to the role of a shepherd who cared for his flock and it was almost exclusively associated with the church and concerned with spiritual guidance. At present, this term has a much broader meaning. Although there is no generally accepted definition of pastoral care in the UK, the term is generally used to refer to the responsibility of the teacher for the general well-being of their students (Calvert, 2009). It refers to the daily work of the teacher and is understood as the type of influence on the student's personality and environment which is intended to support the development of their intellectual and social skills and contribute to their emotional stability. In principle, it is an effort to determine all the variables of the educational process so as to give every student the best chance of success (Crane, 1990).

Thus, pastoral care is understood in considerably wider terms than in Slovakia and is subsumed into the broader issue of caring

for students. It is not so much about developing the student's spirituality, but rather about solving common student problems, such as study, personal, relationship and psychological problems. This approach is based on the fact that academic and pastoral duties cannot easily be separated because academic problems almost always have a non-academic cause (Hughes et al., 2018). In this context, universities are attempting to specify the responsibilities of employees for academic and pastoral care. However, this is not based on the notion that they need to be separated, but in order to clearly define the levels of responsibilities for employees and provide clarity for students as a result.

Universities are trying to tackle pastoral care professionally – through personal tutors and academic supervisors. The problem is the difficulty of strictly separating academic and pastoral responsibilities. These specialists are uncertain about where the boundaries of their roles lie, and what their remits are. A further problem is the lack of a shared view between universities on what is part of academic care and what is part of pastoral care. Therefore, the role of a personal tutor in one school is understood in terms of academic support, and in others as more pastoral support. Another factor preventing a clearer perception of the pastoral service is the fact that students bring personal problems not only to their personal tutors, but to any member of the university staff whom they trust. However, there is a general consensus that cases that fall within the professional competence of other professionals, such as psychologists, must be referred to them.

Although this is not the norm in the definition of pastoral care in English-speaking universities, in some cases, in addition to emotional and psychological, the definition of pastoral service also mentions promoting the spiritual welfare of students (Equality, 2013). But that does not mean that it directly relates to spiritual ministry of the priests from individual church denominations for the benefit of the students.

The Australian and New Zealand approach to defining pastoral care takes a similar approach to that in the United Kingdom, with the difference that it explicitly states the original definition of this service based on the principle of Christian philosophy, which is focused on personal development and, in particular, on the universal and moral well-being of students (Lang, 1983). At the present time, it seeks above all to promote values relating to mutual respect, responsibility and services within the community (Pastoral care, 1994). Although the referenced Christian basis has been eroded from this service, the individual areas of activity include support for the student's moral and spiritual development, as well as the preventive function of pastoral ministry (Cross, Lester and Barnes, 2008).

In the materials of Catholic universities, Jesus Christ is directly mentioned as the image and form of God present in the human community. Jesus' values and teachings show all people the way, the truth and life, and it is from that the values are derived that this kind of pastoral service seeks to promote – love, respect, compassion, tolerance, forgiveness, repentance, reconciliation and justice (Pastoral Care Policy, 2016). The question of what means of promotion that entails is not answered in these documents.

Some universities offer, if necessary and in the interest of students, the direct service of a priest of a particular Christian denomination, to whom the students can turn if necessary. In the United States of America, especially in Catholic universities, there are Catholic university centres (for examples the *Catholic student center at Washington University* has, in addition to its Catholic priest and deacon, 19 other team members who look after the needs of the students) (Stohr, 1996), with a similar focus to that of university pastoral centres in Slovakia.

### 3 Methodology

The principle of phenomenological analysis, which is part of qualitative methodology, was used in this research. The essence

of phenomenological analysis lies in the fact that the researcher tries to enter the inner world of the individual in order to understand the meanings the person attributes to the phenomenon under investigation (Miles and Huberman, 1994). They try to reveal the way a selected group experiences the world, representing the feelings, thoughts and self-knowledge of the subjects (Morgan and Smircich, 1980). The main aim of phenomenological research is to analyse and describe the actual experience of the individual (group) with the specific phenomenon (Grbich, 2009). It seeks to understand the hidden meanings and essence of the experience along with the importance attributed by the participants themselves (Gavora, 2009).

In our research we used a semi-structured in-depth interview. The basic research question was: How did the participants assess the educational activity of the university pastoral centre compared to that of the university where they studied? The basic research question is very broad and therefore, as it is common in qualitative design, we have divided it into smaller units and specified it in separate research questions (Bryman, 2006).

We transcribed and encoded the recorded conversations using open coding (Ezzy, 2002). The individual codes were subsequently categorized (Strauss and Corbinová, 1999). The research report processes those categories that relate to the research topic.

#### 3.1 Participants in analytical interviews

The recommendations in the literature regarding the number of participants in a phenomenological study are not uniform. Various authors mention numbers ranging from 7 to 15 people (Creswell, 1994). More important than the number of participants in the sample is that the meaning categories be saturated (Brikci and Green, 2007). The research sample in our research consisted of 14 participants – 5 male students and 9 female students. We chose this ratio of men and women deliberately because it corresponds to the proportion of male and female students attending the UPC. We used a homogeneous sample when selecting participants (Onwuegbuzie and Leech, 2005) – the focus of our research was to study participants who had a shared experience, namely attending a university pastoral centre.

#### 3.2 Data collection, processing and analysis

We used a qualitative interview method – an in-depth semi-structured interview – to gather research data. This interpersonal method is based on personal contact, which is aimed at putting the researcher into the shoes of the participant (Mack et al., 2005).

Some of the interviews took place at the participants' private accommodation and some of them took place at the faculty where they studied or in the university pastoral centre. We tried to meet the requirements of the participants. The opening part of the interview sought to assure them that their identity would remain anonymous. At the end of the opening part of the meeting, we asked their express permission to record the interview. After it was granted, we began recording the interview.

Quotes from interviews used in the work are given in italics. In parentheses without italics is information that could lead to the identification of the participants or other people who have some relation to the research. The quotations are not linguistically or stylistically edited. They are presented as we recorded them, including with grammatical errors. Since we decided not even to give fictitious names to the participants, after each quote there is a code that contains information about whether it is a male student M or a female student W. Next follows the serial number of the interview and the number of the page from which the quote is taken. For example, (2M4) is a quotation from the interview with the male student who has serial number 2, taken from page 4.

#### 4 Comparison of the activity of the university pastoral centre and the university

We live in a pluralistic society and the diversity of opinions is a reality that we cannot deny. This also applies to the higher education environment in which the flow of thoughts and the creative emerging atmosphere should be unhindered. We do not assume that there is anything like a unified attitude in this environment putting religious faith as the highest-ranking value. However, what we might expect is some acceptance and respect that among the students are those who have religious beliefs and want to develop them during university. In this subchapter we try to find the answer to the question of whether it is perceived like that by the participants.

The participants stated the despite the educators being practicing believers, they did not explicitly reveal their religious beliefs to the students, so the participants implicitly interpreted this as meaning they are operating in an atheistic environment. *I think it was two different worlds (11M5)*. As if the world of science and specialized vocational training was absolutely separated from the world of religious faith. Students identified people of a similar mindset among the university educators in different ways. For example, based on whether they accepted an invitation to UPC events. *I registered the invited professors, so I was able to see who was religiously oriented and had nothing against communicating in that way too. So, then, one discovered who was a believer without trying to find out (4M5)*.

An important role in this issue was played by the subject which they student studied at university. *I think that the UPC did not want intentionally to act against the faculty and against the teaching. It went its own way, and a person could choose which way to go. Whether it would be the teaching style of the faculty, which had a certain post-communist character, because I felt there was, in a way, a materialistic approach to the perception of the person, that is, in my field, in psychology (8W7)*. The study of this discipline also brings knowledge of facts that are intertwined or directly related to the content of religious beliefs. It was striking to our participants that in the common material for psychology and theology it was lectured that the expert opinion of psychology excluded the attitude of theology. According to the participants, there was a lack of effort to integrate or at least some admission of the integration of both positions. *For example, the soul is only a chemical transmission or personality part of a chemical transmission. That was presented, about which I was not internally convinced. The fact that I am also convinced of something different was something that the UPC helped me to integrate. But I don't think that it wanted to go against our faculty. Rather, the reverse. The faculty was not convinced that spiritual life helps a person progress so much. But that's only some people, not everyone (9W7)*. The participant appreciated the work of the university pastoral centre, which she understood as an opportunity to integrate professional and theological aspects into a whole that would be beneficial for her personal growth.

On the other hand, the UPC's activities in this area were too strict for other participants, without the possibility to discuss the problem. One student felt as if they were being guided to the only "correct" opinion, which would be an attitude consistent with the church's position. *In school, it was more like a discussion. It ended in a neutral way, but it sparked a discussion, with this opinion and that opinion when we were doing, for example, family law. And in UPC it always led towards the believers' conclusions as to how to look at this world (5W10)*. We can discuss whether this fact should be evaluated positively or negatively. On the one hand, it is logical that UPC presents and defends the Church's position. On the other hand, faith is the free response of a person to the offer of faith, so the person to whom it is offered ought necessarily to feel freedom in terms of whether they choose it or not.

The participants perceived the activities of the university and the university pastoral centre to be neutral or contradictory. They did not agree whether the UPC's position on the offer of faith

sufficiently respected human freedom. *It is important to know what, how, in what way I should communicate or act, what a Christian should know in order to properly defend their views. On the other hand, sometimes I felt at UPC that it was so strict, that it has to be that way and that's it. Without my having my own opinion, or my having the time to form my own opinion. So, I liked at school that it was so open, not every opinion was rejected (6W10)*. This attitude of UPC partly reflects the fact that in the pastoral practice of the Catholic Church it appears quite often. It is a dogmatic promotion of faith as a necessity, without a comprehensive justification, without solid theological and anthropological argumentation, discussion and sufficient respect for the individual's personal freedom. The presence of this attitude in the activities of the UPC means that the special pastoral care in this regard is not sufficiently "special" because to communicate and defend faith in the rarefied intellectual environment of a university requires a different approach than in the parish, where the priest must work with the entire age and intellectual spectrum of believers. We do not mean that UPC should offer more doubt about belief or more scepticism, but it certainly should place more emphasis on discussion, deeper argumentation and respect personal freedom more. Of course, this should go hand in hand with a deep spiritual life. The participant must feel that the decision for faith is their free and joyful decision, not a forced response created by the requirements of the Church as an institution.

#### 4.1 Criticism of the community levelled at the University Pastoral Centre

The aim of the research was not to find out the critical reservations of students against UPC's activities, but during the interviews this topic constantly arose naturally, so we decided to include this part in the final report.

The first part of the participants' reservations concerned the closed nature of the community at the UPC. *The people at UPC like to close themselves off from others. Outwardly, everything looked open, but in fact I often encountered closed relationships and groups, so I didn't feel at home at UPC (3M1)*. This criticism has two possible origins. Either it is caused by a situation where a new student comes into the community and needs some time to adapt to the community. Creating relationships requires an openness on both sides that cannot be programmed or enforced. The second reason is the non-acceptance of various proposals, when a member of the community put forward proposals but the others do not accept their proposals. There was another objection about the closed nature, but in different sense. *There were enough activities for people who were at the centre of things. However, the people there were the same people who came to everything, so the community was a bit closed (13M1)*. Every type of activity in the university pastoral centre has its fans. For example, students who organized literary evenings or exhibitions have mostly not visited other activities.

For the more spiritually minded students with rich experience from spiritual life, some members of the prayer community were too superficial. *Sometimes it was just so superficial. Even though we had those bible meetings where I had the opportunity to hear some opinions, they were strange. But it was good that it was possible to point out that they were bad (14W10)*. And of course we cannot avoid the various conflicts, misunderstandings and mutual animosity that can affect any community. The relationships were not quite right. Of course, not everyone gets on with everyone, but I have more neutral impressions from it (5W10).

Some of the participants' critical comments concerned the programme offered by the pastoral centre. *I would have liked there to be wider range of regular meetings, which would be the best place to build personal relationships (4M1)*. This proposal lacked a more specific vision in the participant's statement. Further proposals were not solely dependent on the decision of UPC management. According to the participants, the UPC priests could teach at the university where the UPC was

operating. *I would add lectures in the field of marital maturity, the functioning of the family, for which students could enrol as an optional subject and it would be taught by someone from the UPC (2M1).*

Several church administrators and chaplains have come and gone at the university pastoral centre. There is also a change in the style of UPC pastoral care. The following statement from a participant represents those who took a critical view of the more focused orientation of the new UPC management towards the spiritual activities. *I had the feeling that it became more spiritually focused. And that's not what suits the university students, it suits a certain group of people. But that group of people can't keep the UPC together because it will become a closed community that no one else will want to enter. And when it is more open and not about spiritual matters, other people will come there. My classmate (classmate's name) wouldn't be there if you were too spiritual and I wouldn't either. And if it had been from the beginning how it was with the new manager, I wouldn't have gone there. That system doesn't suit me and never suited me (4M2).* The participant's statement suggests a constructive discussion on how the church should communicate with individual groups of believers. A different pastoral style is required by people whose background is a traditional family of believers. Another style is required by those who are believers, but either their spirituality is more fragile, or in their faith they emphasise practical deeds over spiritual life and pastoral practice.

In spite of the stated reservations about the university pastoral centre, the participants attended it either through their entire university studies or for a substantial part of it, which suggests that it was sufficiently attractive for them to spend their own time not only as consumers but also as active members. So, the positives outweighed the negatives.

## 5 Conclusion

Based on the conclusions of the research we conclude that the activities of the university and the university pastoral centre were like two different worlds for the participants. On the one hand, the world of empirical knowledge and scientific research, and on the other, as if its antithesis or even its irreconcilable adversary, stood the world of spirituality. It made it harder for the participants that they expected the possibility of integrating these two worlds. Above all, they blamed the university for the fact that it was precisely in the topics that offered the possibility of integrating the two areas that there was a considerable lack of interest in trying to do so, and also that they implicitly indicated the insignificance of spiritual life. They criticised the university pastoral centre for its dogmatic recitation of certain principles that lacked theological and anthropological argumentation, open discussion, and respect for the participant's personal freedom. This fact suggests that the UPC's activities should be more respectful of all specificities of university students as an important social group (in both psychological and sociological terms).

The above research conclusions raise a question that this research does not answer, which is why the students perceived the activities of the university and the university pastoral centre as contradictory. Only as a comment we can state that perhaps a certain share of responsibility for this situation may be the persistent conflict of attitudes and opinions on the liberal and conservative spectrum in all areas of society. Finally, it's not a new phenomenon, but a continuation of a process that has a rich history. One more argument worth mentioning, is the certain form of antagonism that was systematically developed in the Slovak environment before 1989, and which circumstances suggest that it still persists. This is the massively enforced belief of the totalitarian regime that religious belief is an experience that hinders and enslaves a person.

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## PERFORMANCE OF LIFE INSURANCE INTERMEDIARIES: CASE OF LITHUANIA

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**Abstract:** The paper examines the influence of work methods (adaptive selling, customer orientation, active listening) used by Lithuanian dependent life insurance intermediaries and their personality traits (self-efficacy, emotional intelligence) on customers' decision to purchase life insurance. The purpose of this research is to evaluate how these factors determine the performance of life insurance intermediaries, which in this study is measured by the average number of life insurance contracts concluded by intermediaries per month, the average premium of the signed contracts and the average amount of commissions received for life insurance intermediation.

**Keywords:** life insurance, insurance intermediaries, consumer behaviour, personal selling, sales performance.

### 1 Introduction

In the structure of the economy of the economically developed countries, a significant position is occupied by the financial services sector. The sphere of life insurance services, as one of the components of this sector, is being rapidly developed, and its importance is constantly increasing in the social and economic context of the state. Analysing the trends of the development of the global market of insurance services, it can be noted that the success of life insurance companies is determined by the knowledge of the needs and expectations of the users of the chosen segments of insurance services. It is equally important that the customers of these services would understand not only the terms of the contract, but also the essence and importance of a product, its benefits and potential losses related to the invested capital. In such contexts, in life insurance market there emerges the importance of insurance intermediaries as they not only provide the policyholders with information that enables them to make informed decisions, but they also disseminate innovative practices that deepen and extend life insurance market. Insurance intermediation, currently serving about 80 percent of insurance operations in the developed countries of the world, is a sphere of activity which is rapidly developing in the Lithuanian insurance market. Assessing the practices of many Western countries, it can be noted that a very small number of insurance policies is concluded without insurance intermediation. According to Lezgovko and Jastrebova (2015, p. 99), the role of insurance intermediaries in the financial services sector is unique. These people facilitate the insurance purchase process and provide insurance companies and their customers with services that simplify the insurance selection process. It should be noted that intermediaries are well aware of the trends in the insurance market and the specifics and prices of its products; they know the needs and expectations of insurance customers. In the narrow sense, the main task of insurance intermediaries is quality sales of insurance services. In the broad sense, the activity of insurance intermediaries have a positive impact on the overall economic development of the state, both at the national and international level (Lezgovko and Jastrebova, 2015, p. 99). It should be noted that the increased awareness of policyholders about the insurance services increases the demand for such services and the improved quality enables to increase insurance premiums. Life insurance intermediaries play a peculiar role in the market; they relieve it and provide additional benefits not only to policyholders but also to insurers. Compared to the major Western countries, life insurance market is not developed in Lithuania and, therefore, has a high potential for development. In the general insurance market of the state, life insurance intermediaries have a significant impact on customers' choice in life insurance services. In this context, it is important to investigate more thoroughly the impact of personality traits and

work methods of intermediaries of the Lithuanian life insurance market on their performance results.

### 2 Literature Review

Although life insurance is dealt with in many different aspects in the scientific literature, the problems of this theme still remain relevant. The peculiarity of the activity of life insurance intermediaries, their functions and significance in forming insurance market, the importance of knowing customers' needs have been analysed by Mass (2006), Cummins and Doherty (2006), Goel (2006), Leary et al (2014), Wookjae et al. (2017), and others. Pascal Osta (2014) has investigated the process of providing services by distinguishing the peculiarities of services in life insurance business. Arndt et al. (2014) have highlighted the importance of building credibility during encounters with customers, Pelham (2010) has emphasised the importance of salespersons' ability to present high value of a product, while Yu et al. (2016) have assessed the relationship between life insurance intermediaries and customers as a means to increase sales and customer loyalty. In the studies on the processes of selling life insurance, a number of factors determining the results are analysed: socio-demographic characteristics (Turner, 2008), self-efficacy (Byunghwa et al., 2011; Fournier et al., 2010); emotional intelligence and work methods based on the principles of customer orientation, active listening and adaptive selling (O'Boyle Jr. et al., 2011; Kidwell et al., 2011, 2012; Wisker and Poulis, 2015; Chakrabarty et al., 2014; Hughes et al., 2013; Homburg et al. 2011, Pelham, 2010; Verbeke et al., 2011).

Life insurance is also studied in the works of Lithuanian researchers. Kindurys (2008, 2011) has described in detail the peculiarities of life insurance market. Concentration and competitiveness of the Lithuanian life insurance market have been analysed by Ulbinaitė and Šiaulytė (2014); the current situation of the market in the context of other Baltic states, its growth and the trends of development have been analysed by Jakaitytė and Marcišauskienė (2015), Lezgovko and Lastauskas (2008). Aidukienė and Simanavičienė (2010), Danilevičienė and Macutkevičienė (2017) have evaluated the theoretical elements of the insurance structure; they have also identified the factors that determine the formation of this sector and difficulties that insurance market participants had to face during the economic crisis. The peculiarities of the process of selling insurance services have been investigated by Lezgovko et al. (2014). Lezgovko and Jastrebova (2015) have evaluated the theoretical and practical aspects of activities of life insurance intermediaries. The aspects of insurance consumer behaviour have been analysed by Ulbinaitė (2010, 2013), Ulbinaitė et al. (2011, 2013), Ulbinaitė and Kučinskienė (2013), Ulbinaitė and Moullec (2010).

### 3 Theoretical Background

In the financial services market, due to complication, complexity and high level of individuality of the products, personal selling is one of the most acceptable means of providing support. It is a unique element of marketing communication. Unlike advertising or sales promotion, which focus on increasing consumer awareness of the existence, the availability, price, and essential features of goods and services, personal selling enables to provide customized information tailored to the specific needs of each customer. It should be noted that this kind of presentation is required due to the uniqueness and specificity of the product of life insurance. According to Olumoko et al. (2012, p. 148), the communication method of personal selling is usually directed towards particular segments of the market and plays a significant role in marketing exchange as it covers all the elements of the marketing mix. Marketing exchange can be described as a process of creating value for both the organization that meets the needs of a customer and customers themselves through interaction between the buyer and the seller. Leary et al. (2014, p. 33) notes that, despite the fact that insurance companies in

many countries use various service distribution channels, face-to-face communication, conducted by a well-trained and ethical sales professionals, is the main method for promoting sales to identify, meet and forecast the needs of the current and future customers.

An efficient sales process, as many other characteristics that ensure competitiveness of business organizations, is of particular importance for successful activity. Most of the authors who study sales (Byunghwa et al., 2011; Fournier et al., 2010) distinguish sellers' self-efficacy as one of the most important variables in assessing and analysing the models of sales performance. In the context of personal selling, this trait is associated with self-control in order to achieve the raised goals. According to Byunghwa et al. (2011, p. 372), personality traits, including self-efficacy, have an indirect impact on sales performance. The authors note that self-efficacious employees are more proactive in correcting sales failures. Not only do they generate higher sales volumes, but they also establish and maintain closer relations with customers, thus raising the process of providing services to a higher level.

Emotional intelligence is important in many business areas, but in the service sector it is especially important. Kidwell et al. (2012, p. 25) describe the concept of emotional intelligence as the ability of a person to acquire and apply knowledge from one's emotions and to understand the emotions of others to achieve the desired outcome. Kidwell et al. (2011, 2012), Wisker and Poulis (2015) emphasize that the proper salespersons' use of emotions strongly affects the efficiency of their work. The results of the study on the work of insurance agents by Kidwell et al. (2012) have revealed that emotionally intelligent agents capable of perceiving a wide range of emotions not only achieve high performance results, but also develop quality relationships with customers. Thus, integrating emotional management into the process of providing services is vital to creating quality interactions with customers based on goodwill and positive emotions.

The relationship between the concepts of salespersons' behaviour, such as adaptive selling or customer-oriented selling, and sales performance is widely studied and analysed. Many studies (Chakrabarty et al., 2014; Verbeke et al., 2011; Hughes et al., 2013) trace a strong positive relationship between the application of these concepts of sales behaviour and the efficiency of sales professionals. Easily adaptable to the situation salespeople, during the sales process, are able to effectively apply a suitable selling method to a particular customer and to increase the value of a product perceived by each customer, and at the same time to increase the income and profit of an organization. (Chakrabarty et al., 2014, p. 113).

A professional with customer-oriented sales practice actively seeks to provide with a solution that would enable the customer to achieve the desired goals. The customer-oriented sales process enhances customers' confidence in a product of an organization, forms positive attitude and opinion of the sales professional. Chakrabarty et al. (2014, p. 113) emphasize that customer-oriented sales professionals need to summarize customers' initial attitudes, intentions and wishes, and to draw conclusions from this information.

Analysing the impact of applying the concepts of salespersons' behaviour on sales performance, Pelham (2010, p. 108) distinguishes the behaviour of active listening. The author emphasizes that at the initial stages of sales process, an adaptive seller gathers information in order to adapt the appropriate communication method to each unique situation and to maintain good relationship with a customer. In the phase of identifying the needs, the sales professional identifies both the obvious and the "hidden" problems of a customer in order to provide an appropriate solution. Active listening is essential for a deep, not superficial understanding of the situation of a customer.

The volume of sales and performance of insurance companies is determined by the number of concluded contracts and the

amount of premiums, thus the contribution of each sales employee is very significant. Lezgovko and Lastauskas (2008) note that the amount of commissions for the consultant depend on the amount of client's premium specified in the insurance contract. Thus, it can be argued that by using such a methodology for calculating remuneration, insurance companies seek to directly motivate sales employees to conclude as many contracts as possible with the highest possible insurance premiums. Sales performance is the dominant criterion for evaluating the salespersons' efficiency. In the study designed to determine sales performance, Byunghwa et al. (2011) have used the average annual amount of commissions received by each insurance intermediary for the signed contracts. In the present work, sales performance is also evaluated by means of objective measurement criteria: the average monthly amount of the concluded contracts, signed insurance premiums and commissions received from intermediation.

#### 4 Research Methodology

The purpose of our research has been to evaluate the performance factors of Lithuanian life insurance intermediaries. In order to achieve this purpose, the following tasks have been raised: 1) to evaluate the relationship between intermediaries' personality traits and their performance results; 2) to identify the influence of the selling methods applied by intermediaries on their performance results. To achieve the purpose of the research we have conducted a quantitative empirical research, the instrument of which is a survey. Respondents have been selected on the basis of the method of non-probability sample (purposive sampling), since the group of the analysed respondents is formed according to the purposes of a researcher. With reference to the studied feature, the most informative data may be provided by those insurance representatives who are sophisticated in selling life insurance services of their represented company and who are directly involved in them. Thus, the respondents of our survey have been the representatives of the major Lithuanian life insurance companies (Aviva Lietuva, Ergo Life Insurance SE, Compensa Vienna Insurance Group, PZU Lietuva, UAB Bonum Publicum, Mandatum Life Insurance, Swedbank Life Insurance SE, UAB SEB Life Insurance). Referring to the data on the dependent intermediaries provided on the websites of the aforementioned insurance companies, it is estimated that the current approximate number of dependent intermediaries accounts for 4716 (website addresses are listed in the list of references). Based on the Paniotto formula, 355 insurance intermediaries have been interviewed. A total of 298 completed questionnaires have been collected, resulting in a return of 83.94 percent.

The questionnaire has consisted of 14 questions that can be divided into the following categories:

- a) Questions aimed at evaluating the socio-demographic characteristics.
- b) Questions aimed at analysing intermediaries' work methods. Adaptive selling has been evaluated by asking the respondents to rank the following statements on a scale from 1 (very often) to 5 (very rarely):
  1. I can easily apply many different sales methods/techniques.
  2. I choose a particular sales method depending on the situation easily.
  3. When I notice that my sales method is inappropriate, I easily replace it with another.
  4. I often experiment by testing different sales methods.
  5. I am flexible in sales methods I use.
  6. I feel comfortable when I can effectively change my sales technique during an encounter with a customer, even though I had planned to use a different technique.
  7. I try to understand how customers differ from each other.
  8. I usually treat each customer more or less similarly. (reverse)

The level of customer orientation is also evaluated on a respective scale by using the following statements:

1. I try to help my customers to achieve their goals.
2. I try to solve the problem together with my customer, by offering a version of a product that would best meet the solution of a problem (selection of the period, amount of the premium, additional insurance, insurance sums, etc.).
3. Presenting a product to a customer, I try to provide as clear information as possible so that the customer would know exactly what he gets.
4. Sometimes I have to object to the customer's opinion when I want to help him make a better decision. (reverse)
5. I am selling a product or designing it more with respect to my personal goals than to what is better for the customer. (reverse).

The abilities of active listening have been analysed according to the following statements ranked by the respondents:

1. At the time of selling I give the impression that I am sincerely listening to the buyer.
2. I do not interrupt the customer when he/she speaks.
3. I am asking continuous questions, e.g. "Can you tell me more?"
4. I am asking clarifying questions, e.g., "I am not sure if I have understood what you mean".
5. I support eye contact with the customer.
6. Every time I give the customer a nod, showing that I understand what he/she says and that I agree with his opinion.
7. I can understand the signs of customer's body language.
8. I wait for the customer to finish talking, to summarize what has been said.
9. I often repeat what the customer says.
10. I try to understand the buyer's attitude.
11. I try to find common things between myself and the customer.

- a) Questions aimed at evaluating intermediaries' personality traits. In order to determine the level of intermediaries' self-efficacy which determines their job performance, respondents have been asked to rank the following statements on a scale from 1 (totally agree) to 5 (totally disagree):

1. At the time of selling, I know clearly how I should behave in different situations.
2. I am convinced that I do my job well.
3. I am very responsible in selling.
4. I am a good specialist in the sphere of sales.
5. I am a motivated person.
6. In my work, I have various competences that help me do my job well.
7. I am convinced that I can execute the sales process successfully.
8. I am convinced that I have a strong ability to sell, even if I sometimes fail.
9. I feel that my sales process is not going the way I want. (reverse)

Emotional intelligence has been evaluated by using the following statements:

1. I can understand what emotions a person is experiencing from human facial expression.
2. I rely on my feelings when making important decisions.
3. I can remain calm when it comes to dealing with stressful situations.
4. When I am angry, I manage to calm down quickly.
5. I can control my mood so that I could rationally solve difficulties.
6. I am sufficiently capable of controlling my emotions.
7. I constantly say that I am a competent employee.
8. I always set goals for myself and try to achieve them.
9. I can easily recognize emotions from people's behaviour.

10. I understand and know my emotions well.

- b) Questions related to job performance of intermediaries.

Based on the accomplished studies and their generalisations, five research hypotheses have been formulated to confirm or to deny the influence of personality traits and work methods of Lithuanian dependent life insurance intermediaries on their performance:

H1: Self-efficacy of life insurance intermediaries is directly positively related to their sales performance.

H2: The level of emotional intelligence of life insurance intermediaries is directly positively related to their sales performance.

H3: The method of adaptive selling used by life insurance intermediaries is directly positively related to their sales performance.

H4: Customer orientation of life insurance intermediaries is directly positively related to their sales performance.

H5: Active listening of life insurance intermediaries is directly positively related to their sales performance.

To process the data, the statistical data processing software SPSS (version 17.0) has been used. In the course of processing the data, the following mean variables marked with the corresponding abbreviations have been derived: adaptive selling – AS, customer orientation – CO, active listening – AL, self-efficacy – SE, emotional intelligence – EI, the average number of life insurance contracts per month – ANC, the average premium of life insurance contract – APC, the average monthly income from life insurance intermediation – AII.

A large part of data analysis methods is based on the assumption that the values of variables have normal distribution, but it is important to apply the appropriate methods to verify this assumption. In order to determine what kind of analysis should be applied to test the hypotheses, normal distribution of derivative variables is evaluated. Depending on the sample size, the Shapiro-Wilk criterion has been chosen. The data presented in Table 1 shows that the selected criterion has not confirmed normal distribution of variables (p-values of all variables are greater than the chosen significance level of 0.05).

Table 1. The coefficients for evaluating normal distribution of the derivative mean variables

Derivative mean variable	Shapiro-Wilk criterion
Adaptive selling (AS)	0,892
Customer orientation (CO)	0,865
Active listening (AL)	0,832
Self-efficacy (SE)	0,820
Emotional intelligence (EI)	0,836

Since all distributions of variables of are not normally distributed, non-parametric criteria are employed to evaluate the hypotheses; Spearman's correlation coefficients are calculated. Prior to correlation and regression analysis, descriptive statistics of the measures has been performed. It aims at determining the mean values of the measures, to estimate the measures of location and dispersion, as well as their maximum and minimum values. To assess the internal consistency of the composed constructs (scales), the values of Cronbach's alpha statistics have been calculated, the internal consistency with the data of each construct (scale) has been assessed.

In the course of the research, the relationship among customer orientation, adaptive selling, self-efficacy, active listening, emotional intelligence of life insurance intermediaries, and their sales performance – the average number of the concluded life insurance contracts, the average premium of the signed contracts and the average income from life insurance intermediation has been evaluated. For this purpose, Spearman's correlation coefficients have been calculated.

To evaluate the hypotheses H1–H5, the correlation analysis and multiple linear regression are employed by applying the ENTER method. Coefficients of determination for the regression model have been calculated, which have revealed the consistency of a model with the data. Moreover, estimates of model parameters have been calculated to show the impact of independent regression variables on dependent variables. For each estimate of the parameter, referring to Fisher's test with the critical region on the right, its statistical significance has been assessed. To assess the statistical significance, a significance level of 0.05 has been chosen. The estimate of model parameter has been assumed to be statistically significant if  $p < 0.05$ . Otherwise, the estimate of a parameter does not help to explain the dependent variable and is not statistically significant. In the course of regression analysis, regression equations that relate dependent variables (AS, CO, AL, SE, and EI) with independent variables (AI, ANC, and APC) are obtained.

## 5 Data Analysis and Discussion

65.4 percent of respondents were women and 34.6 percent were men. Such gender-distribution is partly due to a bigger number of women working in the sphere of life insurance intermediation. When evaluating other socio-demographic characteristics of respondents, it should be mentioned that the majority of respondents selling life insurance services have higher university education (69 percent). A relatively small proportion of respondents have indicated to have advanced vocational education and training and higher college education – 12.7 percent and 11.7 percent, respectively. Only 4 percent of respondents have secondary education and 2 percent of respondents have indicated “another option” (incomplete higher, special secondary, and vocational education).

In order to assess the employment dynamics of intermediaries and the importance of the function of life insurance intermediation, respondents have been asked to indicate what position in their working activities is occupied by selling life insurance services – is it main job or additional, as well as whether intermediary is engaged in other work activities, despite the fact that the analysed sphere is their main activity. On the basis of the collected data, it can be assumed that the market of life insurance services is dominated by the trend that intermediaries are engaged in more activities than only providing life insurance services. Although slightly more than half of respondents (55.30 percent) have indicated that intermediation in life insurance business is their main job, almost a third, i. e., 25.30 percent of respondents besides intermediation are also engaged in other work activities; 19.40 percent have indicated that intermediation in the sphere of life insurance is only an additional job.

The majority of respondents have much experience in the field of insurance intermediation. Intermediaries with 7 to 9 years of experience in life insurance business have accounted for 26.7 percent, 4 to 6 years – for 23.7 percent, and more than 10 years – for 11 percent. However, one third of respondents of the survey have relatively little experience of 1 to 3 years. There were 29 percent of such life insurance intermediaries. The least experience in intermediation, i. e. up to one year, has been indicated by 9.7 percent of respondents.

Based on the descriptive statistics of the variables, the mean values of measures have been determined, the characteristics of location and dispersion of measures have been evaluated, as well as the maximum and minimum values (Table 2). Part of the respondents did not provide all the answers, therefore further data analysis includes only data lines with full data.

Table 2. Descriptive statistics of measures

	Adaptive selling	Customer orientation	Active listening	Self-efficacy	Emotional intelligence
Total	289	294	286	293	287
Did not respond	11	6	14	7	13
The mean	2.39	2.15	2.20	2.13	2.12
Median	2.13	2.00	1.73	1.67	1.80
Standard deviation	1.07	0.84	1.09	1.05	1.00
Minimum value	1	1	1	1	1
Maximum value	5	5	5	5	5

Since the most expressed behavioural feature (the answer – very often, totally agree) has been evaluated on a scale of 1, and the least expressed features (very rarely, totally disagree) – on a scale of 5, the obtained results have revealed that, on average, the most common behaviour is emotional intelligence as it has the mean of 2.12 points while the rarest is adaptive selling (2.39 points). Moreover, in the course of the research, the medians of scales have been calculated; they are appropriate because this statics helps to determine the mean value of the attribute without including exclusions (the median indicates the mean value of the ranked scale). The results have showed that the results of the median are somewhat different from the results of the mean, with the lowest score of 1.67 points in self-efficacy and the highest score in adaptive selling (2.13 points). The evaluation of data dispersion has showed that the highest standard deviation was recorded in the measure of active listening (1.09 points) and the lowest in the measure of customer orientation (0.84 points). This shows that the greatest inconsistency of opinions has been observed in evaluating the measure of active listening, and the most consistent respondents' opinion was in evaluating customer orientation.

In order to assess the reliability of the research instrument, the values of Cronbach's alpha statistics have been calculated. They show the internal consistency of each construct (scale) with the data. Based on the obtained results, it is evident that Cronbach's alpha values in all scales are greater than 0.7. The lowest Cronbach's alpha value is observed in the scale of “Customer orientation” (0.822), and the most consistent with the data is the scale of the variable of “Active listening” (0.964) (see Table 3).

Table 3. The Cronbach's alpha results of the internal consistency of scales

Scale	Cronbach's alpha value	Number of statements in questions
Adaptive selling (AS)	0,950	8
Customer orientation (CO)	0,822	5
Active listening (AL)	0,964	11
Self-efficacy (SE)	0,960	9
Emotional intelligence (EI)	0,953	10

Based on the results of consistency of scales, it can be stated that all scales are well consistent with the data and therefore they are suitable to be used in the research to accomplish correlation and regression analyses.

In the course of the research, correlation and regression analyses have been performed. They have helped to test the hypotheses raised in the theoretical part. The evaluation of the hypotheses H1–H5 has aimed at determining whether work methods of adaptive selling, customer orientation, active listening used by life insurance intermediaries, as well as high level of their self-efficacy and emotional intelligence are directly related to their sales performance, which in this study is defined by the average number of life insurance contracts per month, the average

premium of the signed life insurance contracts and the average monthly income from insurance intermediation. In order to evaluate job performance of intermediaries, they were provided with the margins where they indicated their potential sales performance: 1 – high sales performance, 4 or 5 – low sales performance, respectively.

Assessing the correlation relationship between the measure encompassing the number of life insurance contracts per month and intermediaries' selling methods and their possession of the analysed traits, it has emerged that all assessments of the selling methods and personality traits are related with the measure of life insurance contracts per month by positive, of average strength ( $\sim 0.5$ ) and statistically significant correlation relations ( $p < 0.05$ ). This means that the more life insurance intermediaries are customer-oriented, actively listen to and adapt to each selling situation, and the higher is their level of emotional intelligence and self-efficacy in their work, the more life insurance contracts they conclude.

Table 4. Correlations between the dependent and independent variables

		AS	CO	AL	SE	EI
ANC	r	0,643*	0,406*	0,517*	0,554*	0,546*
	p	0,000	0,000	0,000	0,000	0,000
APC	r	0,584*	0,444*	0,545*	0,605*	0,599*
	p	0,000	0,000	0,000	0,000	0,000
AII	r	0,641*	0,492*	0,599*	0,653*	0,614*
	p	0,000	0,000	0,000	0,000	0,000

\*correlation is statistically significant, with the level of statistical significance at 0.01

The data presented in Table 4 show that the strongest relationship has been established between the number of life insurance contracts per month (ANC) and the method of adaptive selling ( $r = 0.643$ ,  $p < 0.05$ ), whereas the weakest relationship has been recorded between the number of life insurance contracts per month (ANC) and customer orientation ( $r = 0.406$ ,  $p < 0.05$ ).

It has been also found out that the assessments of the applied selling methods and the analysed traits are related with the mean measure of monthly premium of the concluded life insurance contracts by positive, of average strength ( $\sim 0.5$ ) and statistically significant correlation relations ( $p < 0.05$ ). The strength of interrelations of the analysed measures can be explained by the fact that the more selling methods (adaptive selling, customer orientation and active listening) are applied by life insurance consultants in their work and the more of the analysed traits are inherent to them (self-efficacy and emotional intelligence), the higher is the average premium of the signed life insurance contracts. The strongest relation has been identified between this measure and self-efficacy ( $r = 0.605$ ,  $p < 0.05$ ), whereas the weakest – between this measure and customer orientation ( $r = 0.444$ ,  $p < 0.05$ ).

The third result is very similar – all the assessments of the analysed selling methods and personality traits of intermediaries are related with the mean measure of monthly income from life insurance intermediation by positive, of average strength ( $\sim 0.5$ ) and statistically significant correlation relations ( $p < 0.05$ ). The strongest relation has been identified between the mentioned measure and the level of self-efficacy ( $r = 0.653$ ,  $p < 0.05$ ), whereas the weakest – between the mentioned measure and customer orientation ( $r = 0.492$ ,  $p < 0.05$ ).

Based on the results from Spearman's correlation analysis, the research hypotheses H1-H5 have been accepted as it has been identified that the more of the above-mentioned methods are applied and the more of the analysed traits are inherent to intermediaries, the better is their sales performance. In order to examine the hypotheses H1-H5 in more detail, it has been aimed to assess whether the methods of adaptive selling, customer orientation, active listening applied by the sellers of

life insurance services and their self-efficacy and emotional intelligence are directly positively related with high sales performance and how the change in the dependent variables determines the change in the values of independent variables.

In order to test the hypotheses, three models of multiple regression have been developed. They help to evaluate the influence of the selling methods and analysed traits on the factors of sales performance. The obtained results have revealed that self-efficacy ( $b = 0.460$ ,  $p = 0.002 < 0.05$ ) and adaptive selling ( $b = 0.274$ ,  $p = 0.004 < 0.05$ ) has statistically significantly positive and statistically significant influence on the average monthly income from insurance intermediation. Whereas, customer orientation of life insurance intermediaries, the application of work methods based on active listening and emotional intelligence, according to this model of regression, have no statistically significant impact on the average monthly income from life insurance activities (customer orientation:  $b = 0.108$ ,  $p = 0.194 > 0.05$ ; active listening:  $b = 0.460$ ,  $p = 0.721 > 0.05$ , emotional intelligence:  $b = 0.155$ ,  $p = 0.292 > 0.05$ ). The coefficient of determination for the regression model is 0.516, thus the developed model explains on average 51.6% of the distribution of sales performance depending on the measures related to it (Table 5).

Table 5. The influence of the analysed work methods and traits on sales performance

Variables	The developed equation (p-values in brackets)	The coefficient of determination ( $R^2$ (adjusted))	P-value of Anova Regression
AII	AII=0,414+0,274(0,004)*AS-0,108(0,194)*CO-0,051(0,721)*AL+0,460(0,002)*SE+0,155 (0,292)*EI	0,516	0,000
ANC	ANC=1,954+0,447(0,000)*AS-0,122(0,194)*CO-0,190(0,238)*AL+0,285(0,092)*SE+0,195 (0,241)*EI	0,380	0,000
APC	APC=1,473+0,132(0,220)*AS-0,172(0,069)*CO-0,239(0,138)*AL+0,510(0,003)*SE+0,376 (0,027)*EI	0,389	0,000

The average number of life insurance contracts per month is statistically significantly positively and statistically significantly influenced by adaptive selling ( $b = 0.447$ ,  $p = 0.000 < 0.05$ ), while the average premium of the signed life insurance contracts is influenced by self-efficacy ( $b = 0.510$ ,  $p = 0.003 < 0.05$ ) and emotional intelligence ( $b = 0.376$ ,  $p = 0.027 < 0.05$ ). Other dependent variables, according to the developed models of regression (Table 7), do not have a statistically significant influence on sales performance. The coefficient of determination for the second and the third regression model accounts for 0.380 and 0.389, respectively, thus the developed model explains an average of 38 percent of the distribution of sales performance depending on the depending on the measures related to it.

Based on the results of three regressions, it can be stated that the research hypotheses H1-H5 can be partially expanded by examining the possible causal effect of sales factors on sales performance. The obtained coefficients of determination are not suitable for the statistically accurate prognosis of the variation in the values of variables, but it would be possible to repeat this research in the future by interviewing a larger number of respondents.

## 6 Limitations of Research

Life insurance companies operating in Lithuania provide services to both natural and legal persons, by offering products

tailored to each segment. Since the selling processes in the spheres of “business-to-customer” (B2C) and “business-to-business” (B2B) differs, this research is limited to the analysis of sales of B2C, as the specificity of B2B sales requires separate research and analysis.

Although it has been found out that the survey sample consists of 355 dependent life insurance intermediaries, a total of 298 completed questionnaires have been collected, thus the missing number of questionnaires can be attributed to research restrictions. On the other hand, the return of questionnaires comprises 83.94 percent and it enables to draw statistically significant conclusions.

In the course of the research, representatives – the dependent life insurance intermediaries – of the major life insurance companies in Lithuania have been interviewed. Although these services are also provided by independent intermediaries – brokers with the right to represent more than one insurance company – they have not been interviewed in this research, as the nature and methods of their work are likely to be different from those of the dependent insurance intermediaries. The dependent intermediaries are more active in performing the functions of forming consumer demand and active sales. Whereas independent insurance intermediaries, representing the interests of several life insurance companies, usually provide not only life insurance services, thus their main task is usually to select the customer an offer of a particular company without focusing on active sales.

The representatives from life insurance companies belonging to the main banks of the country – “Swedbank Life Insurance SE” and “SEB Life Insurance” – have refused to participate in the research on the ground that they do not employ life insurance intermediaries. In the companies, these functions are carried out by the appointed employees, who usually sell life insurance services by cross-selling. Large part of such contracts is concluded by issuing loans to customers (important condition for issuing a loan is the borrower’s life insurance). It is noteworthy that selling of life insurance services in life insurance companies that belong to banks is only an additional function of employees, therefore the aspects of selling the services analysed in the research are not relevant to the mentioned companies, and the different specifics of the work do not correspond to the analysed theme. Thus, the refusal of these companies to participate in the research is not significant and has no impact on the statistical conclusions and obtained results.

## 7 Conclusion

The market of life insurance is a complex system where there interact insurers, the insured, intermediaries and other institutional units. The complexity of the product of life insurance and the specificity of the use of this service require competent management of the sales process. In this context, the importance of insurance intermediaries, the need for personal selling and the advantages of selling life insurance services are evident.

In the course of the research, the dependent insurance intermediaries representing the major Lithuanian life insurance companies have been interviewed. The results of the correlation analysis have revealed that the selling methods used by the intermediaries are directly positively related to the results achieved. This means that higher job performance is reached by those consultants who are able to effectively select and apply various selling techniques, depending on the situation in the sales process or different clients they meet; who seek to orient their sales behaviour to the customer and to solve his problems by adapting their services; who strive to actively listen to a client to choose a solution that best meets his / her needs. In other words, they conclude more life insurance contracts, their average monthly premium of the signed contracts and the resulting commissions are higher than of those who rarely apply or are unable to apply the analysed sales behaviour.

Personality traits of the consultants – self-efficacy and high emotional intelligence – also correlate with job performance. This means that the more of the mentioned traits are inherent to the dependent intermediaries of Lithuanian life insurance companies, the higher is the number of life insurance contracts they conclude, as well as the amount of premiums and commissions.

After a more detailed evaluation of the research hypotheses H1–H5 with the help of the multiple regression analysis, the research can be partially expanded by analysing the possible causal effect of sales factors on sales performance.

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#### Primary Paper Section: A

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## ORGANISING OF EMPLOYEE TRAININGS RELATED TO DOCUMENTATION AND DATABASES

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Results presented are related to the project entitled „The dynamics of strategic behaviours in the perspective of organisational learning” (2016-2017) financed by the funds for maintaining the scientific potential (supervisor: Marcin Komańda, Ph.D.).

**Abstract:** The aim of the article is to establish whether the level of organising level of employee trainings within the scope of creating and using internal documentation and databases of the enterprise (the so-called cold knowledge resources) is related to the level of formalisation of work in the enterprise. The opinions of respondents were studied with the use of a survey questionnaire and then they were analysed with the use of the Kruskal-Wallis and the Mann-Whitney tests. The existence of the relationship between the form of employee training organisation and the level of formalisation of work in the enterprise (grouping variable) was confirmed. The differences between particular pairs of levels of organising of employee training due to a grouping variable were also indicated.

**Keywords:** employee trainings, knowledge management, documentation, databases.

### 1 Introduction

Employee trainings in enterprises are a solution which is, above all, supposed to develop employees' competences (Matwiejczuk, 2018). The effects of their implementation may be as follows: more accurate performance of employee's duties by persons employed in the organisation, growth of personal engagement of employees and a greater tendency to manifest an initiative as well as wiser acting (Wolniak, Grebski, 2018). Therefore, from this perspective, employee trainings constitute a solution within the scope of learning of employees which is part of a subsystem of hot knowledge in the enterprise and they are perceived as a form of its support by an organization (Karaś, 2012). The description of development of employees' soft and hard skills frequently appears in the reference books (Gajdzik, 2018), the issue of conducting trainings in enterprises within the scope of creating, circulation and use of the resources of codified knowledge and information which already exist in the organisation, and which are, in turn, an element of the subsystem of organisational cold knowledge, is much less popular among researchers. Any works within this scope treat the issue as an element which accompanies detailed managerial issues, e.g. safety management (Warwas, Sołtys, 2018). It should be emphasized that creating knowledge resources in the enterprise may depend on the process of sharing knowledge as well as on the existing and arising organisation documentation (Andreeva, Kianto, 2011). Especially due to the fact that these processes are related to, among other things, making predictions and coordinating collaboration within the enterprise (Komańda, Sowa, 2014), and the technologies applied in the enterprise often even force an appropriate codification of knowledge and information (Dziubińska, Woźniak, 2015). Documentation in such case is a necessity for assignment of tasks, spread of results (Da Silva Wells et. al., 2011) and their duplication (Nosál, Porubán, 2016). A crucial aspect of these issues is accepted and motivated use of databases (Marler, 2006).

#### 1.1 Employee trainings vs. knowledge resources in the enterprise

At the beginning of the consideration of the issue raised it should be noticed that the issue of employee trainings is not only an economic or organizational problem but also a legal one. Legal regulations introduced impose a duty on an employer to enable employees to develop their professional qualifications (Pisarczyk, 2003) and they are still a significant element of the labour code (Polish Labor Code, 2018). This multidimensional nature of employee trainings results in consequences which affect the functioning of the organization, especially within the scope of human resources management. It is an important observation since employees may connect professional work with the possibility to pursue formal education (Komańda, 2015). Lack of properly integrated attitude to this challenge leads to low efficiency of trainings conducted in the enterprise

(or on its commission) (Róžański, 2012). Moreover, the necessity to formulate clear rules and criteria in this respect is emphasized (Balcerzyk, Smal, 2017). At the same time, the fact that employees attend trainings, especially when trainings meet their expectations, is, in turn, related to their level of motivation and attachment to the organisation (Owoyemi et. al., 2011), and, as a result, to the development of their potential (Mlkva et.al., 2017).

The above-mentioned challenges related to the issues of organising of employee trainings and support of the functioning of the enterprise as well as simultaneous development of individual employees are connected with hot and cold knowledge in the organisation. Cold knowledge represents a fundamental system of mutual interdependencies (Gobillot, 2013) between particular parts of the organization as well as between their individual members. Therefore, it is based on the organisational formalism the basis of which is the source of understanding for what should be done and why. These interdependencies may also be considered between enterprises, especially in case of the existence of a legal and organizational correlation. As the results of the studies show, dependence/independence of a business entity may influence the applied forms of trainings within the scope of cold knowledge which is expressed, among other things, by work regulations as well as organisational routines (Komańda, 2017(a)). These aspects become particularly significant in the context of establishing procedures and using further resources of cold knowledge of the enterprise, i.e. internal documentation of the enterprise as well as organisational databases (Komańda, 2017 (b)).

Cold knowledge is contrasted with the so-called hot knowledge which is related to the experience of individual persons. It has been defined as "people's skills acquired through education, life and professional experience" and its tight connection with individual motivation is pointed out at the same time (Materska, 2005). The enterprise in the matter of hot knowledge is therefore interested, above all, in the development of soft and hard competences of employees and choice of appropriate solutions within the scope of their motivation (Komańda, 2016).

#### 1.2 Issues of employee trainings organisation

These observations make it possible to state that the organisation of trainings in the enterprise has to be aimed at creating conditions for full use of the potential of employees as well as the organization itself, which is a challenging task (Róžański, 2012). It needs to take into consideration mutual relationships between a formal system as well as less obvious and less formal relationships which occur parallelly in the enterprise (Rokita, Dziubińska, 2017). It is related to the necessity to perceive these issues also through the prism of the conversion process of the forms of knowledge (Mikula, 2006) (in a two-way manner between practical, individual knowledge – the so-called hot knowledge and the so-called cold knowledge which is formalized and widespread in the enterprise).

In the source literature, the issue of trainings conducted in the enterprises is related, above all, to the issue of efficient work and its improvement (Billett, 2001). The issue of learning, which is considered in a multi-dimensional manner is also a part of these considerations. Learning in the enterprise is presented as a process conditioned by undertaken actions (activity) of the members of the organisation as well as the organisation itself, their individual and organisational situational context (Kim, 1998) and prevailing organizational culture (Evans, Rainbird, 2002). To a large extent, the organisational culture is from this perspective expressed by a way of collective thinking characteristic for a given organisation (Bučková, 2017). With reference to the issue of efficient work it should be noticed that trainings may concern particular aspects of conducted work or they may be of a general nature. As the results of the studies show, trainings of a general nature seem to translate into the engagement of employees to a greater extent, and, as a result,

into their work efficiency (such types of trainings are perceived as a specific form of motivation) (Barrett, O'Connell, 2001). It is worth mentioning that apart from specially organised employee trainings in the enterprise there is also a form of practical knowledge acquisition. However, this form of training is frequently used by the management of the enterprise as an unstructured and low-cost one, although from a formal point of view it should rely on a clear curriculum, prepared workout handouts related to the scope of performed vocational duties and specific individual support of the trainer offered to the employee attending the training (Jacobs, 2003).

## 2 Method

The aim of the conducted study was to establish the existence of relationships between the power of formalisation of work in the enterprise and implementation of trainings in the enterprise of a specific level of organising within the scope of databases and internal documentation. Therefore, two hypotheses were formulated:

H1: There is a relationship between the indications of respondents concerning the level of organising of trainings related to internal documentation and their opinion on the level of formalisation of work in the enterprise.

H2: There is a relationship between the indications of respondents concerning the level of organising of trainings related to databases present in the enterprise and their opinion on the level of formalisation of work in the enterprise.

The following research questions were also posed:

1. Between which levels of organising of trainings related to internal documentation are there significant differences due to the respondents' opinion concerning the level of formalisation of work in the enterprise?
2. Between which levels of organising of trainings related to databases are there significant differences due to the respondents' opinion concerning the level of formalisation of work in the enterprise?

The Kruskal-Wallis test was applied in order to verify the hypotheses. The Mann-Whitney test was applied for the purposes of the posed research questions to compare the variables in pairs in order to detect their statistically significant difference towards each other (therefore, the hypotheses of their statistically significant difference were tested for each pair of variables).

The method of sampling for the study was of non-probability nature. It assumed the form of convenience sampling, which made it possible to obtain a relatively large group of respondents for the study. In this way, a high ratio of return of Paper Self-Administered Questionnaires (PSAQ) was ensured. The number of questionnaires that were filled out and qualified for further stages of the study amounted to 215. Each respondent represented a different enterprise, these were also persons occupying various positions in the organisational hierarchy.

The largest group of respondents (184 persons, 85.6%) represented enterprises located on the territory of the Silesian Voivodeship. As many as 13 enterprises (6%) were from Lesser Poland Voivodeship. In the remaining cases the percentage of enterprises from particular voivodeships did not exceed 2.3% of the studied group.

The questions the respondents were asked concerning the level of organising of trainings existing in the enterprise both within the scope of creating and using internal documentation and database resources contained the following answer versions (according to the level of organising from the highest to the lowest one): special trainings (dedicated trainings based on a formally defined curriculum and conduction procedure), mixed form of trainings, learning in the course of performance of professional duties (lack of formal support for the learning of an employee, there is, however, informal support from co-workers)

and lack of trainings (lack of any kind of formal and informal support for the learning process of an employee). It should be noticed that the mixed form of trainings was assigned according to the theory of the issue of organising of trainings in the form of performance of professional duties as well as simultaneous support for this process through workout handouts and appropriately conducted supervision (the so-called training on-the-job) (Jacobs, 2003).

The respondents could tick one selected answer version related to the form of training. For the purposes of the conducted statistical analysis during data processing a code from a four-level ordinal scale of measurement was assigned to each answer version. The respondents were also asked about their opinion on the level of formalisation of performance of professional duties in the enterprise. In this case the answer was given directly on a five-level Likert scale, where 1 indicated a low level, whereas 5 – a high level.

## 3 Results

The numbers of particular variants of the respondents' answers are presented in the table below (Table 1). In case of "the level of formalisation of work" variable the largest number of respondents indicated the following variants: rather high (38.13%) and medium (34.41%). In case of organising of trainings within the scope of internal documentation the respondents most often indicated learning through performance of duties (48.84%) and special trainings (23.26%). The most popular answers to the trainings within the scope of creating and using databases were as follows: through performance of duties (41.39%) and lack of trainings (28.37%).

The Kruskal-Wallis test was applied in order to find out whether the level of organising of trainings within the scope of internal documentation in the opinion of the surveyed respondents occurs independently from their opinion concerning the level of formalisation of work or not. The Chi-square test value (at three degrees of freedom) in this case amounted to 14.873, whereas its significance to 0.002 ( $p < 0.01$ ). Therefore, it was necessary to reject the hypothesis about the equalisation of distribution in the compared subgroups. Thus, it was possible to make a conclusion that the indicated levels of organising of trainings within the scope of the rules governing the creation and usage of documentation of the enterprise depend on the perceived level of formalisation of work. The following values were obtained in case of the level of organising of trainings within the scope of databases (three degrees of freedom again): Chi-square value 18.011, and the value of the significance level 0.0001 ( $p < 0.01$ ). It was possible to state also in this case that the levels of organising of trainings within the scope of databases depend on the level of formalisation of work.

In order to determine between which levels of organising of trainings the actual differences occur, the decision was made to apply the Mann-Whitney test and compare in pairs particular levels of organising of trainings concerning internal documentation of the enterprise (Table 2), as well as databases (Table 3) as tested variables. It was done with regard to the assessment of the respondents concerning the level of formalisation of work in the enterprise (grouping variable).

While making an analysis of data presented in tables 2 and 3 it is worth noticing for which cases the level of significance is lower than 0.05 (it is indicative of a statistically significant difference between the levels of organising of trainings with regard to the grouping variable).

From the values of average ranks, the information about the level of formalisation of performance of professional duties stated by the respondents can also be read out. The higher the rank at a given level of organising of trainings, the higher the level of formalisation of work in the enterprises in the opinion of the respondents (these issues should be considered within the framework of the pairs of variables).

Table 1. Distribution of answers obtained from the respondents

Area of trainings	Level of organising of trainings	Perceived level of formalisation of work					Total
		low	rather low	medium	rather high	high	
Documentation	special trainings	0	2	17	26	5	50
	mixed form	0	3	6	15	11	35
	through performance of duties	3	17	37	37	11	105
	lack of trainings	2	1	14	4	4	25
Total		5	23	74	82	31	215
Databases	special trainings	0	1	10	22	7	40
	mixed form	0	4	2	12	7	25
	through performance of duties	1	10	34	33	11	89
	lack of trainings	4	8	28	15	6	61
Total		5	23	74	82	31	215

Table 2. Results of the Mann-Whitney test for the variables tested in the area of the form of trainings within the scope of documentation

Pairs of variables	Z value	Significance	Average rank
mixed form	-1.862	0.063	48.53
special trainings			39.13
mixed form	-3.299	0.001**	89.21
performance of duties			64.26
special trainings	-2.084	0.037*	88.26
performance of duties			73.11
mixed form	-2.633	0.008**	35.30
lack of trainings			23.78
special trainings	-1.923	0.055	41.18
lack of trainings			31.64
performance of duties	-0.367	0.714	66.06
lack of trainings			63.14

\*Significant at the 0,05 level; \*\*Significant at the 0,01 level.

Table 3. Results of the Mann-Whitney test for the variables tested in the area of the form of trainings within the scope of databases

Pairs of variables	Z value	Significance	Average rank
mixed form	-0.493	0.622	34.34
special trainings			32.16
mixed form	-2.092	0.036*	69.10
performance of duties			54.24
special trainings	-2.408	0.016*	76.09
performance of duties			60.02
mixed form	-2.949	0.003**	55.40
lack of trainings			38.62
special trainings	-3.663	0.000**	63.48
lack of trainings			42.82
performance of duties	-1.850	0.064	80.63
lack of trainings			68.01

\*Significant at the 0,05 level; \*\*Significant at the 0,01 level.

While making an analysis of data presented in tables 2 and 3 it is worth noticing for which cases the level of significance is lower than 0.05 (it is indicative of a statistically significant difference between the levels of organising of trainings with regard to the grouping variable).

From the values of average ranks, the information about the level of formalisation of performance of professional duties stated by the respondents can also be read out. The higher the rank at a given level of organising of trainings, the higher the level of formalisation of work in the enterprises in the opinion of the respondents (these issues should be considered within the framework of the pairs of variables).

#### 4 Discussion

In case of trainings within the scope of the cold knowledge resources lack of significant difference of the variables tested with regard to the grouping variable was indicated by two pairs of particular levels of organising of trainings. Special trainings and mixed form were one of them, whereas lack of trainings and performance of duties were other one. These are, in a way, two extreme cases of pairs. In case of one of them, one has to deal with two levels of organising of trainings of the highest level of organising, in case of the other – with the lowest level of organising (or even with the lack of formal trainings). It is also important that in case of a statistically significant difference of pairs of levels of training organising in both areas (i.e. within the scope of documentation and databases) the trainings of higher level of organising scored higher ranks, that is the acknowledgment of a stronger influence of formalisation of work in the enterprise.

In case of the variable testing the level of organising of trainings within the scope of documentation, it was impossible to indicate a statistically significant difference for the pair: lack of trainings and special trainings. The unsatisfactory significance level obtained is in this case, however, only 0.005 above the limit value, which could have been caused by the sampling method and the structure of the group of respondents. Descriptive statistics show that in case of lack of trainings 32% of respondents' answers concerned simultaneously indications of rather strong and strong influence of formal rules of work, whereas in case of special trainings it was as many as 62% of the answers.

It is worth emphasizing that the indicated relationship between the level of formalisation of work and the level of organising of employee training is not surprising in the light of the arrangements made in the introduction to this work. Formal decisional procedures and criteria are essential for designing, organising and implementing employee trainings (Singh, Vohra, 2009). However, it is emphasized that high formalisation of work which is expressed by, among other things, bureaucratisation of the procedures in the organisation does not favour building of employee engagement (Bendkowski, 2017). This engagement is crucial for achieving expected results of the training itself as well as enterprise performance and job satisfaction of employees (Lai et al., 2017). Therefore, the indicated lack of statistically significant difference with regard to the level of formalisation of work between pairs of forms of trainings representing the lowest and the highest level of organising seem to be extremely interesting. These facts may indicate two issues. Firstly, even if the enterprise is characterised by low formalisation of work there is a possibility not to use forms of employee trainings organised in the most poorest way. Secondly, in case of the conditions of high formalisation of work in the enterprise the most formalised ways of training personnel are not necessarily applied.

#### 5 Summary

Cold knowledge makes it possible to widespread the understanding of the sense of performed professional duties among employees and make them aware of their connection with other organisational areas and processes. The above-mentioned

issues are undoubtedly related to the knowing and obeying procedures and regulations; therefore, they also constitute a part of the issue related to the level of formalisation of conditionings of undertaken professional duties. From this point of view organising of employee trainings is, on the one hand, an implemented internal procedure in the enterprise which depends on the existing formal organisational solutions, and, on the other hand, it may favour the establishment of a deepened understanding of the essence and interdependencies of formal rules regulating the functioning of this entity.

The results of the conducted study make it possible to assume the hypotheses made in this paper. However, the obtained results indicate that despite a general relationship between the level of organising of employee trainings within the scope of the selected areas of cold knowledge and the level of formalisation of work in the enterprise, in the opinion of the respondents included in the study, there is lack of statistically significant difference in the application of pairs of trainings representing simultaneously two forms of the lowest and two forms of the highest level of formal organising. It may prove a practice applied in the enterprises within the scope of organisation of trainings which would indicate that in specific conditions the forms of organising trainings within the framework of these pairs may be applied interchangeably. It implies an assumption that planners and organizers of trainings may to some extent of freedom decide upon the form of training. It seems important for the need to build the employees' engagement to become a criterion deciding upon a particular form of training within this context. However, due to the applied sampling method the obtained results may only be referred to the studied group.

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**Primary Paper Section: A**

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# THE SYNERGIES OF USA FOREIGN TRADE POLICY AGENDA CHALLENGES WITHIN THE INDUSTRY 4.0

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**Abstract:** The forthcoming Industry 4.0 Industrial Revolution, also called a digital revolution, is characterized by a blending of technologies that erase the boundaries between physical, digital and biological spheres. There are gains from international trade. Importing and exporting of goods is big business in today's global economy thus international trade is supposed to be beneficial for a particular economy even for the USA. Paper deals with issues such as the U.S. foreign trade characteristics and the impact of Industry 4.0 on the US trade and economy. This study is analyzing the US trade policy agenda and discussing the impact of Industry 4.0 on the U.S. foreign trade and economy and its current status in international economic relations. By implementing the Industry 4.0 approaches into the U.S. foreign trade agenda, the economy of United States can keep the leading role in world economy not only today but also in the future.

**Keywords:** competitiveness enhancement, export promotion strategy, international economics, new jobs creation, automatics and robotics.

## 1 Introduction

International trade means the exchange of goods or services along international borders. This type of trade allows for a greater competition and more competitive pricing in the market. Probably the most important single insight in all of international economics is that there are gains from trade - that is, when countries sell goods and services to each other, this exchange is almost always to their mutual benefit. Importing and exporting of goods is a big business in today's global economy thus international trade is supposed to be beneficial for a particular economy even for the USA.

The versatile use of global capital is the proven success source of the US global economic model within the 21st Century, based on qualitative aspects, manifested primarily in global efficiency, being reflected in the US economy in terms of scientific and technological global development engagement, the strategy of science, inventions, discoveries and technical-economic improvements, the revolutionary progression of information technology, space research, armaments industry, universities, education and practically all fields of human activities. These are the starting points for the forthcoming Industry 4.0 Industrial Revolution, also called a digital revolution, characterized by a blending of technologies that erase the boundaries between physical, digital and biological spheres.

The question is arising if Americans shouldn't buy American goods whenever possible, to help create jobs in the United States. Paper deals with issues such as the U.S. international trade characteristics in terms of territorial and commodity structure, the U.S. export trade promotion strategy, the impact of Industry 4.0 on the US trade and economy international trade development as well as President's Trump strategy regarding the U.S. international trade strategy.

This study is analyzing the US trade policy agenda and discussing the impact of Industry 4.0 on the U.S. foreign trade and economy and its current status in international economic relations. Basic data will be drawn from generally accepted institutions, evaluating the U.S. economy performance. To accomplish this goal, methods such as analysis, comparison, synthesis and logical deduction are to be used; facts from scientific and professional publications, periodical and non-periodical press.

International trade of the United States is one of the world's most significant economic markets. The country is among the top three global importers and exporters. USA has trade relations

with many other countries. Through efficiency, competition, and relationships the international trade can increase economic growth and allow for all countries to benefit from it.

## 2 Theoretical Background and Literature overview

The world of Industry 4.0 (also called Fourth Industrial Revolution) is based on the fact that everything goes to the so-called networking, digitization. According to Zak (2012) production is interconnected by intelligent logistics of goods and associated with marketing and intelligent services with a strong focus on needs, individual and specific capabilities of a customer. Tight linking of products, devices, people enhances the efficiency of production machines and equipment, and reduces costs and saves resources (Varadzin, 2016). Intelligent tracking, highly automated robotics, intelligent machines, technology will become a complement to human work. New business models and new collaboration across countries and continents are emerging. The Fourth Industrial Revolution has the potential to increase the world income levels and improve the quality of life of population around the world (Mura et al., 2017). With Industry 4.0, the possibilities are enhanced by emerging technical discoveries in areas such as artificial intelligence, robotics, the Internet of Things, autonomous vehicles, 3-D printing, nanotechnology, biotechnology, materials science, energy storage and quantum computing, computerization of manufacturing and logistics within the machine - machine communication.

According to Simionescu et al. (2019) Industry 4.0, the phenomenon of today, is the interconnection of the Internet of things, services and people, and the associated immense volume of data generated, whether the machine - machine, man - machine or man - man is already communicating. Industry 4.0 is not just a mere digitization of industrial production, it is a comprehensive system of changes gathered to a range of human activities, especially in the field of artificial intelligence, not only in industrial production. The Internet of Things (IoT) concept is being developed, enabling everyday items to be included within the communication network. There are new advanced steps in robotics, and even some autonomous vehicles are already being put into production by some companies (only new legislation is awaiting) along with 3D printers or augmented reality technologies becoming more and more creatively enforced in production.

Cihelková (2016) argues that international trade means the exchange of goods or services along international borders. This type of trade allows for a greater competition and more competitive pricing in the market. Muller (2006) states that the competition results in more affordable products for the consumer. Krajnakova et al. (2015) argue that the exchange of goods also affects the economy of the world as dictated by supply and demand, making goods and services obtainable which may not otherwise be available to consumers globally.

According to Tupa et al. (2019) trade policy defines standards, goals, rules and regulations that pertain to trade relations between countries. These policies are specific to each country and are formulated by its public officials. Their aim is to boost the nation's international trade. Gärtner et al. (2017) and Deese (2014) state that a country's trade policy includes taxes imposed on import and export, inspection regulations, and tariffs and quotas.

Lipková et al. (2017) states that characteristics of international trade can be highlighted as follows. The first one is the Separation of Buyers and Producers. In inland trade producers and buyers are from the same country but in foreign trade they belong to different countries. The second one is Foreign Currency. Foreign trade involves payments in foreign currency. Different foreign currencies are involved while trading with other countries (Helisek, 2016; Helisek, 2015). Very important

are Restrictions. Imports and exports involve a number of restrictions but by different countries. Taušer, et al. (2015) argues that normally, imports face many import duties and restrictions imposed by importing country. Similarly, various rules and regulations are to be followed while sending goods outside the country. Risk Element. The risk involved in foreign trade is much higher since the goods are taken to long distances and even cross the oceans. Another one is Law of Comparative Cost. A country will specialize in the production of those goods in which it has cost advantage (Sejkora, 2014; Svarc, Grmelova, 2015). Such goods are exported to other countries. On the other hand, it will import those goods which have cost disadvantage or it has no specific advantage. Finally, there is Governmental Control. Lipkova and Braga (2016) argue that in every country, government controls the foreign trade. It gives permission for imports and exports may influence the decision about the countries with which trade is to take place.

International trade permits everybody to have more access to the goods and services that are created or performed around the world. According to Obadi and Korcek (2016) international trade helps in many other ways such as benefits to consumers, international peace and better standard of living. Before entering a new market, it is very important for every country, nations and businesses to consider these international trade positives and negatives sides (Zadrazilova, 2016; Vojtovic, 2016).

Krugman, et. al. (2014) argues that regarding the positives ones, inter-national trade allows businesses to expand their markets, gives companies access to different forms of monetary units, is a way to avoid heavy domestic competition, creates more new jobs for people, can set up new industries, develop the means of transport and communication. According to Taušer and Čajka (2014) imports allow foreign competition to reduce prices for consumers and availability of all types of goods for example tropical and out-of-season fruits and vegetables.

Though foreign trade has many advantages, it is very important to point out on some disadvantages such as: import of dangerous goods for example drugs and weapons, risk of international peace, political risk (slavery and wars), cultural risk (different cultural habits and beliefs), economic risk, currency (unexpected changes) and also environmental issues (Zemanova, Drulakova, 2016).

O'Brien and Williams (2013) argue that comparative advantage remains the basis of international trade. Differences in production costs within countries determine much of the flow of goods and services across international borders. Economists use the term "comparative advantage" to indicate that a country has a cost advantage in producing certain goods relative to other goods that could be produced within that same country (Balaz, Hamara, 2016). In other words, what spurs trade and specialization is not the absolute cost advantage that one country's producers have over their competitors in another country, but the relative advantage they have compared to other sectors within their own country. Comparative advantage can spring from multiple sources. Abraham, et al. (2016) states that a country can have a cost advantage in the production of a particular good because of superior production technology. This superiority can include better ways to organize the production process or a climate that allows the country to grow certain crops, such as bananas and mangos, more cheaply. It can also include greater investments in skilled labor and equipment that can result in a comparative advantage in such areas as computer software (Boukalova et al., 2016; Jenicek, 2016; Lehmannova, 2014; Zagata et al., 2019).

Chung (2015) argues that rapid trade growth may well act as a transmitter of economic stimulus around the globe and a vehicle of continued recovery, particularly if enhanced by additional efforts to reduce barriers and expand trading opportunities further. Recognition of the long term benefits of expanded trade, as well as the positive role trade can play in the current economic recovery are central factors reflected in the Administration's trade policy (Jirankova et al., 2015; Jirankova, M., Hnat, 2012).

### 3 The Goal and Research Methodology

The research task of this paper is focused on the analysis how the U.S. trade policy agenda is implemented into competitiveness enhancement of the U.S. economy, how important role the Industry 4.0 plays within the U.S. foreign trade to assure the sustainable economic growth in U.S. economy and to enhance the U.S. competitiveness within the world economy environment. The issue is also to find out the proper involvement of Industry 4.0 along with the possible risks and benefits for the U.S. economy and other economies in international economics system.

By means of analysis, comparative analysis methods followed by logical deduction the main aim of this paper is to figure out how and in what way the U.S. trade within its policy agenda can affect the international economics system in terms of Industry 4.0. Paper will find out and discuss based on the U.S. trade policy agenda analysis to figure out the impact of Industry 4.0 within the U.S. foreign trade on the U.S. economy and its current status in international economic relations.

Basic data will be drawn from generally accepted institutions, evaluating the U.S. economy performance such as Office of the U.S. Trade Representative, U.S. Census Bureau, Bureau of Economic Analysis, Department of Commerce USA, Trade and Development Agency. Those U.S. federal authorities have achieved high acceptance from the international organizations and governments being evaluated as well as businesses, and therefore they are considered as authoritative ones.

To accomplish this goal, methods such as analysis, comparison, synthesis and logical deduction are to be used; facts from scientific and professional publications, periodical and non-periodical press as well as internet sides will be primarily used and examined. Subsequently the analysis will lead to synthesis and prognosis by means of abstraction method eliminating the less important factors in order to set general statements and opinions.

### 4 Findings

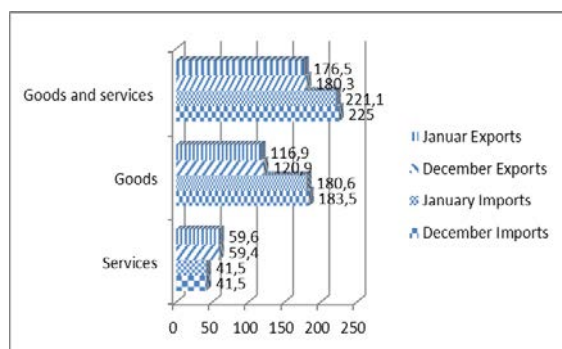
Regarding the U.S. international trade characteristics United States trade policy has varied widely through various American historical and industrial periods. As a major developed nation, the U.S. has relied heavily on the import of raw materials and the export of finished goods. Because of the significance for American economy and industry, much weight has been placed on trade policy by elected officials and business leaders.

In terms of political economy, the Constitution gives Congress express power over the imposition of tariffs and the regulation of international trade. As a result, Congress can enact laws including those that: establish tariff rates; implement trade agreements; provide remedies against unfairly traded imports; control exports of sensitive technology; and extend tariff preferences to imports from developing countries (Drulák, Druláková, 2014). According to Dvorakova (2013) over time, and under carefully prescribed circumstances, Congress has delegated some of its trade authority to the Executive Branch. Congress, however, has, in some cases, kept tight reins on the use of this authority by requiring that certain trade laws and programs be renewed; and by requiring the Executive Branch to issue reports to Congress to monitor the implementation of the trade laws and programs.

By and large the U.S. economy represents the 25.5 % of the world GDP and trade (export most import) is its GDP 22.5 % and the 5.7 % of world GDP. Economies most dependent commercially with USA are, from the point of view their sales, NAFTA partners (Canada and Mexico), China and the EU. During the past 20 years the United States trade balance is deficient increasingly (U.S. Census Bureau, 2019). The world was prepared in all these years to provide goods and services to the United States.

According to information of the U.S. Bureau of Economic Analysis (2019) international trade deficit in goods and services increased to \$45.7 billion in January 2018 from \$44.7 billion in December 2017 (revised), as exports decreased more than imports. In terms of goods and services analysis following data is available. Exports decreased to \$176.5 billion in January 2017 from \$180.3 billion in December 2016. Goods were \$116.9 billion in January, down from \$120.9 billion in December. Services were \$59.6 billion in January, up from \$59.4 billion in December. Imports decreased to \$222.1 billion in January from \$225.0 billion in December. Goods were \$180.6 billion in January, down from \$183.5 billion in December. Services were \$41.5 billion in January, up less than \$0.1 billion from December. For goods, the deficit was \$63.7 billion in January, up from \$62.6 billion in December. For services, the surplus was \$18.0 billion in January 2018, up from \$17.9 billion in December 2017.

Figure 1. The U.S. Goods and services export and import amounts development in December 2017 and January 2018



Source: own processing by The U.S. Bureau of Economic Analysis (2019)

The United States is the world's largest trading nation. There is a high amount of U.S. dollars in circulation all around the planet. The dollar is also used as the standard unit of currency in international markets for commodities such as gold and petroleum (Ivanová, Masárová, 2018).

In 2017, U.S. exports amounted to \$1.3 trillion and imports amounted to \$1.9 trillion. As the Office of the U.S. Trade Representative (2019) states in 2017 the trade deficit was \$634.9 billion. The deficit on petroleum products was \$270 billion. The trade deficit with China was \$295 billion in 2017, a new record and up from \$304 million in 1983. The United States had a \$168 billion surplus on trade in services, and \$803 billion deficit on trade in goods in 2017. China has expanded its foreign exchange reserves, which included \$1.6 trillion of U.S. securities as of 2018. In 2018, the ten largest trading partners of the U.S. were Canada, China, Mexico, Japan, Germany, the United Kingdom, South Korea, France, Taiwan, and Brazil.

Before mapping the US external trade relations, the U.S. Trade Representative institution (USTR) is to be discussed. The growing importance of international trade led to the establishment of the office of the U.S. trade representative in 1963, originally called The Office of the Special Representative for Trade Negotiations. USTR is the U. S. government agency responsible for developing and recommending United States trade policy to the President of the United States, conducting trade negotiations at bilateral and multilateral levels, and coordinating trade policy within the government. The USTR has offices in Geneva, Switzerland, and Brussels, Belgium. The U.S. trade representative is the chief representative of the United States for all activities concerning the General Agreement on Tariffs and Trade (GATT), an international agreement subscribed to by most nations, including negotiations on future GATT tariff adjustments (De Castro et al., 2017). The Trade representative negotiates with the Organization for Economic Cooperation and Development (OECD). The Trade

representative also serves as a member of the boards of directors of the Export-Import Bank (which makes low-cost loans to foreign purchasers) and the Overseas Private Investment Corporation (which insures overseas private investments).

The United States has completed negotiations of a regional, Asia-Pacific trade agreement, known as the Trans-Pacific Partnership (TPP) Agreement and is in negotiations of the Transatlantic Trade and Investment Partnership (TTIP) with the European Union, with the objective of shaping a high-standard, broad-based regional pact. Zadrazilova, (2016) argues that the Trans-Pacific Partnership (TPP) is one of the most ambitious free trade agreements ever signed. Lipkova and Hovorkova (2018) state that the TPP writes the rules for global trade - rules that will help increase Made-in-America exports, grow the American economy, support well-paying American jobs, and strengthen the American middle class.

As a new issue the future creation of US – EU Free Trade Agreement, called the Trans-Atlantic Trade and Investment Partnership (TTIP) is essential to be mentioned. During the first round of the trade and investment talks, which took place in Washington D.C. in July 2013; negotiating groups set out respective approaches and ambitions in some twenty areas covered by the TTIP. According to Machkova and Sato (2017) the Transatlantic Trade and Investment Partnership (TTIP) is a trade agreement that is presently being negotiated between the European Union and the United States. It aims at removing trade barriers in a wide range of economic sectors to make it easier to buy and sell goods and services between the EU and the US. On top of cutting tariffs across all sectors, the EU and the US want to tackle barriers behind the customs border – such as differences in technical regulations, standards and approval procedures. Mura and Kljucnikov (2018) underline that these often cost unnecessary time and money for companies who want to sell their products on both markets. For example, when a car is approved as safe in the EU, it has to undergo a new approval procedure in the US even though the safety standards are similar (Mynarzova, Stverkova, 2015). The TTIP negotiations will also look at opening both markets for services, investment, and public procurement. They could also shape global rules on trade.

The important step towards the U.S. trade promotion agenda has been done by the President's Obama U.S. international trade strategy. The main issues and their impact on the U.S. economy and foreign trade relations will be observed.

A 12-nation Pacific trade deal cements President Donald Trump's strategic pivot toward Asia and challenges China to accept U.S.-backed rules for doing business. A trading bloc stretching from Chile to Japan, with the United States at the economic center, bolsters Trump's effort to counter growing Chinese military and economic influence in the Pacific. More than that, the deal means the U.S. now has closer trading partners and closer friends in the region (Malec, Abraham, 2016). That may force China to live up to the deal's standards or else be cut from some of the resulting economic growth. If ratified, the Trans-Pacific Partnership would be the largest pact governing international commerce in more than two decades, encompassing 40 percent of the world's economic output. The deal would set new precedents for breaking down subtle, politically entrenched barriers to trade and would reinvigorate an expansion of global commerce. The trade pact would eliminate more than 18,000 taxes on U.S. products and includes enforceable labor and environmental standards (Fojtikova, Stanickova, 2017).

Exports are an increasingly important component of the U.S. economy, and the global marketplace holds tremendous opportunity for U.S. companies. Thus the export enhancement agenda is a key element of the U.S. economy. Historically, U.S. companies seeking to expand their revenues focused first on increasing their number and share of U.S. customers. For years, this focus served as a winning strategy for many of the most successful U.S. companies. Today, global economic trends make clear that successful companies are those that reach and sell to consumers outside U.S. borders and around the globe. As the

U.S. Dept. of Commerce (2017) states over 95 percent of the world's consumers live outside U.S. borders. A new middle class is emerging in once-developing nations, which will increase the consumption of goods and services worldwide. More than one billion new consumers worldwide will enter the middle class during the next 15 years. According to a recent study by the Organization for Economic Cooperation and Development (OECD), global middle-class consumption is expected to rise from \$21 trillion to \$35 trillion by 2020, with over 80 percent of the growth in consumption occurring outside of North America and Europe. U.S. companies ignore these opportunities at their peril (Krajňáková, Vojtovic, 2017).

## 5 Discussion

Upon analyzing the impact of trade on the US economy and international trade development the issue why international trade and investment within the Industry 4.0 is so important for the United States is about to be discussed.

The United States of America is the most economically powerful country in the world. In 2018, its economy accounted for 22.4% of nominal world GDP. As far as industry is concerned, the USA produces almost a third of the world's industrial production. In particular, USA specializes in advanced engineering, with a high proportion of science and research. North America with traditionally strong industrial sectors, the technological innovation in terms of Industry 4.0 remains the only way to keep the competitive prices, being expected not only to increase productivity but also to reduce costs and optimize the production process (Tupa, Vojtovic, 2018).

The Smart Factory approach appears to be the trend of Industry 4.0 in the USA, being characterized by flexibility and re-configurability, efficient resources deployment, ergonomics and direct connection with customers and subcontractors, hence the production productivity should increase by 30 to 40% (Abrahám, Lžičar, 2018). Industry 4.0 means the implementation of new software and technology in the US economy. The Smart factory approach development - called 4.0 Industry 4.0 - means that industrial companies are increasingly investing in software. And all this, along with the development of future technologies such as smart vehicles, artificial intelligence (AI), virtual reality and 3D printing, is a very promising background for long-term investment and changes within the industry production and foreign trade quality structure (Abrahám, 2017). In any case, technologies are a highly globalized sector - with the supply chains of companies often operating in many countries. The US economy is known for its technological innovations - that is why, it is home to some of the world's most important IT companies (Drabík, Zamečník, 2016; Krnacova, Drabík, 2018).

The entire Industry 4.0 in the US is based on the logic of cyber-physical systems (CPS). This means that you have autocratic, independently operating systems that are able to optimize production by themselves through self-optimization and mutual communication. Cyber-physical systems (CPS) are a central element of the new industry. They will enable efficient interconnection of individual machines, equipment, computers, logistics systems, vehicles, raw materials, products and entire operations in a co-operative supply-customer chain into one comprehensive network (Internet of Things - IoT). Individual items and sub processes in "smart factories" not only communicate with each other, but also control each other reliably.

In the US, the Industrial Internet Consortium (IIC) was established in 2014 and currently has 212 members. It was founded by AT&T, Cisco, GE, IBM and Intel to accelerate the development of communications technologies for machine and device interconnection and intelligent analysis. IIC is to coordinate priorities and release technology for the industrial Internet. The consumer is at the center of all activities. Today's consumers demand individually manufactured products and services ("Made-for-Me"). Daňo and Lesáková (2018) state that intelligent items, products and machines would enable

manufacturers to embark on piece production and produce original products without extra cost. This phenomenon is also to be adapted to the US export structure.

Advancing the US economy is the way to an innovative and smart intelligence economy. American companies have a major advantage in terms of cutting-edge areas such as artificial intelligence, software, automatics and robotics. According to Hanulakova and Dano (2018) digital connectivity not only improves efficiency, but also accelerates innovation, implements new business models that can be put into action much faster. Industry 4.0 is speeding up and bringing innovation to the US economy by generating new businesses by sharing devices or selling their capacities. With sensors and connectivity, products will be enriched with services (such as predictive maintenance) or even transformed into service. The engine manufacturer does not need to sell engines in the future, but will provide them as a customer service, and will only charge the engine power used by the customer.

Grenčíková et al. (2017) argues that international trade - both exports and imports supports 38.1 million American jobs. These trade related jobs are at large and small companies, on farms, in factories, and at the headquarters of globally engaged firms. The United States exports trillions of dollars in goods and services annually, including petroleum products, transportation equipment, farm products, travel services, and royalties from industrial processes. According to Jiroudkova and Rovna (2015) the vast majority of U.S. exporters are small and medium sized companies with less than 500 workers. Customers in 234 countries around the world buy American grown and manufactured goods and services. Top markets like Canada, Mexico and China buy hundreds of billions of dollars of U.S. products and services annually (Sejkora, Sankot, 2017). Imports lower prices and increase choices for United States companies and families. Lower raw material and input costs help U.S. companies stay competitive in global markets, while families can stretch paychecks further as trade agreements reduce the cost of products by eliminating costly barriers to trade. Free trade agreements (FTAs) have led to rapid export growth to partner countries. America's FTA partners purchased 12.8 times more goods per capita from the United States than non FTA countries did in 2012. Foreign-owned companies invest in the United States and employ 5.3 mil-lion Americans (Trade and Development Agency, 2019).

Here are some of the enormous benefits of the international market place for the U.S economy. Successfully enhanced the U.S. trade pro-motion agenda means: jobs for local communities throughout the United States; more business opportunities for small and medium-size firms across America; increased manufacturing for potential all key industrial sectors from chemicals and computers to machinery and transportation; and finally it means more sales revenue to supplement the tax base of each state to fund community assets like roads and schools. As this discussion demonstrates, embracing international trade has bolstered the economic prosperity of companies from all 50 states. Nearly every state in the country exported at least a billion dollars' worth of goods to markets overseas. These exports create thousands of jobs as local export-oriented businesses work to fulfil customers' orders around the world.

## 6 Conclusion and Further directions

By arriving to the conclusion it is necessary to highlight that globalization within the implementation of Industry 4.0 aspects should head in all directions and levels to activities that disintegration would not be the case. The fact that the US accounts for 22% of world GDP production is also relevant to the further development of the US economy and, consequently, to global economic growth. Thus, as a leader of global economic growth, US will continue to determine clearly further developments in global economic growth, as well as improving its future growth measures or its future developments. Industry 4.0 means implementing new software and technology in the US economy. Developing and advancing Industry 4.0 affects all

industrial sectors of the US economy and fundamentally influences the qualitative structure set of the US goods export structure as it affects manufacturing in the automotive industry, i.e. the development of science, technology, new education, new trends and labor. The structure of exported US production to world markets thus reflects the Industry 4.0 aspect as a driving force in international trade trends and the world economy future development.

The goal of international trade is trade goods and services between different countries. In this paper we have shown that international trade of the United States is one of the world's most significant economic markets. The country is among the top three global importers and exporters. USA has trade relations with many other countries. Through efficiency, competition, and relationships international trade can increase economic growth and allow for all countries to benefit from it. Generally speaking, the U.S. has experienced many different benefits and consequences because of international trade over its history. The question now is whether trade will harm U.S. workers and productivity in the new millennium. The world is progressing so rapidly and on so many dimensions that a mistake in our progress and growth would be detrimental to our survival. The U.S. must decide what to do about the standard of living and its position as a leader in the global economy. Whether the U.S. will erect walls of protection or heartily embrace trade as a prosperity factor will determine the future of U.S. workers and the U.S. economy. We have proved that trade is beneficial and necessary for U.S. survival, but until there is a definite analysis that completely disproves the opposing side of the argument, the debate will continue.

Finally, we can summarize that openness to international trade within the Industry 4.0 approach encourages productivity gains and improved competitiveness. Doing business internationally has allowed U.S. businesses, including small and medium-sized enterprises, to grow in markets outside of the United States and prosper globally.

Further research will be devoted to exploring the role of the US trade policy within the other EU common and coordinating policies such as Trade and Industry policies. Taking into account that questions of trade relations between the US and EU are among the most complicated ones, crucial emphasis should be also paid to researching peculiarities of new Trump foreign trade policy agenda within the China-USA trade war along with the U.S. imposed duties on cars export from the EU to the USA symbiosis and synergies regarding the future world economy development.

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#### Primary Paper Section: A

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## EDUCATING CHILDREN UP TO THREE YEARS OF AGE IN THE NARRATIONS OF TODAY'S PARENTS

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**Abstract:** The paper presents the results of a long-term qualitative examination of early childhood educating and childcare (ECEC). It is ten years of targeted research, with the KEGA grant scheme no. 070UK-4/2016 which enables to reveal different levels of educational practice, and the fact that educational practice needs to be supported by pedagogical science. The research sample consisted of more than 110 subjects - parents, educators (caregivers) and children. Research tools applied, were focus group, interview and observation, via which massive research material was analyzed. The most important finding of research is the need for scientific support in this area, because the caregiver has no support in the current literature. Love, boundaries, consistency, and time prove to be important critical points in the process of bringing up (educating) a child in an early childhood education and childcare facility, providing care up to 3 years of the child's age, and educating in the family.

**Keywords:** educating, children up to the age of 3, parenting, „The Act of day nursery care centres“, qualitative research

### 1 Introduction

Children up to the age of 3 are thinking, moving, sentient and interactive human beings. At present, we still have little understanding of the child's mental development in the early years. However, one of the domains of current pedagogy should be to focus on optimum upbringing and early childhood education, taking into account the whole spectrum of their development, so that they can later fully integrate into society.

The changing conception of the world has set in motion a change in our understanding of what knowledge is, and how we get to know. Science no longer acts as an island of objectivity in the sea of cultural relativity. Multiplicity of opinions is a newer phenomenon in our cultural space and one of the new roles of the scientist is to find and interpret the unifying features in the intersubjective thinking subjects, as co-creators of contemporary worlds (D. Kostrub 2016). We present the results of the research in which we decided to apply a purely qualitative methodology, because we realize that there is no universal model of a parent's or caregiver's behavior and we fully accept, that every parent and caregiver has a distinctive mental model, that is also applied in early education of children. In the first part of the paper, we present a view on ECEC from the perspective of various Slovak and foreign authors, because of our theoretical definition. In the next part of the study, we focus on the main results of the long-term qualitative study of ECEC.

### 2 The role of an educator (parent, caregiver) in supporting a child's emotional and social development at an early age

From the psychology point of view, the early age of a child includes a newborn period, of up to one month, a period of infant, from one month to one year, and a toddler period, from one year to three years of age. Each of these periods is specific in terms of the child's biological, cognitive, emotional, or social development. The period of a newborn is short, in terms of the length of other developmental periods, and is also characterized as a child's adaptation period, when the child adapts to new environmental conditions. The infant's period, which lasts about one year, is characterized not only by rapid biological development, but also by changes in other areas related to the perception of external stimuli, the development of cognitive processes, or the development of speech. From the point of view of the subject matter and the topic of the study, it is of immense importance for the infant period to be a period of deepening the relationship with the closest person, the relationship with the

mother. As stated by M. Mahler (in M. Vágnerová, 2000), the period between 3 and 6 months is also called the symbiotic phase, which means a close connection between the child and the mother. The mother is accepted as a significant source of the child's satisfaction. Later, at the age of 6 and 9 months, the child begins to differentiate familiar and unfamiliar people, where fear of strangers and unfamiliar situations also emerges. This is understood as separation anxiety. As reported by S. Nolen-Hoeksema, B.L. Fredrickson, G.R. Loftus and W.A. Wagenaar (2012), another period of separation anxiety reaches a peak between the 14th and 18th month, and then gradually fades away. Among the professional public, in the context described above, there is a fairly often discussed theory of child attachment to the mother, which is definitely related to the early childhood period of the child. Most child attachment theories are based on the original study of psychoanalyst J. Bowlby (1973, in S. Nolen-Hoeksema, B. L. Fredrickson, G.R. Loftus, W.A. Wagenaar, 2012), which was implemented on the basis of the behavior of babies and young children separated from mothers during weekly ECEC centres, or in hospital. Based on his research, J. Bowlby concludes that failure to establish a strong attachment to one or more primary persons in early childhood, is related to the inability to establish close personal relationships in adulthood. J. Bowlby's work was followed by his co-worker M. Ainsworth, who has developed a theory of child attachment styles at about 12 to 18 months of age. Based on the behavior of the children, she divided them into three groups - securely attached, insecurely attached and avoidant, insecurely a attached and ambivalent (M. D. Ainsworth, M. C. Blehar, E. Waters, S. Wall, 1978, more in S. Nolen-Hoeksema, B. L. Fredrickson, G. R. Loftus, W.A. Wagenaar, 2012). A more recent study by K. Howard, A. Martin, L. J. Berlin and J. Brooks-Gunn (2011), examined associations between early mother-child separation and subsequent maternal parenting behaviors and children's outcomes in a sample of 2080 families who participated in the Early Head Start Research and Evaluation Project, the vast majority of whom were poor. Multiple regression models revealed that, controlling for baseline family and maternal characteristics and indicators of family instability, the occurrence of a mother-child separation of a week or longer within the first two years of life was related to higher levels of child negativity (at age 3) and aggression (at ages 3 and 5). The effect of separation on child aggression at age 5 was mediated by aggression at age 3, suggesting that the effects of separation on children's aggressive behavior are early and persistent. According to J. Langmeier and D. Krejčířová (2006), the belief that a child at an early age must have the opportunity to establish a lasting, uninterrupted relationship with its mother during this period, if its personal and social development is to continue as satisfactory, is based on the assumption called the critical or sensitive period of the child. However, there are current psychologists who reject such an absolute definition of critical period and believe that the first year of life is important, but at the same time, there is no reason to believe that later relationships are not possible, or that further child development is necessarily irreparably damaged.

R. Winston and R. Chicot (2016) report that, during the first two years of the child's age, children undergo huge brain development, growth and neuron pruning. The brain development of infants (as well as their social, emotional and cognitive development) depends on a loving bond or attachment relationship with a primary caregiver, usually a parent. There is increasing evidence from the fields of development psychology, neurobiology and animal epigenetic studies that neglect, parental inconsistency and a lack of love can lead to long-term mental health problems, as well as to reduced overall potential and happiness. In this paper, the authors consider the evidence for this claim across several disciplines and conclude that, the support of babies and their parents in the first two years of life, to be a crucial aim of public health groups in the community.

S. Nolen-Hoeksema, B. L. Fredrickson, G. R. Loftus and W. A. Wagenaar (2012) report that, even with regard to the child's autonomy and independence on the parent (caregiver), there are significant differences between children of about 1 year of age which are still dependent adult care, but a two-year-old or three-year-old child can already take a meal plate or bring a toy out of the shelf. This all, reduces the child's dependence on the caregiver in general and on the family caregiver particularly; the presence of parents is no longer so urgent for a child. S. Nolen-Hoeksema, B. L. Fredrickson, G. R. Loftus and W. A. Wagenaar (2012) further argue that, a child of three years of age, when children usually feel well enough in the absence of their parents, is already able to spend time with other children or adults. It follows from the above mentioned that, there is no clear opinion on the separation of the mother (nearest person) from the child at an early age, among psychological and pedagogical experts.

## 2.1 The role of an educator (parent, caregiver) in educating a child up to three years of age

Demanding requirements have always been (and continue to be) present in education of children of an early age. In the past, the educating of children was influenced, to some extent, by factors other than the present, due to the ongoing changes affecting current families. In the past, the mother, but also in the case of multi-generation cohabitation, grandparents were involved in the educating of children. At present, due to the decline of multi-generational cohabitation, as well as an increase in the early return of the mother back to work, perspectives on educating children up to three years of age have changed. J. Derková (2018) states that, being a good parent in today's chaotic and rapidly changing world is difficult. Many are wondering how they can, and whether they can, convey their values to children, if the world is changing so quickly. Certainly there are unchanging, permanent, humanly valid values that need not be imposed on children, because it is better to educate them by example.

Although it is not the subject of this study to write about the relatively rapid changes that take place in contemporary families, it is not possible to neglect them in the context of early childhood education, as they also influence the development of the child's personality, in conjunction with other aspects. Changes in current families, such as the increase in divorce rates, the increase in out-of-wedlock children, the increase in single mothers, changes in parental roles, the increased work involvement of mothers and the filling of parents' off-work and family time, are the subject of many scientific studies in sociology, psychology and education. New phenomena, such as the change in the acceptance of the father's role in the family, the father's maternity and parental leave, and the education of children from the perspective of a gay couple, are also being researched. The above-described changes in the functioning of the family, such as the father's maternity and parental leave, should be key in scientific research constituting new knowledge regarding the educating of children, as well as the (male) caregiver's influence on the child's development up to three years of age.

Despite the above-mentioned changes concerning the current families, and with regard to the aspects described above concerning the development of children up to the age of three, certain rules in education do not change. We note that this is a sensitive period of early childhood development, in which the optimum impact of education, taking into account the specific needs of the child at this age, is of immense importance. J. Langmeier and D. Krejčířová (2006) state that, of course, sufficient environment stimulation, as well as clarity and stable structuring, are a prerequisite for the rapid and complex development of the child at an early age. There should be a person who guarantees the continuity of gentle, loving and sensitive care. This is a guarantee of a sense of safety, a prerequisite for a healthy psychological development in the years to come. The development of the child, according to the authors, is optimal, where the mother or several persons familiar to it are concerned. The danger lies in the frequent substitution of the

social environment, separation from the family, the care of several less known people and the exposure of the child to any kind of unfavorable condition.

From the point of view of important milestones in connection with the early age of the child, we consider it important to devote to the period of rebellion (defiance), the so-called. self-assertion period. The period of defiance usually occurs between the 2nd and 3rd year of life of the child, sometimes beyond the age of three, and continues into the next development period. The aforementioned period refers to many parents (caregivers) as quite demanding, as children tend to react by self-asserting their own will, displaying defiance to their parents, aggression, in „normal/standard“ situations. P. Řičan (2014) emphasizes that, this period is the period of "rage in the sake of rage" when the child acts stubbornly, i.e., it self-asserts its will, not because it has a certain need, or something bothers it. It is just for the sake of it. D. Miell and S. Ding (2005, in S. Ding, K. Littleton, 2005) state that, in this development period the self-awareness of the little child is most pronounced. Expressions of self-awareness in the young child can be seen in the displays of rage and aggression, which are most common in Western societies, from 18 months to 3 years of age, when the infant is already displaying an increasing awareness of the self, through the use of the words 'me' and, particularly in this context, 'mine'. J. Překopová (2014) states that, the period of defiance is of paramount importance in the awareness and manifestation of conflicting emotions, as well as in their own boundaries, and the boundaries of others. The author further states that, the evolving ego becomes detrimental whenever we stop the anger, divert attention from it, and comfort the child as if it were a baby. The ability of a two-to three-year-old child to experience defiance, that is to say, the boundaries and the power of itself and power of another, that is, to experience the relationship between ME and YOU, should not be punished. P. Řičan (2014) states that, if it is not necessary, the parent should give up any attempt to force the child to do what he / she refuses to do. The author further states that, the solution to the crisis is the adoption of order, i.e., in sharp collisions with the environment, the child will eventually realize that the constraints his parents give him/her are part of a solid educational guide, that protects him/her from the dangers of the outside environment and also from the dangers coming from within, i. e., from the unbridled spontaneity of its own interior.

## 2.2 Education in a family vs. out-of-home environment of a child at an early age

A number of expert discussions are currently being conducted on the educating of children, under the age of three, in family and non-family settings. Pedagogy or psychology experts can not agree on when it is appropriate or "safe" to care for a child of this age outside the family environment via its placement in the facility. Obviously, at an early age of a child, i.e., a child from birth to three years of age, optimum care is provided by the parents, first necessarily by the mother, and immediately followed by the father. However, given the current economic situation in current families in Slovakia, it is not always possible for one of the parents to care for a child in their home environment. Mostly mothers are "forced" to return to work, because of the family's financial situation, or to keep their jobs. Experts in the field of developmental psychology and pedagogy confirm, and scientific studies show, that the early return of a mother to work is not favorable for the child. J. Langmeier and D. Krejčířová (2006) argue that, placing a child in an institution, (hospital, infant institution) under the age of 1, brings an increased risk for the child at this age, which is difficult to compensate for/by the nursing staff's focused care. The placement of a child at this age in the nursery should be seen as a less appropriate alternative to family educating, although some children adapt to the nursery quite well. A child of about one year can not yet establish a relationship with other children, they become only "objects" of momentary interest to it, and they cannot satisfy their needs. The authors further argue that, the fact that a child is about to be actively interested in interacting with other children, from about two years of age, and that he / she

sometimes engages vividly in such interaction, points out to that he / she is more likely to be able to benefit from such interaction, from the point of development, and therefore, is better prepared at least for a short play in the group. Some children handle the inclusion in nurseries well and it may not necessarily be endangering or even harmful to them, as it is sometimes unilaterally emphasized. Others, however, are very immature for such experience. This apparently depends on the temperament dispositions, on the previous experience with strangers so far, dependence on mother, cognitive maturity, but also on the way of nursery education, etc. L. Markham (2015) argues that, if a child spends more than twenty hours a week in the facility, this environment will certainly affect it. The influence is according to the author, largely positive, as the child learns behavior in a group of peers and has many opportunities to explore and learn. However, according to the author, small children are to be in close contact with one primary adult. The author further notes that, for example, paid parental leave is not ensured in the US, so about half of the children in this country spend most of their active time (when not sleeping), during the first two years of their lives, without parents. It is a critical development period, when the center of emotion develops in the brain. L. Murray (2016) argues that, one of the biggest studies dealing with the impact of non-parental care on early aged children found that the general impact of this care is negligible. However, the study emphasized that, the nature of this care is important. The author further emphasizes that, one of the key issues raised in research into nursery care is the importance of quality. Sufficient staff in relation to the number of children, well-trained staff and better salaries ensure more satisfaction for the caregivers, a greater sense of professionalism and a low turnover rate.

Currently, in accordance with the above mentioned, the ensuring of a quality environment and a professional approach by carers in facilities for children at an early age, is a relatively frequently discussed topic in Slovakia, i.e., "The act of the day nursery care centres", Social Services Act no. 448/2008 Coll. Based on the wording of Act 32b, it is possible to place a child in a childcare facility providing care up to the age of three in Slovakia, where a "service to promote reconciliation of family life and working life, by providing childcare under three years of age", is provided if the parent, or a person who has a child entrusted to a personal care by court decision, prepares for a vocational education in a secondary school or college, prepares for the labor market or performs entry or return activities, and/or is employed. ECEC facilities for children under the age of 3 provide: routine childcare, nutrition, education. '

Since its inception, the wording of the act, and its adaptation, has been the subject of many criticisms, also due to the tightening of the conditions for the operation of such facility, such as the provision of barrier-free access, which many operators of existing facilities can not provide. The issue of discrimination against some groups of parents and children was also criticized (e.g. non-working parents, disabled parents), as well as restrictions on the provision of care, in relation to the child's age (i.e. up to 3 years). The change in form of the act has also brought the view that many of the existing private facilities will cease to exist, because they will not meet the stringent conditions for their operation. There are not enough of state-run facilities for children in Slovakia, so parents and children are paying for the current situation. However, in the context described above, we express a skeptical view, because there is little debate about ensuring the quality of education in these facilities. At the end of this part of the article, we agree with the comments of foreign authors P. Broadhead, J. Johnston, C. Tobbell and R. Wolley (2010), who argue that professionals from different areas of early childhood education and care should work together and learn from each other. Social or health care providers, as well as education professionals, can "benefit" from an integrated approach and thus provide more effective measures. The authors further emphasize that, even within one discipline, professionals can support each other to provide more effective care. An important part of this integrated work is partnership or teamwork, so that different knowledge of professionals, who are professionally engaged in ECEC, is

appreciated, respected, shared with each other. It is always important to consider the reason for this integration; an individual - a child who should be at the center of everything that is needed to be done and what is done.

### 3 Methodology, methodics and organization of research

At present, the child's education at an early age is not systematically addressed in Slovakia. Similarly, it is also abroad. There are few research studies on early childhood education and care. They are overshadowed by the research of preschool and elementary age children, but issues of toddler and infant education are rarely addressed. There are few state-run institutions in Slovakia which aim to educate children of early age. Such education takes place in facilities until the third year of the child's age. Based on period-conditioned, domestic and inspirational foreign programs, in line with the socio-cultural conditions of the present world, ECEC proves necessary not only for the development of a child in rapidly changing conditions, but also for parents, who are rapidly returning to their profession. Parents also have difficulty in choosing parenting strategies, at a time of rapid information boom and absent pedagogical counseling, including the absence of educational programs for children. The main goal of our long-term research is to conceptualize early childhood education and care for children up to 3 years of age.

Our intention is to identify the educational aspects of institutionalized care provided in ECEC facilities up to the 3rd year of the child's age. To present and analyze the essence of subjective testimonies of caregivers and early childhood education and childcare professionals, related to the research problem identified. To conceptualize the methodological-content form of ECEC, by identifying educational issues and educational needs, considered by caregivers, parents, and ECEC professionals. Research questions are defined as follows: What are the specifics of early childhood educating in the family and childcare facilities up to the 3rd. year of the child's age? What are the positives, negatives of contemporary education in ECEC facilities up to the 3rd year of the child's age? What early childhood educating constructs can be identified, based on mental and social representations of parents, caregivers and other early childhood educators?

We exclusively used qualitative methodology (M. C. Wittrock). Our intention is to understand how the subjects of our research view the studied phenomenon, postpone our view, and describe the system of relationships, how they (the subjects) connect them to a network and determine each other. In our research we exclusively use qualitative research methods and research tools to gather data, as well as to elaborate them: Focus group (C. McNamara; J. Plichtová), narrative and discourse interview, direct and indirect, participative and non-participative observation (P. Gavora) and analysis: open coding method (A. Strauss, J. Corbin), constant comparative method (W.J. Creswell, M. Kolb), selective coding method (A. Strauss, J. Corbin).

The target group of our research project were caregivers in ECEC, providing care up to the third year of the child's age, and specialists in early childhood education, together with parents. Research terrain was represented by state-run ECEC facilities and maternity centers in Bratislava. At the end of the research project, we managed to implement a workshop in one of the ECEC facilities, where we presented some of our findings. The results of the research raised questions - the space for discussion of the concerned. The participants were: child-educating professionals (educators, psychologists, healthcare professionals, politicians and ministerial employees).

In the qualitative research, we have carried out, we applied validation and reliability methods (D. Kostrub 2016 and L. M. Ferrer, Jimenez, M. J. Mayan): Triangulation as a combined application of different research tools, methods, groups of research subjects, local and time spaces, and various theoretical

perspectives, aimed at gaining the phenomenon. Constant Comparative Method (CCM) - application of systematic comparison of codifications and classifications.

The degree of generalization - the creation of a terrain-based structure. Presentation of the process - imaginary transfer of the audience to the research field. Process evaluation and quality control - implemented through reliability and credibility. The presentation of the research results consists in designing research findings (emerging questions) and discussions, (*questions on the substance of the text, what to do to support the development of educational principles in the education of children and others*) by constructing consensus in dialogue (discourse) and intersubjectivity.

### 3.1 Interpretation of research results

Institutional education for early childhood in Slovakia, takes place in ECEC facilities. We solved the project of our research at the time when the so-called "Act of the day nursery centres" of the Ministry of Labor and Social Affairs was being solved, and met with senior executives of the Department of Labor, Social Affairs and Family in Bratislava, to whom we wanted to presented our project. We did not agree on cooperation, but we met with them at the last discussion seminar. The research was conducted in ECEC centers and state-run facilities, providing care up to the third year of the child's age in Bratislava. These are family-type facilities with permanent staff. Caring for the child is of the responsibility of the caregiver. We have identified that, in the state facilities the majority of employees have the qualification of a nurse (currently the study program is disabled). Graduates of this program have knowledge at the level of the school-leaving exam in psychology, paediatrics and are prepared for the work with children. They have many years of experience and many have been in the facility for over 30 years, where they carry out their work at a high professional level. Their professional activity is not supported by methodological manuals; they draw on the literature written before 1999. We conclude that good, well-proven elements of the past in the process of education, persist until now. However, some of the caregivers said that in addition to not being supported in methodological manuals, speech therapists, psychologists and paediatricians do not come to their facilities, as they had in the past. They consider current state nurseries to be of a high standard. They even see the way how nurseries used to work in the past as an amateur approach. They consider it unsuitable for a child to have a precisely defined educational component at the exact time of day. It is desirable for the caregiver to have thoughtful and planned activities, together with bearing in mind that the educating should take place throughout the whole day. The approach of the caregiver should be individual and the caregiver should respond to the current physical and psychological disposition of the child (for example, it may be teething). We identified targeted educational activities in a set of activities, implemented almost throughout the whole child's stay in the facility. The child's cultural literacy is developed by education. Based on research data, we identified 7 areas of education: communication culture, safety and care culture, culture of getting to know (cognitive), culture of coexistence, behavioral culture - emotions, attitudes and their balance, culture of interpretation - art.

Educational activities for children are prepared by the caregivers. It is an artistic, movement, intellectual, musical field of education, and self-help skills activities. The day of the child in the institution has a well-defined timetable and precise rules are set for all participants, to determine the direction of the facility (D. Kostrub et al. 2018).

Significant critical points in the process of educating a child in a ECEC facility for children up to 3 years of age, and educating in the family are: promoting independence, love, and cooperation between family and institution.

It is important to point out the individual dimension in promoting the child's autonomy and competence done by the

parents. There are parents supporting independence and on the contrary, parents leaving the development of independence to the child itself. "Let him be, he'll learn". Caregivers respect the reservations and needs of parents. It's as if there were two poles, because on the one hand, the caregiver knows what to do with this particular child, but the parent is the one who refuses. Caregivers are also encouraged to communicate with a parent who is not interested in how the child thrives during the day. The stay in the facility is considered by the parents to be essential in the educating and support of the child in self-management, whereas in the home environment the child is just sent to bed. On the contrary, there are parents who want to teach the child everything themselves, and parents who cooperate. A significant breakthrough for successful cooperation seems to lie in the success of the child.

Independence, competence, gives the child freedom. This way it is happy because it becomes independent in its actions, independent of adult help. It doesn't have to be in a dirty diaper anymore, it doesn't have to be dirty, it doesn't have to wait for someone to wash it, because it can do it by itself. We think communication with the child is beneficial. The child has to get used to self-help skills activities, gradually. It should gradually learn and be given time to try to dress, wash, eat with a spoon, etc. We note that children in ECEC facilities have enough opportunities to progressively improve their autonomy. Caregivers consider the development of autonomy and competence a priority.

The basic and immediate phenomenon we have identified in ECEC centres, as well as in the family, is love. Love has different forms in the family. We identify that love is the foundation of education and we conclude that how parents understand and apply it in education, has a definite impact on parents' constructs in education. Rejecting an authoritarian approach to education, and seeking for respect for the child, is a phenomenon on which parents clearly agree. Their opinions differ in what behaviour they still respect from the child and what they can not, or in no case, will.

We assume that, parents' opinions differ in the following: Whether a child should be raised/educated within the boundaries of set rules, or not. Whether, or not, the child should respect the specified rules. Whether only the child should respect these rules, or the same goes for the parent too. Whether a parent has enough will and energy to be consistent. Whether he/she tries to evaluate - to "guard" the behavior of the child, or is able and willing to be attentive to him/herself (in the role of parent and human being). Whether he / she can identify errors only in the child's behaviour, or also in his / her own. Whether he/she can admit the mistakes and stand up to them, as an opportunity to rectify (behaviour) or failure (M. Tománková, D. Kostrub 2018).

From a rigorous analysis of research data, we have found a clear match between the interpretations of caregivers and other professionals which tells us that the basic feature of a good caregiver is to love children, have a positive attitude towards them. The caregivers simply said, they like children, have the will to make a child happy, as well as a parent in the question of raising/educating a child. A parent understands love differently, compared to a caregiver. The caregiver makes the child happy through educational activities during the day, by teaching it to be relatively independent. "The child is then proud and in fact, the educator this way manifests love". A parent can only understand love towards the child from that emotional side, and on this basis, he/she forms educational implications, or (sometimes) not at all.

We identify that communication is an essential critical phenomenon in family and facility collaboration until the third year of the child's age. Parents approach the collaboration differently. Some are interested in how their child thrived during their time in the facility, others not as much. But still, caregivers' superiors require active communication and collaboration with parents. The most effective strategy is to highlight the success of the child. Parents are surprised how come the child is doing

things “right” in the facility and not at home. Importance lies in the fact that, the child spends a substantial part of the day in the facility, where the caregiver actively engages the child, perhaps more than the parent. We assume that, the fundamental phenomenon, complicating the educating in the family, is consistency in parenting and the time enabling the parents to be consistent. Caregivers are consistent in their work and have a child-only time. Parents know how it should be theoretically, they are interested in the subject matter, they talk to friends about it, they do study various materials on the Internet, but still, the problem is consistency. Research shows us that they do not have the time to be consistent in education. We note that for more serious problems, such as child aggression, family and facility cooperation is of high importance. The parent often finds it very difficult to accept that something is wrong especially, when the child behaves differently at home. It happens that the parent does not take the words/advice of the caregivers seriously, and hardly ever believes them. The parent often refuses the recommendations of a professional and only when a more serious problem arises, he/she will seek the help of a psychologist, etc. The caregiver should protect the other children in the group. When a child gets sick or has health problems, and the morning filter confirms it, the child cannot remain in the group until he / she has a proof of his / her health condition from the pediatrician. When an aggressive child threatens other children in the group, he / she may, in extreme cases, be excluded from the group. It depends on the operating rules, that the parents are obliged to sign and accept. However, we note that the staff is in every case, trying to work with parents and solve the problem. Trust is important. The parent voluntarily chooses the facility. He/she chooses a facility he trusts (D. Kostrub et al. 2018).

The following table summarizes the most important findings from the research presented:

*Tab. Parallels of educating in an ECEC facility, providing care up to the third year of the child's age and in family*

	FAMILY	ECEC FACILITIES PROVIDING CARE UP TO THE THIRD YEAR OF THE CHILD'S AGE	PARALLELS OF EDUCATING IN ECEC FACILITIES AND FAMILY
Love	Love is the foundation of education and we conclude that, as parents understand it and apply it in education, it has a clear influence on parents' constructs in education.	A positive relationship with the child, understanding and interest, is a vital phenomenon in education, and the basis for accompanying the child in all its phases.	The caregiver defines and understands love in a completely different way than a parent. The means of the educator is targeted professional activity, educational activity (play). Independence and rules are the means of caregiver, to make a child happy in a facility. It is a caregiver's interest in the child. We note that, a parent understands love more on the emotional level.
Boundaries	Parents' views differ in the importance of setting boundaries and their consistent observance. The setting / non-setting of boundaries in education in the family is often minimized to positive patterns/rolemodels. The child is the "mirror" of the parent and also mimics the negative patterns/rolemodels.	The „demarcated“ boundaries represent a safe space in which the child operates independently. The child becomes independent and less dependent on adults. The phenomenon of educating, or non-educating parents clearly manifests itself in the will of the child to respect the boundaries of the facility, if the child does not need specialist care and the caregiver doesn't suspect a diagnosis	It is important to communicate and cooperate with the parent and in the event of a problem, to cooperate with other professionals, especially the psychologist. A healthy child is taught by a caregiver to respect boundaries, if the family works with the facility and can receive expert advice and assistance. The means is not a ban, but a distraction in form of other activities. The

	dels, possibly the negative behaviors are closely linked to the situation and the overall atmosphere of the family. If a child does not have a diagnosis that complicates education.	(e.g. autism, ADHD) complicating the child's respect of the boundaries. The facility offers a helping hand to the parents, and the facility's staff recommends working with a specialist. In extreme cases, the child is excluded from the group for security reasons and for the protection of other children.	caregiver teaches the child to think critically and talks about the child's specific educational problems at an appropriate level.
Communication / Comfort in interest of the child	We note that parents approach differently to communication with the facility and see the child's interest differently than the specialists - staff of the facility: 1. Parents leave all educational activities under the surveillance of the caregiver. They do not work actively with a child at home, or work with the facility. 2. Parents who want to teach the child everything themselves and do not respect the caregiver's opinion. 3. Cooperating parents.	Caregivers are encouraged to communicate with parents, even if they are not interested in how the child was doing in the facility. Parent and caregiver communication is cautious on the part of the facility. If the parent does not respect the caregivers, the director of the facility enters the communication and points out the child's interest in an appropriate manner.	Pointing out the success of a child is a breakthrough phenomenon in family and facility collaboration.
Independence Support / autonomy	Parents consider independence to be an essential phenomenon in education. However, consistency and time complicate and artificially prolong the child's ability to act independently within the boundaries of education. Parents are often unable to grasp the problem. They look for support in professional literature and online discussion forums. Positive is their effort to seek professional help, but many parents are afraid of being helped by a psychologist, being it understood as a stigma by them.	Caregivers are limited by parents' requirements. Often times there is a conflict between the opinions of experts and the family.	Communication and collaboration between family and facility is important. It is important that the child's independence is promoted both in the facility and in the family. In terms of pedagogical theory.
Consistency	Parental overload is a phenomenon that does not facilitate their ability and will to be consistent in education.	Consistency is unambiguously required, preferred and implemented, in the upbringing and education of the child in the facility.	The success of a child is a motivation to work closely together and trust the facility.
Time	Parents are	Caregivers have a	Parents admire and

	facing a time deficit. Education and actively spent time with a child are often minimized to a basic day-to-day interaction. Educational potential of rolemodels, that are not always positive.	child-time only. They responsibly perform targeted educational activities. They are also proactive and willing to prepare for their work outside their working hours.	show sincere joy at each child's success. They are astonished and do not understand why a child will perform a particular activity and develop it just in the facility, whereas at home it refused to do it, or to understand and apply specific elements in education.
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#### 4 Conclusion

From the theories presented above and from the results of our research, it follows that, in the educating of children under the age of three, the educator (parent, caregiver, educator) should, based on the biological and psychological needs of the child at this age, aim to provide a sufficiently stimulating environment in the field of motor development, i.e., to provide enough space for movement in the interior, but also exterior, together with the area of emotional development, i.e., to fulfill the need for security, safety, and love. In the area of social development of a child, it is best to establish relationships with the primary/closest caregivers and later to gradually expand the network of relationships with peers and others. In view of the cognitive development of a child at this age, it is necessary to provide adequate stimulation, i.e., enough incentives from the outside. Intellectual stimuli are important. Given the sensitivity of the period in the initial development of speech skills, it is necessary to provide enough stimuli in the area of speech development, with the correct speech pattern, constant communication with the child, via reading, etc. At a later stage in the early childhood period, it is important to support the child in independence, i.e., teach it self-help skills activities, e.g. for personal hygiene, dining, dressing and the like. In early childhood education, parents (caregivers) should not forget to support the "base formation" for further development of the child's moral values at a later age. From the point of view of moral development (e.g. L. Kohlberg, 1976, Š. Ferková In: Prevendárová J. et al., 2017), it is not harmful if the parents support a child's moral behavior and they also show, by their own actions, what is expected, allowed and what is prohibited, etc. Parents enable the child to orient itself in the basic rules of behavior. It is important to note that, every child is in essence unique. Therefore, the approach to early childhood education should be unique. We are of the opinion that there is no single, coherent 'guide' for educating a child at this age. What is clear however, is the need to provide enough incentives in different areas of early childhood development. These should be in synergy with providing enough love, acceptance, security, safety from the parent (caregiver), because they predetermine the child's future behavior, further development, its ability to learn, create "healthy" relationships with other people, and integrate into society with full acceptance of the child's developmental potential.

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## INFLOW OF CHINESE INVESTMENT TO THE CZECH BUSINESS ENVIRONMENT

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The paper was processed under the SGS grant Evaluation of the influence of foreign capital holders in the business environment

**Abstract:** The purpose of establishing a strategic partnership between the Czech Republic and the People's Republic of China was to increase investment activity between countries. The aim of the paper is to map the main Chinese capital holders and their investment activities that were boosted by the Czech system of investment incentives. The investigation is based on data from Czech National Bank and Czech national agency CzechInvest using case study approach. In the period 1993 - 2017, the investment amounted for 6.67 billion CZK. It counts for 29% of all Chinese investment representing supported projects by the Czech system of investment incentives. The rest two thirds of Chinese capital goes to core Czech regions.

**Keywords:** Capital inflow, Chinese capital, Czech economy, foreign direct investment, investment incentives, multinational companies.

### 1 Supporting foreign capital inflow – yes or no?

The inflow of foreign capital has been a controversial topic in economic literature. The reason is its huge range of created effects that some of them are positive and some have the negative consequences. Nevertheless, the foreign capital is interpreted mainly in the positive way. The reason for this is that the positive effects tend to come to light and emerge immediately (creation of new jobs positions, improved payment balance), while negative ones often occur in the longer term (taking over skilled workers from local companies) and often do not have a clearly specified link to foreign investors (Hořejší, 2015). A typical case is the creation of so-called crowding-out effect where local companies are pushed (crowd) out of the market by the existence of capital-intensive and mainly technologically stronger economic entities (Zamrazilová, 2007). Paradoxically, the local competition may not be liquidated by the investor's targeted efforts. Foreign presence is sufficient due to the significant size of the technological gap between foreign investors and existing local businesses. Expert studies can hardly quantify this phenomenon, as it is difficult to determine (let alone quantify or generally quantify) whether a local company (companies) or industry has disappeared (is in decline) due to the foreign presence of investors in the local business environment. These effects are very difficult to quantify due to their externalities character (Benáček, 2000) and scientific literature is therefore forced to ignore them and focus on more quantifiable indicators. However, these indicators are associated with a short period (financial resources related to employee education) or interpret the localization itself (the size of the investment, the promised number of jobs). These effects have logically positive character.

Comprehensive evaluation of how foreign companies influence the local business environment is very complicated due to the absence of methodology how to complex evaluate the overall impact in a long run (Camagni, 2009). This absence does not contribute to resolving the dispute between experts on the support of foreign capital inflows (Damborsky, Wokoun and Krejčova, 2013). The system of investment incentives, which can be requested by both foreign and local companies, causes disproportions on the market. There is an incentive redistribution from small businesses that logically cannot meet investment criteria, towards capital (and as well as technologically) stronger players. However, the final benefit of localization and attracting of these large economic entities is uncertain, resp. not yet quantified. It means that governments spend considerable sums from public sources` resp. from tax revenues from entities that cannot apply for investment incentives. The final impact over a long period of time may be negative or zero for these entities

(Minchung et al., 2019). Then, investment incentives become completely counterproductive.

More discussed is the situation when companies from countries with lower economic level gained investment incentives. In this case, the difference between the economic levels of both countries is definitely not negligible (the Czech economy had a higher economic level compared to China in 2017 by USD 11,553) based on GDP per capita in current prices (World Bank, 2019).

It is a case of Chinese investors. The Chinese capital inflow changes the territorial structures of capital inflows to the Czech Republic. In the past, in particular, large investment projects from technologically and economically more advanced countries were supported (Hořejší, 2016).

### 2 Central Europe: the host market for Chinese investors

In the past decade (from the 2005) Chinese companies have increasingly targeted Central and Eastern European countries. China is especially interested in Czech Republic because of its specific location.

The Czech Republic is one of the most successful Central European countries in attracting Chinese investment, although the amount of Chinese investment in 2012 was not significant. However, the Czech Republic has gradually become one of the largest FDI recipients together with Poland and Hungary, as well as Romania and Bulgaria. At the same time, China is one of the fastest growing investors with potential for further investment in the country. China is gradually changing the structure of its FDI and deviating from investing in natural resources in investing in higher-value technical goods.

Central Europe is well positioned and with stable EU regulatory framework and it has brought opportunities for growth and return on investment (De Castro et al, 2017). The Czech Republic does not benefit only from its geographical location, but also its industrial tradition and good production network with other EU countries. China has played a minor role in this process, but the country's attractiveness is increasing as it is proactively supported politically and lobbying for Chinese business activities (Seaman et al. 2017)

#### 2.1 Current situation of the Chinese investment projects getting the support

There are currently nine Chinese investment projects that were granted the state aid in form of the incentives. Total amount of these investment is 3.63 bil. CZK (excluding reinvestment projects) and newly created jobs count for 1.565 in total (current status as at March 31, 2019). In all cases, the final decision from Czech government was obtained up to one year after submitting the application. The length of approval process differs among new companies or expansion of existing businesses. Investing sectors of Chinese investors can be seen in the table 1 and description of the companies follows.

Tab. 1: Chinese investment with investment incentives granted by Czech government

Company name	Sector	Type of project	Year of aid granted decision
Changhong Europe Electric s.r.o.	electronics and electrotechnic	Production	2006
SHANGHAI MALING (CZECH) a.s.	food industry	Production	2007
SHANGHAI MALING (CZECH) a.s.	food industry	Production	2008
Solar Express s.r.o.	electronics and electrotechnic	Production	2011
YAPP CZECH	manufacture of	Production	2011

AUTOMOTIVE SYSTEMS Co., s.r.o.	transport equipment		
Lemtech Precision Material (Czech) s.r.o.	metalworking industry	Production	2017
Yanfeng Czech Republic Automotive Interior Systems s.r.o.	manufacture of transport equipment	Production	2017
Espressif Systems (Czech) s.r.o.	IT and software development	strategic service centre - software development centre	2018
XZB (Europe) s.r.o.	manufacture of transport equipment	Production	2019

Source: CzechInvest (2019)

Changhong was established in Mianyang, Sichuan province of China in 1958. The Czech subsidiary started its operation in city of Nymburk in 2006 and it is one of the 43 foreign subsidiaries of the company. The Czech production plant focuses on televisions with LCD monitors. Changhong Europe Electric is currently Changhong's largest overseas manufacturing and operation base. The company has created 300 jobs as promised in their application for the investment incentives from the Czech government and 91 % of its employees are locals. Guided by the "Belt and Road" strategy, based on the manufacturing base in Czech, Changhong Europe Electric has established sales branches in Czech, Germany, France and Italy, and the European marketing center in Germany.

Shanghai Maling were granted with investment incentives for two sequent years in 2007 and 2008. The company operates canned meat production in Teplice which is the region with high unemployment rate and belongs to the most structurally disadvantaged regions of Czech Republic. Starting its history in China at 1930, Shanghai Maling company belongs to Bright Food Group Co. Ltd - state owned shareholding company associating 29 shareholding companies with wide range of activities. It is the biggest food industry company in China at the moment. Only 5 % of the total production capacity of pork luncheon meat and ham was placed on the local Czech market, the rest was exported to other markets in Europe, East Asia and USA. In 2017 the Czech subsidiary went bankrupt after almost two years of continuous problems and it was bought at auction by another Chinese investor. According to press, the company's problems with debts have roots in the dispute over trademark with China National Cereals, Oils and Foodstuffs Corporation.

Solar Express company specializes in the design and installation of renewable energy systems however there are no public information available about the company.

Yapp Czech Automotive Systems is a part of the YAPP Automotive Systems company with the headquarter in Yangzhou in China since 1990. The Czech plant focusing on fuel tanks for automotive industry is active in Mlada Boleslav since 2010. The location is beneficial due to the local presence of Skoda company, the largest automotive company in Czech Republic. Yapp Czech Automotive Systems supplied Volkswagen with car parts in China since 1988 and this long term cooperation led to establishing the business relationships also in Europe. Thanks to the good partnership with Skoda, Yapp Czech Automotive Systems has been able to expand to Kvasiny, another Czech city where Skoda has its manufacturing plant.

Lemtech Precision Material started its production in industrial zone of Jihlava in 2017. Lemtech comes from Chinese Kunshan and the Jihlava's plant is the first and only subsidiary in Europe. Lemtech produces metal parts used for electrotechnic and automotive industries, medical devices. Lemtech created about 30 new jobs.

Yanfeng Czech Republic Automotive Interior Systems has two production plants in Czech Republic. Besides its localization in Czech Republic, its European presence is on the markets of

Slovakia and Hungary, as other productions plants or technology center and business center. Yanfeng Automotive Interior is a joint venture of Yanfeng Automotive Trim Systems Co and Johnson Controls established in 2015 with a majority share of the Chinese partner and it already has four production plants in Czech Republic. The Czech plant produces instrument panels and cockpit systems, door panels, floor consoles and overhead consoles for automotive industry, namely for example BMW, Daimler, Škoda a Volvo. Thanks to its expansion, the company able to employ much more employees that expected, it plans to create about 1500 new jobs in total which is a great support for the local regional unemployment.

Espressif Systems is one of the newest Chinese investor with state aid on the Czech market headquartered in Shanghai since 2008. This technological company is located in Brno, the second largest city of Czech Republic and boosting as a start-up locality. In order to upgrade its customer services for the European market, it is the first foreign branch of the Espressif company developing advanced power controls, chips, modules, development boards and others that are widely deployed in such products as tablets, OTT-boxes, cameras and IoT gadgets. Although the number of newly created jobs is not high (nearly 30 jobs promised in the application), there are aimed for skilled labour contrary those in production plants as in other cases.

XZB (Europe) located its investment in the industrial zone Ostrava-Mošnov. The Chinese company was founded in 2002 as Hangzhou XZB Co., LTD and it is a specialist on research and development, manufacture and sales of automotive parts. Except of the headquarter in Hangzhou, Zhejiang province and its European subsidiary in Mošnov, there is also a branch in Mexico. XZB (Europe) plans to create 60 job positions.

In terms of regional localization of the investment, the Chinese investment were located in regions of Central Bohemia (two investment), Ústí nad Labem (three investment), Olomouc, Vyšecina, South Bohemia, South Moravia and Moravia-Silesia.

### 3 Subventions of Chinese capital inflows

All the mentioned Chinese FDI are the successful beneficiaries of the Czech system of investment incentives. According to the Czech law and currently regulation by Act No. 72/2000, investment incentives in the Czech Republic are following:

- income tax discount for 10 years,
- transfer of land including related infrastructure at a discounted price,
- 300 000 CZK financial support for the creation of new job position,
- 50 % financial support for retraining or training of employees,
- 10 % financial support for the acquisition of intangible and tangible fixed assets (for strategic investment),
- exemption from real estate tax in preferential industrial zones (i.e. government-approved industrial zones designed to promote balanced and dynamic economic development in the Czech Republic and decreasing the regional disparities).

The most important of the supported projects is the investment project Yanfeng Czech Republic Automotive Interior Systems for both the number of newly created jobs (588) and the size of the investment (1.85 bil. CZK).

Shanghai Maling's reinvestment in 2012 also received investment incentives. However, this support did not prevent bankruptcy in 2017. The contradictions in the effectiveness of granting investment incentives can be perfectly illustrated at this company. Shanghai Maling has invested twice in the Czech Republic, in 2007 and a year later. In both cases, it received

investment incentives that were sufficiently motivating to reinvest in the host market. However, in the case of investment support, the result of supporting this reinvestment action is zero. After the period of the investment conditions and criteria run out, the company terminates the operation.

Yapp Czech Automotive Systems is another and the last of these companies that have made a significant reinvestment action on the Czech market. This company reinvested its capital of 246 mil. CZK in 2015 (CzechInvest, 2019).

Based on statistic of Czech National Bank the inflow of Chinese capital decreased at 5.79 bil. CZK in 2015. In 2016, increased rapidly to the level 12.51 bil. CZK. Last current data show that the new capital inflow from China was around 7 bil. CZK in 2017 and the final stock of Chinese investment in 2017 was 23 bil. CZK. (Czech National Bank, 2019).

From the point of view of CzechInvest projects (2019), China was the largest investor in FDI in 2018 in terms of investment and new jobs created. In the period 1993 - 2017, the investment amounted to 6.67 bil. CZK. Resp. 29% of all Chinese investment (including reinvested capital) represents supported projects by the Czech system of investment incentives. The most significant increase could be seen in 2018 (3.7 bil. CZK). Thus, in 2018, China outpaced traditionally active investors from Germany, Japan and Korea. Only Czech companies invested more. The remaining two-thirds of China's investment goes to core regions that are not linked to investment incentives. Due to the aim of investment incentives is to reduce the regional disparities of the core-periphery areas.

In general, investment has grown rapidly following the establishment of a strategic partnership between the Czech and Chinese economy, and although the Czech Republic is going through a period when the unemployment rate is well below NAIRU (Czech Statistical Office, 2019), Chinese investors are still growing. These projects are connected with higher value added than in the past. It means mainly production and development projects, not acquisitions (CzechInvest, 2019).

Although Czech Republic has been attracting increasing number of Chinese investors after strengthening the Czech-Chinese ties, the amount has not been as much as expected. By the end of 2016, Czech president Zeman announced that investment from China were about to reach 50 bil. CZK which was unprecedented on the market of the size of Czech Republic however, according to the Czech Central Bank the actual amount was only 750 million USD, and the year after was less than half of that figure (Czech News Agency, 2016).

Other major investments (beyond CzechInvest's responsibility) include the acquisition of China Energy Company Limited (CEFC). An important investment in September 2017 was the establishment of a branch of the Chinese bank ICBC in the Czech Republic (Czech National Bank, 2019). The most prominent Chinese investor overall is the private-owned conglomerate CEFC that established its European base in Prague in 2015. It concentrated on collecting assets and it has been active in many fields, such as oil and gas trade, real estate, logistics, finance, tourism, infrastructure and others (Debiec and Jakóbski, 2018).

#### 4 Conclusion

China experienced a change in the perception of Czech Republic especially after its accession to European Union in 2004. Currently, Czech Republic and China have been enjoying a stronger relationship with the focus on the economic cooperation based on defining the relevant policy framework in top-level visits in recent years,

The Czech Republic benefits from its geographical location, industrial tradition and good production network with other European Union countries. China's investments were predominantly in the form of capital inputs and acquisitions,

which for the most part do not participate in building greenfield sites and job creation.

However, Chinese investment in the Czech Republic remains relatively low, also in comparison with investments from other Asian countries such as Japan, Korea or Taiwan. Although Chinese investment in the Czech Republic and Central Europe has grown very much lately, the largest investors still come from the European Union (De Castro et al. 2017).

During the examined period 1993 to 2017, 29% of all Chinese capital on the Czech market were granted with the investment incentives. This ratio is not negligible however it also shows that majority of Chinese investment has not been able to apply for the financial support from Czech government. The reasons lie behind their localization in the regions, especially Central Bohemia and capital Prague, that are not included in the investment system. Moreover, these investors are concentrated in the sectors, such as tourism, infrastructure or for example real estate, that are also not applicable for the incentives.

In view of current situation of the Czech labor market with the characteristic of experiencing period of unemployment rate below NAIRU and consequent inflation gap, the topic of investment incentives requiring new jobs creation becomes even more debatable. This situation creates even higher pressure on the local labor market and increase attractiveness for the foreign labor and thus the immigration from especially third country nations.

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**Primary Paper Section: A**

**Secondary Paper Section: AH**

## EXPRESSIVITY IN HIDDEN AGGRESSIVE BEHAVIOURS OF CHILDREN IN PRE-CHILDREN AGE

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The study presents an analysis of findings from a long-term research supported by the VEGA agency 1/0452/18. Identifications, analyses, inhibitions of latently aggressive children's actions in pre-school period.

**Abstract:** The study analyses utterances and responses of pre-school children on hidden aggressive behaviour, they met in an inclusive kindergarten classes. The results of the research show that beginning of aggressive behaviour is present in the early childhood groups (latent form of aggression), and later it metamorphoses into direct verbal or direct brachial aggression.

**Keywords:** hidden aggressive behavior, pre-school children, kindergarten, research

### 1 Introduction

Although there are relatively extensive research about bullying in the school environment and a lot of theoretically oriented scientific, professional and popular articles, the basis of this text is about a specific and low-elaborated form of bullying. There are hidden aggressive actions that occur within the group against the individual or several individuals at the same time. From the experts' point of view, the mentioned form of bullying has different terminology. The experts agree that despite the different terminology, that mentioned form of aggressive action harms the group's social relationships related to one or more individuals, and is an object of mediation processes.

The language of persons who acts aggressively can be described in their verbal and nonverbal communication as expressive. Direct or hidden behaviours are clearly expressive (for example anger as a verbal response, anger as a physical reaction). Expressivity in the aggressive action is for the aggressors important. (Kováčová, 2014). It is evident to see an angry, frustrated, or hostile aggressor - if older (and more developed), he or she is more able to control expressive behaviours, which are "eye-visible and easily detectable" within communication.

Mainly, the kindergarten is one of the first opportunity, as Kováčová wrote, to develop friendships and relationships that can be out of school (Kováčová, 2010, p. 65). According to Dunn (1983), friendship is typical friends are those who don't betray and ridicule themselves using defamation in existing peer group. This loyalty to a friend enhances their intimacy and closeness. An example is a published friendship study where Maquire and Dunn (1997) point to the presence of hidden latency in children's behaviours. I do not like X, do you? Creating conflicts, defamation without real reason, or false information suggests that pre-school children use hidden aggression initially to empower an own position, later deliberately intending to isolate an "unwanted" friend. Friendship is a commodity, as Comstock-Galagan wrote, which transcends so called label and stigmas. Dealing with a child /pupil friendships, it is also a matter of gender (Kováčová, 2014).

The hidden aggression is more visible, but ultimately, it is one that damages relationships and weakens the child's reputation. Goffman (1986, p. 67) confirmed that already 3–4-year old year children begin "with the defamation, making false information".

The author (Goffman, 1986) described the dialogue of two children who talk relatively loudly about the third one that they want to go away from them because they are angry with him.

Several authors reflected friendship and presence of hidden latent strategies in their research studies. As a result of examining relationships in peer groups was a fact that friendship and popularity have been found to be primary aspects of social contact in child development. A child of pre-school age considers them crucial for their own existence in the given society. The concept of friendship expresses a specific, intense, affective dyadic relationship between two children, while the concept of popularity expresses the child's perception of the whole group. These two concepts complement each other and are important and necessary for a child's preschool age relationship (more in: Casas & Crick, et al., 2004). The child who uses hidden strategies with aggressive intent in his actions has at least one reciprocal amicable friendship relationship (Grotperet & Crick, 1996; Rys & Bear, 1997).

### 1.1 Pre-school children and latent aggression in their social groups

Considering pre-school age hidden (latent) aggression, it is appropriate to give its characteristics. The description of the characteristic is significant in terms of the analysis of the situation within the text above.

The first study of latent aggression (Crick et al., 2002(a)) considers the fact relating to the age (in the early sense – toddler and preschooler age) if it is correct to write about hidden-concealed aggression. According to their research findings, the existence of definite hidden aggression in a child age younger than 2.5 years has not been clearly confirmed. Crick et al. (2002(b)) argued that the emergence of hidden aggression in early childhood is associated with a reduced level of mutual acceptance (negative preferences) and an increased tendency on the part of the peer group to reject a friends, or just one of them. Lovaš (2010) described scenario theory as an information processing model that explains the development of habitual aggression among children. He claimed that the child creates aggressive scenarios at an early age that is based on personal experience and observation of ambience. The result is a network of cognitive scenarios of aggressive behaviours in specific situations. Activation of the scenario, is conditioned by creating the conditions that consequently can cause the situation (Lovaš, 2010, p. 37-38). It is enough to provide the children basic information, for example: we will not play with him/her/them, we will not invite him/her/them for somebody celebration, or somebody will not sit with us at the table, etc.

The aggressor does not need to be hidden. According to Kováčová (2014), a "lower" degree of concealment is typical for this age. At the ages 3-5, hidden aggression begins with prototype examples: "You cannot come to my birthday party ...", "You can not play with us ...". This type of behaviour is obvious at beginning, the victim is not only informed, but the victim is even present during the conversation. Aggressor's does not mind victim's participation, usually it's a matter of personal development of the child. Later, the aggressor formulates his strategies through a mediator. In young school age, latent aggressive behaviour becomes more discrete in terms of the form of aggression and used aggressor behaviours. The aggressor's behaviour is more elaborate and concealed. Ostrov et al. (2004) claimed that the identity of the doer is always known, because the child in pre-school age is immediately dealing with the situation "here and now". Children are struggling to reach their goal of "Being in the spotlight, being favourite". They make their intention by gossiping, joking against a member of the group (this is not behaviour based on conscious calculation). Pellegrini & Roseth (2006) argues this fact by saying that the younger aggressor (in

terms of early and pre-school age) does not have the experience of acting anonymously, but gradually acquires competence in this procedure - to act aggressively. Typical are the direct and indirect aggressor's attacks against the victim (Coyne et al., 2006). When comparing the latency rate at younger school age, we can say that the aggressor has a reasonable ability to act hidden, and his strategies are usually well thought out. It can influence peer - group members while managing the entire process of hidden aggression. If conditions are created, usually a child who started with aggression in pre-school age develops into concealed aggression person (see Ostrov, Crick, 2006). The hidden aggressive behaviours of early and pre-school age children are connected with problems in childhood. Kováčová (2014) argues that peer-group rejection of the child is linked to a variable range of social and psychological issues.

## 1.2 Specific situations of latent aggression

Based on pre-school victims' testimonies, latent aggressive behaviour is typical by the specific statements in described situations (see Tab. 1), in which an important role is played by so-called message (important warning for the victim). The basis of the described meta-communication is to inform the (potential) victim about prohibition to participate in a particular situation and to inform the victim that his/her presence is unwanted. The prohibition itself, as it is mentioned above, is given by another person (sympathetic to the aggressor), and the way the "ban" message is carried out in a variety of forms - from verbal information to threatening (those ways of communication can also be observed in groups of pre-school children).

Tab. 1: Specific situations of latent aggression

Description of the situation	The message for the victim	Generated significant statement (the children's testimony was shortened but it expresses its meaning)
Common collective game	No one will play with you!	So I stood there looking at them. And they played and played. They smiled and whooped, and I just stood there.
Choosing a friend	Nobody is interested in you.	When was a choice, they always ignored me, and the worst thing was that my friends started to do it, too.
Birthday party	If you come in, anyway you will be alone.	I stood behind the door, I heard them to laugh, but they did not open me the door
Excursion	You will sit alone in the bus.	And I sat as they told me. Everyone looked at me when they thought I could not see them
At the swimming pool	You obstruct, you have to be careful.	Everyone poked me, "Sorry, you obstruct!"

Acceptance or non-acceptance of the pupil by the group is within the competence of the aggressor whose communication with the group has specific features (see Table 2). They describe latently aggressive action and some internal group rules are required and they should be accepted automatically, without rational justification.

Tab. 2: The most common aggressor's statements against the peer-group

Significant statement	Comment
He will not play with us, we all know why ...	The aggressor does not expect that somebody gives reason why. It is a fact that must be accepted without any critical analyses.
If he's a friend, he'll do what I say, because otherwise we cannot rely on him.	The aggressor creates own rules for choosing a friend in a group - either he/she will accept those rules or he/she will be excluded from the group.
If you play with him/her, you are not my friends	The aggressor gives conditions and prioritises social relationships in the group with verbal manipulation, he repeats his/her conditions before each activity, to consolidate his/her position.
He/she shall be not invited to celebrate my (or your) birthday...	The aggressor decides about the presence of specific members of the group. If a child, who has birthday, refuses to obey the aggressor's rules he/she will become a victim of hidden

	bullying.
Well, and now you have to say about him/her that ...	The aggressor manipulates the group members to spread false information about the victim.
Sh! Silent, come closer to me, I will tell you something about him/her!	The aggressor uses silent speech (whispering), "gossiping behind his/her back" to attract and persuade the group about his/her "truth". Often, this ritual took place by chance near the victim - he/she can see it.

## 2 Premises of kindergarten for possible manifestations of latent aggression

Kindergarten and its premises, it is an area where takes place hidden bullying and also the hidden (latent) elements which come from aggressor's behaviours, but also from the individual participants of the group, even from the entire group against the victim.

The aggressor is an important element in hidden bullying (Kováčová, 2014). He/she acts with the latent aggression indirectly, with the help of individuals, and groups. The aggressor directly manipulates the members of the group, encourages them to verbally disseminate negative backbiting that are presented by the aggressor as true, and indicative ones. Aggressor's goal is to obtain group consent, and support in hidden bullying against a particular, predetermined person and to coordinate and direct the group, not to have only "assistants" but also "silent" approval of the whole group, class. Namely, aggressor's strong communication power (which is gradually enhanced by success) is considered as a pillar in the development of manipulative latently oriented strategies. The aggressor tries to differentiate himself from the other members of the social group with his dominant manners. Aggressor's actions are manipulative and his needs are closely linked to the social processes of approval and recognition within the group, Grotper & Crick (1996) claimed, that aggressors with hidden aggression are in social and emotional disorder and feel a higher degree of social loneliness, they have depressive states and negative perception of their personalities. They are usually individuals with inappropriate family education or different negative communicative patterns.

The victim in the process of hidden aggression observes in his/her space gradual changes in social relations (lack of opportunities to participate in games, school trips, parties, stays in nature, etc.). At the beginning, situations are observable as sporadic, later they are infiltrated into all social contacts. A stigmatized pupil/child involuntarily loses friends, as well as social relationships with the group. Victim's perception of the problems arises and gradually become more and more serious. It includes: internalization (anxiety, depressed states), externalization (aggressive to destructive behaviour), and adaptation problems with a higher degree of persistence, also in later and different social communities (Shahaeian, A., Razmjooe, M., et al., 2017). The victim feels lonely and, in extreme cases, his/her action is self-defeating. Friends of the victims, who are not the direct "members" of hidden bullying feel desperation, helplessness, and partly as a victim, are worried that after a time (which they can not identify) they may also become "target" of aggressions. There can be any stimulus, for example if they refuse to act aggressively, or they avoid being active within a group of aggressors). They usually do not talk about group behaviour, rather are in position of silent witnesses with a minimal verbal activity.

## 3 Research findings with emphasis on hidden aggression in children's drawings

25 pre-school children from two kindergartens were involved in the research. After analysing each verbal expression, we selected those in which the child confirmed the repetition with an illustrative example. During searching aggressive behaviours, it is necessary to evaluate the cognitive, behavioural, and emotional characteristics of the individual group members (note: we will focus on assessing behavioural characteristics). The collection of this characteristics is also problematic in the pre-

school age groups, because the researcher must firstly identify aggressive action and then work with the individual, the individuals, and the situation which happened.

### 3.1 Hidden aggression identified situation and interpretation of chosen findings

Individual situations are presented in the form of brief descriptive situations and with a child's verbal testimony supplemented by the aggressor/victim child's assessment.

#### a) Repeated refusal to lend a toy or another object for playing

Rejecting a toy with justification that you are not my friend is a fairly common manifestation occurring in child collectives (wording: I will not lend you it, you are not my friend!). If this type of behaviour is repetitive and intensifies against the selected victim, the situation can be correctly identified as latently aggressive.

#### Situation A (Tab. 3)

Here's an example of a boy (John, 5 years old). The boy has repeatedly expressed his desires about friendship. "I'm not their friend, they don't want me. That's wrong. This one (pointing finger to another boy) is a friend and that one is not. Why?" „He also shows his position in the class as part of an expressive representation of his position, e.g. in the drawing he is on the edge of the drawing ... " when everyone is playing, I am looking; when toys are borrowed, I have to wait for rest or last one."

Tab. 3: Assessment of the identified situation A through the hidden aggression index

Rating scale	Group bullying (S-i: 105p)	Aggressive behaviours (S-i: 38p)	Reactive aggression (S-i: 22p)
index	84	12	3

#### Analysed comment:

In a group rating, John gained a high score ( $i = 84p$ ) in points, indicating that he is in a very serious situation whose identification was also confirmed by the questionnaire. The score in the index of aggressive behaviours ( $i = 14p$ ) suggests that John can be considered a victim. The index in the reactive reaction item suggests that John cannot defend himself, i.e. it is likely that he will leave the team because he is unable to defend himself (parents were advised to enrol a minor to a primary school outside the catchment area of the kindergarten).

#### b) Repeated harm by another person

Friendship is a very important premise for every pre-school child. It is something necessary for a child to be successful in a social life. The concept of popularity and the concept of friendship mentioned above also provides negative opportunities for a child looking for power after being an aggressor.

#### Situation B (Tab. 4)

Andrejka (5,5 years) went through a situation that is typical for latent aggression in pre-school age. There is a verbal description of the situation, which is always repeated before coming from a walk in the changing room. Andrejka's friend (in the position of "visible" aggressor) pulls her hair and the other friend is looking at it. The child's testimony implies that these two friends are doing it, "but they are not always the same (in this act, note). A child who uses hidden strategies with an aggressive intention in his actions uses a mediator usually a friend, who is in friendly relationship.

Tab. 4: Assessment of the identified situation B through the hidden aggression index

Rating scale	Group bullying (S-i: 105p)	Aggressive behaviours (S-i: 38p)	Reactive aggression (S-i: 22p)
index	81	18	12

#### Analysed comment:

In the group evaluation, Andrejka received a high score ( $i = 78p$ ) from the group's point of view, which suggests that she is in a serious situation whose identification by a kindergarten teacher (to be warned by Andrejka's parent) was also confirmed by the questionnaire. Andrejka's score is identical to the score in clinical assessment that is valid for the female persons. Andrejka can be considered as a victim of hidden aggressive action. The index in the reactive aggression item ( $i = 12$ ) suggests that considering the situation, it is necessary to provide for Andrejka time for possible responses to the situation.

#### c) Repeated rejection of the child by another child

Even the appearance plays an important role among pre-school children. I don't want him to be here, but don't tell it him! We will not play with him because he will block us, and ... we will not play well. And we want to play well, don't we? There are isolated figures with children's comments even in their art products.

#### Situation C (Tab. 5):

Julius (7 y.) „I am sad, because nobody plays with me. I want a friend, but I don't have one. That's why I start to fight and wrestle (...) because no one likes me."

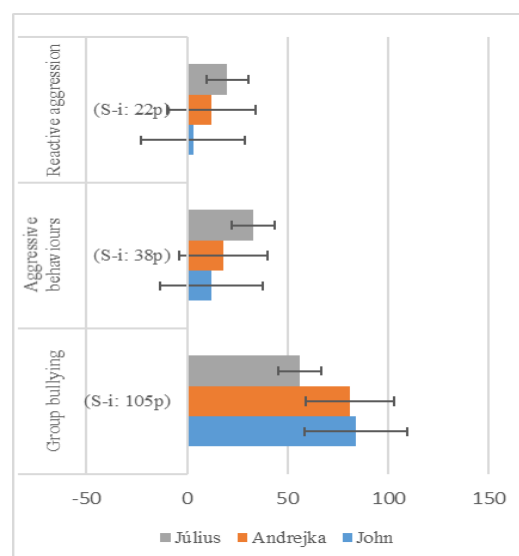
Table 5: Assessment of the identified situation C through the hidden aggression index

Rating scale	Group bullying (S-i: 105p)	Aggressive behaviours (S-i: 38p)	Reactive aggression (S-i: 22p)
index	56	33	20

#### Analysed comment:

Julius gained a rating scale in the bullying index of the points that indicate that he was accepted by the group but he was not bullied. Described situations have image of hidden bullying by the group, but this was not confirmed by the rating. It is clear that even a value index in the item of aggressive behaviour suggests that Julius is not the victim. He can defend himself (S-i,  $r = 20$ ). We have actually assessed the situation that manipulation was done by Julius.

Fig. 1: Graphical processing of situations A-C



Based on the evaluation of the behavioural aspect (Chart 1), it can be concluded that when considering two of the three situations, it can be considered as having latent aggressive behaviour.

Research has confirmed that selection of victim for hidden aggression is done by an aggressor and a peer-group. According

to Crick and Nelson (2002), it has been confirmed that the child - the victim - is being bullied without a real reason (a victim has no knowledge about the reason of bullying, note).

The closest friends begins to be in opposition, later they are aggressive. A child as a victim feels social and psychological anxiety, avoids social contact, is lonely, and deliberately isolates himself (e.g., the child repeats the its requirement not to attend kindergarten and has a need to stay at home, in a family where she or he feels safe), has difficulty in self-control, needs help from an adult to create social contacts and so on. Conversely, a pre-school aggressor uses his/her position to consolidate power.

#### 4 Conclusions

Hidden aggression of early and early age and preschool age children is linked to early childhood problems. Peer-group rejection is associated with a variable range of social and psychological problems related to child development, where the early problem is the early age and development of mutual social ties.

Prevention/preventive measures, or strategies in kindergarten against hidden aggression exist. From the teacher's point of view (Gubricová et al., 2015; Fábry Lucká, 2016) it is necessary to notice labelling of victim by individual or by the group in time. It is sufficient to be attentive in the activities, correctly identify the non-verbal statements of the child / child during the activities in the kindergarten (Lessner Lištiaková, 2013). In this age it is possible to rationally argue, clarify, justify the meaning of used labels, punishments, or other atypical behavior towards a friend. At this age, this form of intervention is effective (Leff, Crick, 2010).

Research findings have shown that mediated aggression is specific in kindergartens because only one victim (a child regardless of gender, belief, race, or health) appears in the group, which is gradually isolated from normal daily activities. Isolation of the child is gradually increased, even from several sides (more children are involved, not only on the aggressor's initiative).

The aggressor in pre-school age is very specific in terms of actions and age. He or she manages commands and prohibitions through mediators and remains hidden before the victim. In the children's group where a victim is absent, the aggressor performs directly, especially with regard to the type of instructions: And we will not play with him! Don't ask him to join us! He is not my or your friend! Aggressor's directness to communicate with the group and secrecy in communicating with the victim is also due to the fact that at the beginning of aggressor's activities, he/she is not socially mature to handle indirect manipulation with the group. If an aggressor in the early stages of his / her activity finds favourable conditions, he/she is able to learn indirect manipulation with the group and isolate the chosen child through false arguments, it means without reason.

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#### Primary Paper Section: A

#### Secondary Paper Section: AM, AN

# QUANTITATIVE RESEARCH OF BUILDING AMENITIES IN PANEL BLOCK BUILDINGS IN THE CZECH REPUBLIC

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**Abstract:** This paper deals with the issues of the building amenities of panel buildings from the perspective of the realistic usability by the residents. To determine the weighted user comfort, the paper used, as general input methods of processing the issue, descriptive statistics, or more precisely put, qualitative research. This method was chosen for its best informative ability to arrive at certain results based on an in-depth comprehension of the details. The subject is very timely and necessary, with respect to the necessity of regeneration of the housing inventory in the Czech Republic. This is not just a theoretical problem, but must also be addressed in practice.

**Keywords:** panel building, building amenities, quantitative research, usability.

## 1 Introduction

### 1.1 Working Hypotheses

#### Hypothesis\_1

The current demands for the existence of building infrastructure in (panel) apartment buildings are directly proportional to their originally intended functions.

#### Hypothesis\_2

The real usability of building amenities in (panel) apartment buildings is greater or smaller depending on the size of the apartment units.

#### Hypothesis\_3

There exists a relationship between the placement of the selected building amenities within the context of a (panel) apartment building and its real usability.

### 1.2 Work Methodology

Table 1: Description of data collection in quantitative research. (Punch, 2015).

Quantitative data collection
Research sample of people is a large number of respondents
Performed primarily using questionnaire surveys
Examines the issues tangentially
Not time demanding
Deduction <sup>1</sup> from the results
Statistical processing of data

<sup>1</sup> Deduction = is a process of judging in which assumptions lead to conclusions that are reached from these assumptions, whereas the derivation is certain, not merely probable. It is therefore the basic procedure for proof.

### 1.3 Quantitative Research

Data collection using standardized questionnaires (focused on confirmation or refutation of hypotheses 1 – 3) on building amenities in apartment buildings.

For data collection, the Netquest.cz, portal was used, which is publicly accessible and so ensures a wide range of respondents.

Quantitative methods are best suited to exploring simple and measurable traits, or combinations thereof, in large and more or less homogeneous populations. For more complex and unmeasurable indicators, it is necessary to scale, and their reliability and comparability naturally fall, especially if the questions are not formulated unambiguously. Therefore, quantitative methods are combined with qualitative (Punch, 2015).

### 1.4 Research Methods

CAWI (Computer Assisted Web Interviewing) or On-line querying

- the fastest and most affordable method of surveying in quantitative research
- interviewing is via the Internet, the respondent fills in the questionnaire directly on the website (Netquest.cz)
- Respondents' responses are automatically sent to the email owner of the questionnaire where they can be continuously checked during the data collection
- the main advantages are speed, low financial cost, possibility to include multimedia materials and easy error correction in the questionnaire

PAPI (Paper and Pen Interviewing) or personal questioning

- is more flexible than written questionnaires- allows one to add observations
- the sampling structure is carefully selected by the interviewer and there is no problem with returns of the questionnaires
- A competent interviewer inspires interest in answering and explaining even more demanding questions and notes open answers
- a potential negative factor that may have an impact is the respondent's concern about the loss of anonymity and the resulting inhibitions.
- as a non-standardized interview, it approaches qualitative methods, as it examines the respondent's motivation and gives him room for more extensive expression (CAMPBELL, 2014)

## 2 Identification of the Issue According to Examination of Public Materials Available on the Issue

During the period of construction of apartment buildings, it was common for every new building to have building amenities that designed for it and also used extensively, whereas nowadays these spaces rarely fulfill their originally intended function.

The design of a building was meant to always be a natural response to the needs of a user whose housing requirements change over time.

The question arises as to whether the purpose of building equipment should be totally restricted by fixed principles as defined by the standard, or should be more focused on real use and respond to the changing needs of the user.

Prior to the design (reconstructions) of the layout of a building and apartment, it is necessary to clarify the demands for operating relationships, functional and across-the-board requirements. (OSTANSKA, 2019)

It is also necessary to realize that the form of housing determines the purpose of the building amenities of apartment buildings, in particular with respect to the highest possible profit.

## 3 Research

Quantitative research consists in examining relationships between variables, how variables depend on each other, and why. This will help to establish the conclusions of the predetermined research hypotheses 1 - 3 and then to meet the objective - the proposal for measures and recommendations for solving individual identified problems (see previous section).

Variables of quantitative research for assembling the questionnaire:

#### 1\_Demographic information

(>60 years old; 45-60 years old; 30-44 years old; 20-29 years old; 15-19 years old)

#### 2\_Permanent residence

(Prague; Central Bohemia Region; South Bohemian Region; Pilsen Region; Karlovy Vary Region; Ústí Region; Liberec Region; Hradec Králové Region; Pardubice Region; South Moravian Region, Olomouc Region; Zlín Region; Moravian-Silesian Region)

#### 3\_Housing type

(brick building, panel building)

#### 4\_Form of housing

(private ownership, leased housing, cooperative housing, other use of apartment)

#### 5\_Size of apartment

(1+0; 1+kk; 1+1; 2+kk; 2+1; 3+kk; 3+1; 4+kk; 4+1; larger than preceding, atypical layout)

#### 6\_Existence of building amenities

(mailbox; baby carriage and bicycle storage room; waste placement; basement storage units; utility room; heating equipment rooms; parking areas; storerooms for maintenance, laundry room, laundry drying room, ironing/mangle room; cleaning utility room; rug beating room; social gathering room; modification of flat roofs)

#### 7\_Real usability of building amenities

(mailbox; baby carriage and bicycle storage room; waste placement; basement storage units; utility room; heating equipment rooms; parking areas; storerooms for maintenance, laundry room, laundry drying room, ironing/mangle room; cleaning utility room; rug beating room; social gathering room; modification of flat roofs)

#### 8\_Sufficiency of building amenities

(baby carriage and bicycle storage room; basement storage units; utility room; storerooms for maintenance, laundry room, laundry drying room, ironing/mangle room; cleaning utility room; social gathering room; modification of flat roofs)

#### 9\_Necessity of building amenities

(mailbox; baby carriage and bicycle storage room; waste placement; basement storage units; utility room; heating equipment rooms; parking areas; storerooms for maintenance, laundry room, laundry drying room, ironing/mangle room; cleaning utility room; rug beating room; social gathering room; modification of flat roofs)

#### 10\_Functions of building amenities

(mailbox; baby carriage and bicycle storage room; waste placement; basement storage units; utility room; heating equipment rooms; parking areas; storerooms for maintenance, laundry room, laundry drying room, ironing/mangle room; cleaning utility room; rug beating room; social gathering room; modification of flat roofs)

#### 11\_Preference of location of space for storage of items found outside of the apartment

(on the ground floor of the building by the main entrance - unit/room for every tenant in the building; on the ground floor of the building by the secondary entrance - unit/room for every tenant in the building; in the basement spaces in the basement of the building - unit/room for every tenant in the building; on the floor near your apartment - unit/room for every tenant of the given floor; in the attic - unit/room for every tenant in the building; in separate spaces in close proximity to the apartment building - unit/room for every tenant in the building; other)

#### 12\_Improvement of the state of building amenities (general opinion of respondents – open-ended question)

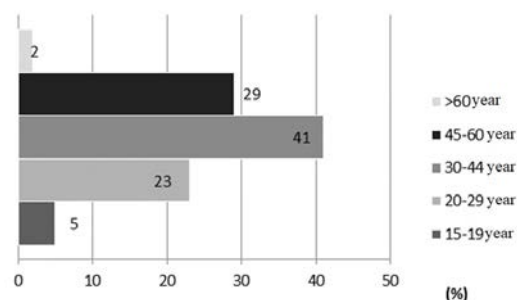
### 3.1 Data Collection

Using the CAWI and PAPI methods

A questionnaire entitled Exploration of Usability and Spatial Effectiveness of Building Amenities of Apartment Buildings was publicly available on the Netquest Portal to create a wide range of respondents from May – October 2018 (Portal for creating and publishing surveys in the form of questionnaires). The number of completed questionnaires is 150 - it can be said that this number is more than sufficient for the relevance of quantitative research. (Punch, 2015)

### 4 Result of Questionnaire Survey

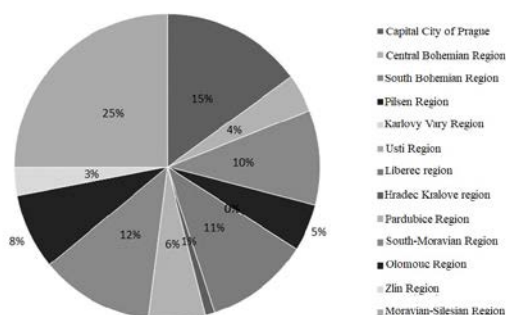
#### 1\_Age structure of respondents:



Graph 1: Age structure of respondents. Author's design.

This question could be viewed as the age structure of the respondents, which, of course, is important from a demographic point of view in any questionnaire survey. It is clear from the Graph that most of the respondents who submitted the questionnaire fall into the age group of 30-44 years old, regardless of gender. Another notable group is the 45-60 years old group and also 20-29 years old, all age groups of respondents of working age. These results could further be used for other demographic calculation methods for the population structure that are not currently the subject of this research design.

#### 2\_Permanent Residence of Respondents:



Graph 2: Permanent residence of respondents. Author's design.

It is evident from the graph that the largest number of respondents is permanently resident in the Moravian-Silesian region. Other regions with notable values include the City of Prague, the South Bohemian Region, the Liberec Region, the South Moravian Region and potentially also the Olomouc Region. For the other regions, the numbers of the questionnaires returned are too small and, therefore, within the region, the responses to the survey would not have a meaningful value, but of course they are of value in the nationwide evaluation.

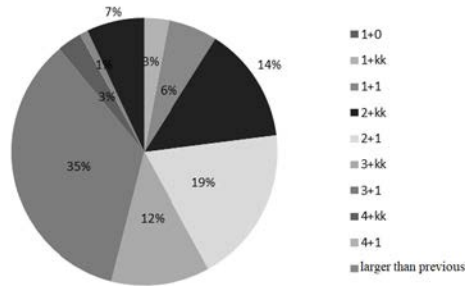
### 3\_Type of Housing/Apartment Building:

Based on the responses, it can be said that the greatest number of respondents live in apartments in panel buildings (62%). Proportionally, this is almost double the number of residents living in apartments in brick buildings.

### 4\_Form of Housing:

From the responses to the question of form of housing, it is clear that the majority of the respondents live in cooperative-owned apartments (53%), which is a certain form of leased housing. Lease apartments make up the second-largest group of this survey (31%).

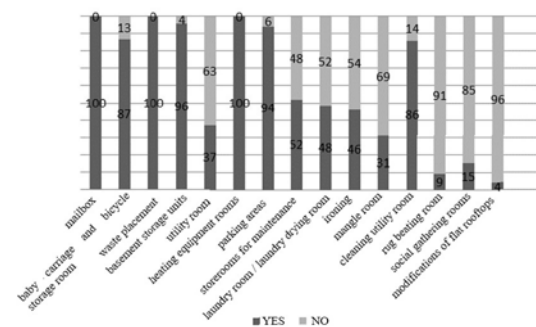
### 5\_Size of apartments of the respondents according to floorplan:



Graph 3: Apartment floorplans of the respondents. Author's design.

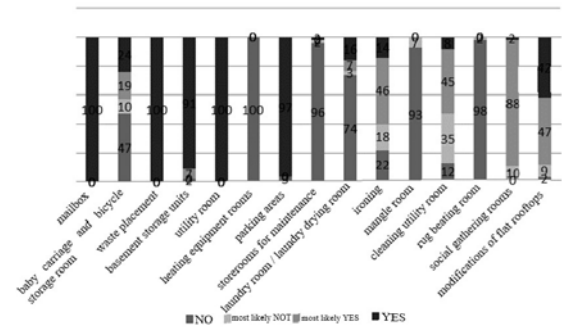
From the survey results, it is clear that the largest number of respondents live in a 3+1 size apartment (3 bedrooms + 1 kitchen), which is 35% or 52 people. The other most frequently inhabited apartments of the respondents according to size are 2+1 with 19%, 2+kk with 14% and 3+kk with 12%. The apartments of other sizes together make up approximately 20%, whereas this usually means apartments of a smaller size, and just 3% of the whole are 4+kk sized apartments. Residents of larger apartments did not participate in the survey.

### 6\_Existence of Building Amenities in Apartment Building of the Respondents:



Graph 4: Existence building amenities in Apartment Building of the respondents. Author's design.

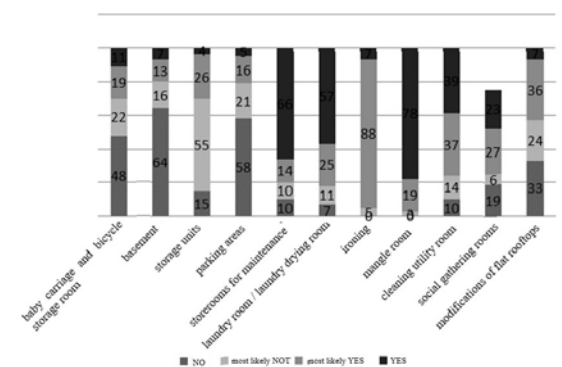
### 7\_Real Usability of Building Amenities in the Apartment Building of the Respondents (under the assumption of their existence):



Graph 5: Real Usability of Building Amenities in the Apartment Building of the respondents. Author's design.

From the two previous Graphs, it can be inferred that building amenities such as mailboxes, waste disposal, basement storage units, utility rooms, parking areas, and assembly areas, if they exist in the building, are 100% or almost 100% realistically used. On the other hand, building amenities such as heating equipment rooms, maintenance, laundry, mangles, and rug beating rooms are almost not used at all in the apartment buildings. Other residential equipment is used in a variety of ways, for example, depending on the location, number of the respondents or the structure of the inhabitants of the residential building.

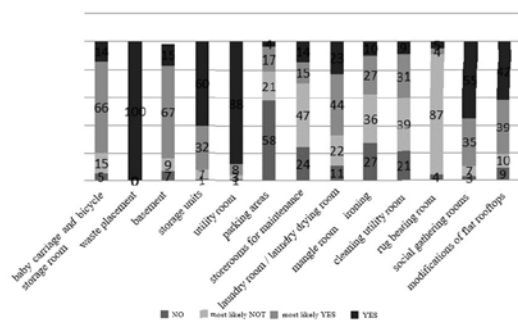
### 8\_Sufficiency of Building Amenities for the Needs of the Respondents:



Graph 6: Sufficiency of building amenities for the needs of the respondents. Author's design.

It is clear from the questionnaire survey that some types of building amenities predominantly do not suit the needs of residents of the apartment building. These include, among others, mainly a baby carriage and a bicycle storage room, basement storage units, parking areas and flat roofs (but only in the case of 4% of the respondents).

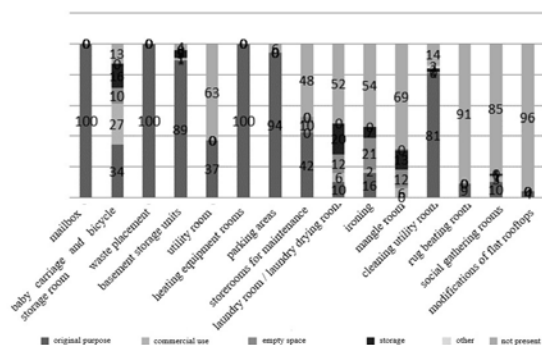
### 9\_Necessity of Building Amenities in the Apartment Building of the Respondents:



Graph 7: Necessity of Building Amenities in the Apartment Building of the Respondents. Author's design.

If spaces such as baby carriage and bicycle storage rooms, waste placement areas, basement storage units, utility rooms, parking areas, laundry drying rooms, gathering areas and modified flat rooftops are located in the buildings of the respondents (assuming that they do exist), they would use these spaces.

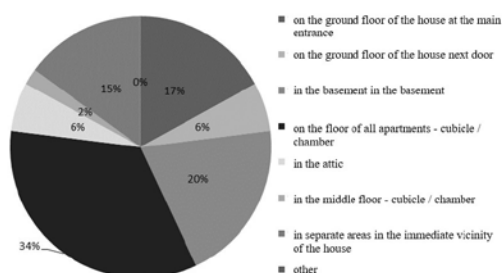
### 10\_Functions of Building Amenities in the Apartment Building of the respondents:



Graph 8: Functions of building amenities in the apartment building of the respondents. Author's design.

According to the statements of the respondents, the original purpose of the building amenities, as designed at the time, is today only fulfilled by the mailbox, the waste placement area, heating equipment rooms and parking areas. Predominantly also the basement storage units.

### 11\_Location of Storage Space for Items in the Apartment Building of the Respondents:



Graph 9: Location of Storage Space for Items in the Apartment Building of the Respondents. Author's design.

From the graph, it can be inferred that 34% of the respondents would wish to have a storage space for items in the apartment building, or potentially in the basement of the building, such as are basement storage units (20%), on the ground floor of the building by the main entrance (17%) or also in separate spaces in close proximity to the apartment building (15%).

### 12\_Open Question: In your opinion, how can the situation of building amenities in the apartment building be improved?

This was the only question open to the respondents to be answered in up to 20 words. To this final question, the respondents responded almost in the same way regardless of their permanent residence, the size of the apartment or the usability and the spatial efficiency of building amenities. By requiring more storage space in the apartment or outside the apartment and their large area, more parking spaces, and, most importantly, about 70% of the respondents considered security to be the most important. They talked about security in conjunction with building amenities, front doors, but also the neighborhood of the apartment buildings.

Partial summary of the questionnaire survey:

- When present in the apartment building, the following are actually used:
  - Basement storage units and storerooms (insufficient for the needs of residents)
  - Parking areas (insufficient for the needs of residents)
  - Spaces for gathering (insufficient for the needs of residents)
- When present in the apartment building, the following are not actually used:
  - Laundry rooms (empty space, storage)
  - Mangles (empty space, storage)
  - Other building amenities (e.g. baby carriage and bicycle storage - insufficient for the needs of residents) are used variously, for example depending on the location, the size of the apartment or the structure of the inhabitants of the apartment building.

## 5 Conclusion

The aim of this paper was to analyze the current state of the real usability of building amenities of panel buildings so that in the subsequent research it would be possible to propose measures and recommendations for solving individual, identified problems of building amenities of prefabricated housing, and their demonstration on selected concrete examples. Using work steps and comparisons of the results of quantitative research and documentation of the historical and current state of housing issues in residential (panel) buildings, the requirements for building amenities in prefabricated apartment buildings for weighted user comfort have emerged. By analogy we can apply the acquired knowledge to panel buildings of the same categories and most of their modifications that do not differ in the location and existence of building amenities. However, for example, the effects of the different spectrum of residents of such buildings and forms of housing cannot standardize and generalize the requirements for building amenities. The human factor introduces a completely different, almost philosophical dimension to this question.

The concluding assessment must of course include a statement on whether the working hypotheses postulated at the beginning of the research were proven or not.

### Hypothesis / 1

The current demands for the existence of building infrastructure in (panel) apartment buildings are directly proportional to their originally intended functions.

**HYPOTHESIS WAS PROVEN**

**Hypothesis / 2**

The real usability of building amenities in (panel) apartment buildings is greater or smaller depending on the size of the apartment units.

**HYPOTHESIS WAS PROVEN**

**Hypothesis / 3**

There exists a relationship between the placement of the selected building amenities within the context of a (panel) apartment building and its real usability.

**HYPOTHESIS CANNOT BE PROVEN**

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**Secondary Paper Section: AP, AO, JN**

## RITUAL ROUND WALK “LADIES” (*PAŇIČKE*) AS A SPECIFIC EXPRESSION OF IDENTITY OF SLOVAKS IN VOJVODINA (SERBIA)

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**Abstract:** The study deals with a specific element of the ritual culture of Slovaks in Vojvodina (Serbia) – “ladies”. Evangelical Slovaks in Stará Pazova perform the “ladies” as an Easter round walk since their arrival in the second half of the 18<sup>th</sup> century. This custom is a manifestation of pagan-Christian syncretism. The actors are children before confirmation who conduct a round walk on Palm Sunday. The aim of the paper is to describe the circumstances of the origin and historical development of this cultural phenomenon, its current form, as well as the changes and factors that determined its persistence and transformation at present. In the study we will point out the parallels and connections of the “ladies” with other family and annual customs. We will examine the “ladies” mainly as an expression of ethnic and confessional identity as well as family and social affiliation.

**Keywords:** “Ladies” (*paňičke*), Easter, ritual round walk, Stará Pazova, syncretism, Vojvodina.

### 1 Research methods

We have compared the information found in the literature with the field research, which we carried out in Vojvodina localities (Serbia): Stará Pazova, Slankamenské Vinohrady, Selenča, Aradáč, Kovačica and Báčsky Petrovec during the years 2018 and 2019. The research included semi-standardized interviews on the topic of family and annual customs with the inhabitants of the mentioned localities (especially the town of Stará Pazova), with the children who participated in the performance of “ladies”, with representatives of cultural, social and religious life and with representatives of local cultural institutions<sup>1</sup>. Participant and non-participant observations were made in the families of Slovaks, in formal and informal meetings of the Slovak community and during annual festivals. The research is a part of an ongoing several years lasting project that aims to map and evaluate the current cultural potential of the Lowland Slovaks in many countries (Serbia, Romania, Croatia and Hungary)<sup>2</sup>. The annual customs and the “ladies” were considered as an important element of intangible cultural heritage.

### 2 Characteristics of the research locality

In the literature but also in the common colloquial language, the population, which is the subject of our research, is denoted as the Lowland Slovaks. The Lowland<sup>3</sup>, in the broadest sense, refers to the territory around the borders of Hungary, Romania, Serbia and Croatia. Slovaks started immigrating into these localities at the end of the 17<sup>th</sup> century because of overpopulation, poor economic conditions and religious persecution (Sirácky 1996, 1980). Immigrants to Vojvodina, Serbia (official name Autonomous Province of Vojvodina) came from several regions of Central Slovakia (Hont, Novohrad, Zvolen, Liptov, Turiec, Orava and Gemer), partly from western Slovakia (Nitra, Trenčín and Bratislava) as well as from the regions of Zadunajsko, Novohradsko-piest'anský and Békešsko-čanádský region as a

secondary migration of Lowland Slovaks. In 2002, more than 50,000 Slovaks lived in Vojvodina regions of Bácska, Banát and Srem, accounting for almost 3% of the total population (Bucher 2011).

Located in the south-eastern part of Srem, Stará Pazova is situated approximately 30 kilometres from Belgrade and 40 kilometres from Novi Sad. The oldest preserved record of this town dates back to 1716. The first Slovaks came here from the village of Selenča in Bácska region, where the Catholic authorities forbade them as evangelicals to carry out their own worship services and took their praying room that also served as a school at that time. Military command allowed this population to settle at the military border. Shortly after arriving in a new location in 1771, the Slovaks built a church building and a school here (Čáni 2004 podľa Novotná 2009, Gavrilović 1972, Babiak 2018). Life on the frontier and certain ethnic isolation<sup>4</sup> caused Stará Pazova to become a unique cultural island.

The Slovak population is now the largest ethnic minority in the city. In 2002, there were 10,477 Serbs and 5,848 Slovaks, representing 31.4% of the total of 18,645 inhabitants. Yugoslavs, Croats, Romani, Montenegrins, Macedonians, Hungarians, Ukrainians and others are also a part of the ethnic structure of the town. Slovak language is the second most represented language and, due to the high representation of Slovaks, it is, together with Serbian language, the official language. Bilingualism and the common presence of the Slovak language in the communication of Slovaks and Serbs are omnipresent. There are several ethnic-based institutions in the city: kindergarten, two primary schools - Serbian and Slovak school. Secondary schools (grammar school, economic school and secondary technical school are not Slovak schools, Slovak language is taught as an optional subject there). In the town there is a radio Stará Pazova, which has two separate editorial offices for broadcasting in both Serbian and Slovak languages. There is a theatre with a Slovak and Serbian program composition (Novotná 2009). Dialect of Stará Pazova has the character of Central Slovak dialects, reflecting the contact of the Slovak population with Serbian but also Hungarian ethnic groups (Štolc 1968, Hurban 1933).

The uniqueness of the lowland Slovaks, which manifests itself in the studied phenomenon of “ladies”, is connected with the syncretic character of their culture. Syncretism is based on the interaction of the culture of the mother nation, the culture of the surrounding nation, and other ethnic groups as well as the culture created by the Slovak minority community in the new homeland. In their culture, two opposing processes began immediately after the settlement: following the original cultural values acquired in their homeland and, on the other hand, ethno-cultural changes caused by the processes of interaction with the different ethnic community. The interaction of these factors enriches and expands the area of material and spiritual culture, and brings forth modifications, wide variability and specificity of culture (Botík 2011).

### 3 Historical development and changes in the ritual round walk “ladies”

“Ladies” (*paňičke*) are an exceptional cultural phenomenon in the region of Vojvodina and all other regions inhabited by Lowland Slovaks. They are a multi-layered formation that combines ancient pagan rites of passage - the departure of winter and the welcome of the new vegetation period and new life and the Christian Easter holiday dedicated to the crucifixion and resurrection of Jesus Christ. “Ladies” were originally known in other Vojvodina settlements as well, such as Aradáč, Pazova or Kovačica. Several decades ago, they were alive in Selenča, where they were practiced among Slovak evangelicals. Slovaks

<sup>1</sup> We conducted the interviews with local evangelical priests, representatives of the local branch of Matica slovenská, the Museum of Vojvodina Slovaks, the Association of Pazova Women (a part of Slovak Cultural and Artistic Association of a hero Janko Čmelík) and others. Respondents' direct statements are in italics in the text.

<sup>2</sup> Based on these studies, several separate publications or scientific studies have been created (for example, Čukan, Korina and Lenovský 2014, Čukan, Michalik, Zima and Žabenský 2015, 2017, Čukan, Kurpaš, Michalik et al. 2018.)

<sup>3</sup> The Lowland, also called southern regions or lowland Hungary, represent southern regions of former Hungary, unlike the area called Upper Land (Horniaiky), which represented the northern mountainous regions of Hungary, inhabited predominantly by Slovaks.

<sup>4</sup> The nearest Slovak village of Kovačica is about 20 kilometres away.

in Stará Pazova came to this territory from Selenča and therefore they are likely to have transferred these customs to the new homeland from there. According to the local priest, recollections of this custom are still preserved in the memory of the oldest inhabitants of Selenča, but its active practice ceased to exist in the 1920s. Sporadic performance of “ladies” can also be found in Sklankamenské Vinohrady, which is a part of the local evangelical church in Stará Pazova.

Picture 1: “Paňičke”. The second half of the 20th century. (Archive of TO, Stará Pazova)



It is likely that “ladies” in Stará Pazova have existed continuously since the arrival of Slovaks to this locality, with the exception of several years of war. They are held annually on Palm Sunday. Its original actors are girls of pre-school or school age before confirmation (up to 12 years old) who visit their relatives in groups (of 3 or more) with their round walk. By singing songs they declare the departure of winter, prosperity and health, for which they are rewarded with eggs and other treats from the hosts (Sklabinská, Mosnáková 2012).

A young bride, who is different from the others by wearing a *parta* (bridal head outfit) or a wreath on her head, is the central character of a group of “ladies”. All girls are dressed in traditional folk costumes of Stará Pazova. One of the girls carries a basket (*céger*) or a felt egg bag; the others are dancing. In every house “ladies” dance and sing a song that is used up to now with minimal variations:

*Palm Sunday, where have you left the keys?  
I gave them, I gave them to Saint George.  
Saint George, get up and unlock the doors.  
We will brew, we will brew red beer,  
We will make, we will make reeve's son drunk,  
If he doesn't drink, we will beat him with the whip on his buttocks.  
The girl is pretty, her hair is down to her waist,  
Reward, reward our beautiful bride,  
we will take her to a fair,  
we will buy her a lace- a red or a green one,  
on a Palm Sunday.  
A big grove or a small grove,  
You our goodwife,  
give us some eggs, not only one but two,  
you will not miss that much.*

The origin of the name “ladies” (*paňičke*) can be explained in several ways. One of them is the presence of a young bride - a virgin (in Slovak language *panna*) who is traditionally associated with the motives of youth, innocence and purity, as well as the rebirth of spring, nature and life. The second parallel can be found in the statements of Stará Pazova inhabitants. According to them, the name „lady“ (*paňičke*) is connected with the motives of beauty or the specific status and prestige of girls. When the girl, who was supposed to take part in the round walk, was dressed nicely, they said to her, *You are as pretty as a lady*.

Today, when using this term, we mean the proud, nicely dressed girls or brides, but also the complex syncretic formation that consists of a girl, a boy, a round walk, a text, a melody, rhythmic steps, props and a reward.

Ritual round walk of “ladies” has undergone several changes of its form, content and meaning. However, the presence of at least three girls in the group, the presence of a young bride with a wreath and a basket to receive a reward are the elements that remained. Several transformations are observed with the actors of the tradition. Originally, the “ladies” were performed by poor girls, who gained eggs in this way. The eggs were then decorated and given to the boys called *oblievari* (those who came to splash them with water as a part of Easter tradition) on Easter Monday. Sometimes, the “ladies” were performed by gypsy children, also dressed as young brides. However, they were not dressed in Slovak folk costumes but in clothes typical for “ladies”. Gypsy children sang the same song (Maričová 2009). In this context, the tradition also had a certain social significance; it was a manifestation of the social stratification of the population. Approximately in the 60s and 70s of the last century, little boys joined the groups of girls. Their role was to help the girls to carry the basket. Later, the number of boys in the group grew, they started to form pairs with the girls. Today, boys are an integral part of the tradition of a ritual round walk. They do not have their own name, the concept of “ladies” today includes both girls and boys. At present mostly boys and girls of pre-school age participate actively in these walks. Mothers with their toddlers in folk costumes, who participate in the parade of children in the church and their singing in front of the church, are an important element of the custom. Initially, children were mainly rewarded with gingerbread, apples and raw eggs. Later, they were given dyed eggs, chocolate eggs, dinars or sweets of various kinds.

Picture 2: “Paňičke” in front of the Evangelical Church. Stará Pazova. April 2019. (Author: S. Letavajová)



The clothes of the “ladies” have also undergone significant changes. At first it was simple and ordinary. *Children wore ordinary clothes in pale colours. Apron and female shirt (called kepeňka) were of the same colour.* It was the wreath or *parta* (bridal head outfit) that distinguished the bride from other girls. Approximately in the 1960s, clothing is changing and takes on its current form. The different garments, material and the way of making the clothes of the “ladies” are replications of the rich and ornate women's wedding clothes of Slovaks in Stará Pazova. While the garments of Slovak brides in Vojvodina was mostly black, the brides in Stará Pazova as well as the border workers<sup>5</sup> were allowed to wear coloured clothing and short skirts. The typical colours of everyday clothing as well as the ceremonial wedding costume were white and light blue. The use of these colours has become one of the most significant elements of ethnic but also local distinction of Slovaks in Stará Pazova. *They*

<sup>5</sup> Respondents expressed their need to wear practical clothing (short skirts), which would not hinder the activities conducted on the border and their potential contact with enemies (transport on carriages, physical work, providing supply to soldiers).

had to wear these colours to make obvious that they were Slovaks from Stará Pazova. This colours are also used in the clothing of "ladies". Up to this day, the following are the compulsory parts of the garment: knitted woollen pantyhose (*pantúške*), a white pleated apron called *šata* and specific hair style. The girls have their hair tied in one braid plaited high in the back of the head. Regardless of the season, the "ladies" usually wear a black scarf (*túrák*) over their shoulders. From the beginning the boys' clothes copied the clothing of adult men and the groom. Boys are dressed in a Slovak folk costume, consisting of a white shirt embroidered on the side and a hat (*kalapčok*). The use of rosemary twig on the hat or a peacock feather was also a specific element. People in Stará Pazova kept peacocks. People who kept peacocks were said to be proud.

Picture 3: "Paničke in church". Stará Pazova. April 2019. (Author: J. Čukan)



Some changes also occurred in performance of the round walk. Originally children visited their relatives in the morning. From the 1940s, a visit of the church was incorporated into the program. At the end of the evangelical worship, the "ladies" come in pairs to the church, walk around the altar, receive the blessing and take their picture in front of the altar. After the Sunday service, they dance and sing in front of the church, for which they are rewarded. This tradition is still alive today. This year (on April 14<sup>th</sup>, 2019) 28 pairs of children attended the ceremonial worship in the evangelical church. Later, a priest joined the program, telling the children about the content and meaning of the Palm Sunday. The role of the church, a local church community and local priest in shaping the present form of this custom is very significant. An interesting component of the tradition of "ladies" is the sale, which has been organized on Palm Sunday for two years. It includes the sale and exhibition of Easter eggs, home-cooked meals and handmade souvenirs from the entire area of Stará Pazova.

"Ladies" are a constant expression of ethnic, confessional, regional, family and social affiliation. Several generations are currently participating in the performance of "ladies", the preparation of clothes, the rehearsal and the realization of the round walk. Often they are the grandmothers who prepare clothes for their grandchildren, dress them up and teach them the lyrics of the traditional song. This phenomenon is an expression

of family identity and belonging and a condition for the intergenerational transmission of tradition.

The clothing of "ladies" also reflects the social status of the family. Making clothing is quite difficult and expensive. Dressing up the "lady" is a complex technological process that has from 12 to 15 successive stages in completing a girl's garment. The number of garments and stages depends on whether the girl has an opulent *parta* (bridal head outfit) or just a little wreath on her head. Every family cannot afford to own such a costume. *Today people are in better financial situation. They spend a lot on their children. They give a great wealth to children. So the children are now dressed like a real bride.* Other families borrow this garment.

"Ladies" in Vojvodina reflect ethnic and confessional affiliation. Most often they were held among Slovak Evangelicals, although the intergroup overlaps of ethnic and religious diversity were also evident in this environment. *Many times when a girl did not have a Slovak girlfriend, they took their Serbian neighbour and went with her. They dressed her in our folk costume and went with her from house to house.*

Ritual round walks of "ladies" in the past were mainly connected with the ceremonial prosperity function. The function of entertainment was added to it later. At present, these functions are interconnected. Pairs of girls and boys are now being prepared by their parents, grandparents, godparents, school teachers, folklore leaders and local church within the children's Sunday schools in order for them to come responsibly and seriously to the family, to stand in front of adult relatives and show them what was always performed on Palm Sunday in Stará Pazova in the past. The inhabitants of Stará Pazova consider the tradition of "ladies" to be a binding, necessary, natural and essential part of this festive day as well as the entire Easter custom cycle. Moreover, the visit of "ladies" in the homes of the Stará Pazova families is considered a God's blessing and a promise of prosperity, health, and good harvest. Families who are not visited by the "ladies" feel offended and believe that it will bring them bad harvest. Thus, tradition is regaining high normativity and obligation, which is typical of ritual practices.

#### 4 "Ladies" in the context of Easter customs and children's games

From the point of view of form, content, symbolism and meaning, it is possible to connect the "ladies" with several traditions. As ritual round walks, we classify "ladies" as the annual custom of the Easter and pre-Easter cycle. The "ladies" are an obvious remnant and distinctive transformation of the ancient Slavic custom of carrying out the winter, which is known in several regions of Slovakia, among the Lowland Slovaks, but also in many other European cultures (described for example by Čaplovič 1997, Niederle 1924). According to the ancient ideas of the Slavs, the spring equinox period was symbolically as well as realistically connected with the departure of winter and the arrival of spring, it meant awakening of nature and starting of agricultural activities. This period was seen as a transition, a new beginning, a new year, the departure of the old and the arrival of a new one. For this reason, there were a number of rituals connected with it, that were supposed to bring health, prosperity and fertility for people, but also for animals, land and nature in general. As winter was traditionally perceived and personified as a dangerous and negative being, the cleansing, protective or prosperous magical acts were supposed to eliminate its influence. The departure or death of winter was accompanied by its ritual destruction. Winter, also called *Death*, *Morena*, *Marmuriena*, *Baba*, *Kisel* or *Kiselica*, was most often presented as a female being. She had the form of a straw-stuffed dummy on a wooden stick, dressed in women's clothes. Young girls carried this dummy through the village on Passion Sunday or Palm Sunday while singing (Elscheková, Klepáčová 1995). *Morena* was destroyed by burning, throwing in water or stoning.

The tradition of carrying out *Morena* was known among Slovaks in Vojvodina as well. We observe it in Selenča, Kysáč, Kovačica

and Stará Pazova. In Selenča, they took out *Kisel'ka* on Palm Sunday and they received eggs for her (Vereš 1973). In Kovačica, girls went round on Palm Sunday from morning with a sprig and they were singing songs. One of them was dressed as a bride (Pavlov 2019). Destruction of *Kiselica* or *Morena* in Stará Pazova was known since the arrival of Slovaks to this village. *Kiselica* was made by the girls, it was a dummy on a wooden stick, and they dressed her up and carried her singing around the village. They set her on fire and threw her into a stream behind the village. The first record of active practice of this custom comes from the first half of the 20<sup>th</sup> century and is found in a monograph from 1932 (Lilge 1932). They were mainly girls from poorer families who went round with *Kisel'ica* before World War II and collected eggs. Some residents of the village remembered that on this occasion they also went to Nová Pazova, where the German Evangelicals lived, who welcomed them and rewarded them. According to the research of ethnologist Pavlov (2019), the tradition has gradually lost its obligatory character, its magic significance has disappeared and it has been replaced by its entertainment function. Young girls, who originally carried out Winter, are replaced in today's form of "ladies" by groups of children lead by a young bride of their age. Boys and girls – "ladies" in ceremonial ritual clothes generally represent the youth and the beginning of a new era. If some girls are dressed as brides, the function of youth, fertility and new life is even more expressive and obvious. The motives of the departure of winter and its ending are still present in the song sung by "ladies" in Stará Pazova during their round walks. One of its central motives is bringing or passing the keys that unlock the new season and bring spring. The same song was sung in Stará Pazova when taking out *Kisel'ica*. Another element that clearly interconnects the contemporary "ladies" with the original spring customs is the moment of rewarding the "ladies" with Easter eggs. Presenting the girls with eggs as a symbol of spring and life is present and obligatory in all forms of this tradition.

Picture 4: Grand mother with grandson. Preparing for round walk "paňičke". Stará Pazova. April 2019. (Author: S. Letavajová)



As we have mentioned earlier, the role of a young bride is very important in the group of girls that represent "ladies". In this context, we could also look for parallels with children's games,

especially those that come from or imitate family customs – a wedding or a funeral. Children's folklore includes games and rhymes, some of the customs and festivals that come from the adult repertoire, or the ones by which children imitate the adult life. An example of this element is a children's wedding or a funeral – burying a sparrow, a mouse, or other animal. The children perform the roles of wedding or mourning officials, in the case of a funeral they present the role of a priest, cantor or a funeral parade, in the case of a wedding they represent the bridegroom, the bride, the elder, wedding parents, cooks, musicians, groomsmen and bridesmaids.

The tradition of children's weddings is still alive in the Serbian village of Kovačica. In the past, children were performing the wedding in the natural environment; almost every street had their wedding parade. In addition to being entertained by these activities, the children learned the common traditions of adults. In the last decade, the children's wedding in Kovačica has been institutionalized, it has a script and a director, and most often it takes the form of a folk wedding parade through the streets of the village. It is a program performed by adults, a cultural event that has repeated performances (in Kovačica as well as at folklore festivals at home and abroad); the number of performances depends on demand and the amount of finance. Its primary function is to select the appropriate types of children, prepare a quality cultural program and to institutionalize the original Kovačica / Slovak custom. The event is held under the auspices of the Memorial Centre of Dr. Janko Bulík, who is, in cooperation with Matica Slovenská in Kovačica, its main organizer. It is held in August or September and in 2019 it will be its 13<sup>th</sup> year (Children's Wedding in Kovačica 2016, 2019). However, we believe that the connection of the "ladies" with children's games is not unequivocal. When performing children's wedding, children imitate adults or some of their activities and the game plays a primary role, regardless of whether their parents help them prepare the space, costume or food.

## 5 Conclusion and discussion

The performance of "ladies" is an ancient custom of the Vojvodina Slovaks. If we do not take into account its unique manifestations in the nearby Sklankamenské Vinohrady, Stará Pazova is the only locality where the "ladies" are still alive and continually realized since the arrival of Slovaks to this locality. The "ladies" have evolved and naturally transformed into today's form from the pagan Slavic ritual of *Morena* (Winter). From the original forms of this cultural element, they retained most of the formal, content, and semantic components. The presence of the "ladies" and their walks during the Palm Sunday is considered a norm and an obligation by the local community, without which the Palm Sunday would not be what they are supposed to be. Some changes took place mainly in the outside – the formal aspect of the custom. The ladies' garments were enriched (colourful, rich, complex garments and garments imitating the bride's clothing), and the group of actors of the tradition expanded (a number of groups and a number of young brides, the presence of boys, babies dressed in folk costume during church services), new features appeared in the round walks such as the participation of the "ladies" in the Palm Sunday evangelical worship (presentation of the children in folk costumes before the altar, blessing by the priest, taking a picture, singing and dancing in front of the church). All of these factors determine the continuation and strengthening of the obligatory character and normativeness of the tradition. From the viewpoint of a form the tradition is increasingly more colourful, varied, pomp, theatrical and representative. They are particularly better living standards of the population that determine these changes. However, the contemporary form of the "ladies" is primarily a reflection of a strong ethnic, confessional and local identity. In addition to the family background and the natural intergenerational transfer of the tradition from the generation of grandparents to their children and grandchildren, the activities of local institutions also participate in its formation. The local priest, evangelical church, kindergarten and primary school as well as folklore ensembles contribute to the preservation and revitalization of the "ladies". The formal and informal support of

local associations and societies and local authorities is also significant. Their effort to register the "ladies" in the list of Serbian intangible cultural heritage<sup>6</sup> is the manifestation of these tendencies.

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#### Primary Paper Section: A

#### Secondary Paper Section: AC

<sup>6</sup> The following organizations are trying to register the "ladies" in the list: Slovak Evangelical church in Stará Pazova, Local branch of Matica slovenská in Stará Pazova, Slovak Cultural and Artistic Association of a hero Janko Čmelík.

## THE IMPACT OF THE PEDAGOGICAL AND PERSONAL HISTORY OF THE TEACHER ON ITS CURRENT TEACHING STYLE

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The paper is an output from the research project VEGA no. 1/0637/16 titled Development of a Diagnostic Tool to Assess the Level of Phonemic Awareness of Children in Preschool Age.

**Abstract:** The teaching style is a distinctive process by which the teacher teaches. It includes specific ways of managing pupils' learning activities, choosing teaching methods, principles, organizational forms, prioritizing and utilising certain didactic resources. This is reflected in the methodological process of the teacher, in the way of managing and organizing work on the lesson as well as in the teacher's interaction with the pupils. However, many determinants are entering the teaching process, affecting the teacher's style in a significant or less significant way. The paper presents and analyses previous knowledge and experience of teachers in the context of teaching style. It brings empirical findings on the impact of selected factors related to teachers' pedagogical and personal history and their impact on the current teaching style.

**Keywords:** teacher, teaching style, pedagogical and personal history of the teacher

### 1 Introduction

Recently, teaching profession has become a frequently discussed topic, especially as a result of constantly increasing demands for its performance. A greater emphasis has been paid not only to the acquisition of key knowledge and skills, but, above all, to having teachers manage many demanding situations brought about by real educational practice. Teachers are becoming much more important factor in the teaching process, though the profile and status of the profession have been experiencing a decreasing tendency. Many of the requirements for teaching profession have impact on teachers' teaching styles. Since teaching is a dynamic process, there are many factors entering it and influencing the style of teaching. This means that the selection and consequent application of individual didactic procedures may be influenced by various factors. This fact becomes particularly significant as regards primary education which has an important role in the life of every child. Teaching style, as a unique way of applying pedagogical knowledge, skills, abilities and attitudes of teachers in pedagogical interaction aimed at learners' personal development, is a key component of the teaching profession. Because of that teaching style should not be understood as just some procedures that could be judged according to what educational aims are set by teachers, what methods and organisational forms are used, or how the role of teachers and learners is perceived. It is a higher construct having a direct impact both on the process of learning as well as on learners' personal development. Thus, the need to analyse teachers' teaching styles, as well as the factors which influence them, is becoming more significant and up to date. Seen from this point of view, the paper discusses the influence of pedagogical and personal history of primary school teachers on their current teaching styles.

### 2 Definition of teaching style and its determinants

Nowadays, there has been much discussion on what teaching procedures are effective and have positive impact not only on the process of learning, but also on learners' personal development. A teaching style, as a key component of teaching profession significantly influencing the quality of its performance, is coming to the forefront of attention.

The concept of teaching styles has been well discussed abroad, especially by such authors as N. A. Flanders (1970), L. A. Walla (1988), A. F. Grasha (1996), C. A. Evans (2003), J. Maňák and V. Švec (2003), R. Kohoutek (2006), D. Wall (2007), C. A. Evans, M. J. Harkins and Y. D. Yong (2008), G. D.

Fenstermacher and J. F. Soltis (2008), J. Škoda and P. Douřfík (2011), J. Mareš (2013), and many others. However, in Slovak literature not so much attention has been paid to this problem (Rovňanová, L., 2015; Fenyvesiová, L., 2006, 2013; Nikodemová, V., Fenyvesiová, L., 2016; Začková, T., 2008, 2010; Malá, D., 2013; Komárik, E., 2013; Turek, I., 2014). Many of the above authors describe and define the variability of teaching styles one can come across during one's teaching. In addition to their definitions and classifications, the authors provide possibilities of their diagnosing and, last but not least, put them into analogy with students' learning styles. There have been several researches aimed at the analysis of compatibility, or incompatibility of teaching and learning styles and its consequences for the process of pupils' learning (e.g. Walla, L. A., 1988; Gilakjani, A. P., 2012).

Teaching style has been defined by several authors, emphasising not only identical, but, in many cases, relatively different characteristics. It may be understood from the following two aspects:

*From a wider aspect*, teaching style is characterised as a way of teaching. It is thus „an individually specific way of teaching, which is preferred by a teacher in a certain period and certain context“. It is manifested by concrete strategies and ways of managing the pupils' learning activities, selection of teaching methods, procedures and organisational forms, preference of certain types of didactic means as well as choice of basic communication schemes in teaching (Škoda, J., Douřfík, P., 2011, p. 68).

*As far as the narrower aspect* is concerned, teaching style is defined by J. Maňák and V. Švec (2003, p. 37) as “a set of teaching methods applied by a teacher”.

The given definitions allow one to state that teaching style is represented by a way of the teacher's management of educational activity. Teaching style as certain procedures influenced by several aspects is described by J. Mareš (2013, p. 467). According to him, teaching styles may be understood as “procedures typical for a given teacher, preferred by him/her during a certain period and used in education to manage the pupils' learning or work in the classroom. These procedures are influenced by the specificities of teacher's personality, his/her preparation for the profession and further education, pedagogical experience, and, above all, approach to teaching”.

A more detailed analysis of the concept of teaching style may be found in the definition of K. Starý (2007) who sees teaching style as something drawing on the teacher's understanding of teaching, and, consequently, manifested in the projection of concrete lessons, i.e. directly in the teaching, not only in the teacher's implicit thinking, but in his/her teaching procedures. It could seem that so defined teaching style is, in its essence, indescribable and imaginative, outwardly manifested by teaching procedures. V. Švec (1998) claims that the teacher's perception of teaching makes up one of the layers of teaching style. Therefore, in teaching style it is possible to distinguish several mutually interconnected layers, including:

- *Cognitive style*, representing the deepest layer, is to a certain extent inborn, i.e. also difficult to influence.
- *Teacher's approach to teaching*, or teacher's everyday philosophy, related to the way of selecting a teaching material, choice of teaching methods, communication with pupils, etc. It is a layer which is difficult to influence, for example by the teacher's self-education, or his/her further education.
- *Ways of dealing with pedagogical situations, or teaching strategies*, which are, to certain extent, influenced by teachers' education, pedagogical experience and, above all, by the processing of this experience. It needs to be

emphasised, as it is also claimed by the above authors, that teachers' reflected pedagogical experience is more beneficial than the un-reflected, or accumulated, experience.

- *Pedagogical knowledge, skills and experience* that, to a certain extent, overlap with the preceding layer and are most influenceable.

Taking into account the above definitions of teaching style by several authors, it is important to draw attention to the factors, or determinants, which may significantly influence it. In recent years, there have been more frequent discussions concerning teaching profession, especially as regards the changing, as well as increasing, conditions for this work. J. Průcha et al. (2009) claim that for the performance of teaching professions, two-level working conditions have been created within the school system. In case of the first level, it is possible to speak about the conditions given by social factors, legislative norms and higher interventions, that is, conditions from the "outside", or, in other words, out of school. The external conditions of work, as factors influencing the teacher's work as well as, naturally, his/her teaching style, may include *legislative norms, the status of teaching profession, teachers' career possibilities, measure of school's or teacher's competences, financial reward, and many others*. External conditions for teachers work determine not only attractiveness of the profession, but a personal stability of teaching staff or schools educational effects. Internal conditions of teachers work, partially created by the school, include conditions of personal nature (*teaching staff qualification, quality of pupils*), conditions related to technical parameters (*number of pupils in a classroom, material equipment*) as well as social conditions (*school climate, relations among teachers, relations with parents or with the public*), and so on (Průcha, J. et al., 2009). According to M. Siroťová (2000, p. 118), teaching style may be determined by the following factors:

1. *social-historical conditions* (the impact of changing social orders, economic and political conditions in individual periods was changing and shaping dominant styles),
2. *teachers personal experience and qualities* (every teacher's pedagogical impact is affected by his/her own experience, but also his/her personal qualities, education and pedagogical practice),
3. *qualities and experience of pupils* (e.g. behaviours of pupils at lessons).

There is no doubt that many of the mentioned factors have direct impact also on teaching style itself. Having to take into account a great number of factors found in both domestic and foreign literature, we propose to classify them into five groups, not considering their number within the proposed groups to be final. We primarily draw on the research of C. A. Evans (2003), and propose to classify them to the following five groups based on certain signs:

- *factors related to teacher's pedagogical and personal history,*
- *factors related to teacher's individual qualities and characteristics,*
- *factors related to pupils' individual qualities and characteristics,*
- *factors related to school, or educational environment,*
- *other significant factors related to teaching profession.*

The paper is focused on a group of factors related to the *teacher's pedagogical and personal history*. The identification of a measure of influence of individual selected factors on teachers' teaching styles is the subject of the research to which closer attention is paid in the empirical part of the paper. The following factors are included into the given group:

- *style of family upbringing,*
- *teachers' own teaching experience* (their teaching style),
- *knowledge and skills in a given field* (acquired during the professional training, theoretical as well practical),
- *experience acquired in the position of a beginner teacher,*

- *success teachers experienced as pupils/students, or as learners,*
- *knowledge from individual subjects at primary educational level,*
- *previous participation in further education and self-study as forms of self-education,*
- *preferred way of learning, i.e. learning style.*

L. Fenyvesiová (2013) has pointed out that knowing one's own prevailing style is a precondition of effective self-reflection and consequent self-improvement. It is possible to state that consequently also the targeted analysis itself, or self-diagnostics of factors influencing teaching style, may be equally effective means of self-reflection.

## 2.1 Classification of teaching styles

Teachers differ from one another by a set of personality as well as professional traits. It means that they are reflected in a teacher's teaching style. Nowadays there are several classifications of teaching styles, defined by the authors on the basis of their various criteria. They may include, for example:

- classification of teaching styles according to teachers impact on pupils (Flanders, N. A., 1970),
- classification of teaching styles according to methods applied in teaching as well as type of interaction between teachers and pupils and pupils themselves (Grasha, A. F., 1996),
- classification of teaching styles according to a philosophical and psychological conception (based on the idea of ideal teaching procedure) (Fenstermacher, G. D., Soltis, J. F., 2008),
- classification of teaching styles according to the way of its management, relation to pupils and a classroom climate (Turek, I., 2014), etc.

This paper draws on the classification of teaching styles by A. F. Grasha (1996) who describes five types of teaching styles:

*The Expert* (so-called information carrier) – having knowledge, skills and expertise needed by pupils. To preserve their expert status among pupils, teachers show detailed knowledge and invite pupils to increase their abilities and competences. They are concerned with the mediation of information, which is to ensure that pupils are well prepared.

*Formal authority.* Teachers with this teaching style determine criteria and define acceptable ways of work. It is a teacher-centred approach, meaning that teachers feel responsibility for providing as well as control of certain contents expected to be accepted and assimilated by pupils. This teaching style is characteristic by a lack of interest in the creation of a personal attitude to pupils, because what is important is the building of relationships among pupils.

*Personal model* is a teaching style characteristic by teaching through illustrations and direct example. Like in teacher-centred approach – teachers here demonstrate and model what is expected (skills and processes) and act as trainers or guides, assisting pupils in applying the acquired knowledge. The teachers who prefer a personal model teaching style encourage pupils' participation in and use of variable teaching styles. This style's advantage is its emphasis on direct observation following personal example. A disadvantage of this style is teachers' belief that their approach is the best way to lead pupils to feeling incapable if they fail to fulfil required expectations and standards.

*The Facilitator* is a teaching style characteristic by its leading and directing pupils through questions, discovering possibilities, proposing alternatives. It is a pupil-centred approach, i.e. teachers facilitate and their attention is focused on activities. What is interesting in this teaching style is that teachers lead pupils to the responsibility to take over the initiative and thus achieve results in various tasks. Independent, active and

collaborating pupils make advances in such environment. Teachers propose group activities that require active learning, solving problems and mutual cooperation among pupils.

*The Delegator* is a teaching style developing the ability of pupils to act autonomously. This means that it is a pupil-centred approach in which teachers delegate control and responsibility for learning either on individuals, or groups of pupils. Such teachers assume the roles of advisors, often requiring pupils to propose and implement complex learning projects. Pupils are often asked to work either independently or in groups, in which they have to work effectively and be able to perform various interpersonal roles.

With regard to the given classification, or its described individual teaching styles, A. F. Grasha (1996) created a research instrument for the evaluation of teaching styles, which finds its use in this research. Drawing on individual divisions of teaching styles it seems to be evident that every teacher prefers certain teaching style which gets projected to the teaching process and for which are typical certain ways and procedures. G. D. Fenstermacher and J. F. Soltis (2008) claim that it is undesirable to try to shape teachers to use one "ideal" teaching style. Pupils are enriched by various teaching styles, therefore authors rather highlight and point to the procedures how to reflect on their teaching and, at the same time, to become aware of the motives of their acting. We also take the view that teachers should reflect on their own teaching style, and consequently modify it to allow its positive impact not only on their professional development, but, at the same time, to effectively influence the learning process and, last but not least, the development of learners personality. With regard to the above mentioned, also E. Petlák (2000) maintains that the main sense of self-reflection, as a reflection on one's own work, an analysis of one's work, its revaluation, etc., is that teachers not only re-value their work, but, consequently, draw conclusions from it to be used for its further optimisation.

### 3 Research methodology

#### 3.1 Research aims, questions and hypothes

There are many factors entering teaching as a dynamic process and significantly influencing teaching style. Based on what has been said above, including the theoretical starting points for teaching styles and the determinants influencing them, the following research aims were set:

- *to explore the measure of influence of the selected factors on the teaching style of primary school teachers,*
- *to explore styles in a wider contextual frame of the factors that determine them.*

Based on the set aims, the following research questions and research hypothesis were formulated:

RQ1: *What impact do the selected factors have on the teaching style of primary school teachers?*

RQ2: *Which factors influence the teachers' individual teaching styles?*

H: It is assumed that teachers' teaching styles are most significantly influenced by a way they prefer and apply during learning, i.e. their learning style.

#### 3.2 Description of research sample

The research sample is made up by primary school teachers. Its selection was defined by the approximation (estimation) of R. V. Krejcie and D. W. Morgan (1970), where the percentual share of research sample corresponded to the percentual share of basic set in individual regions of Slovakia (a minimal estimated number for teachers was N=370). To calculate the research sample, it was necessary to have information on the number of teachers in primary schools in Slovakia, and because of this we drew on the statistical yearbook of educational system, prepared and published by the Slovak Centre of Scientific and Technical

Information (2018). The research sample was made up by 404 primary school teachers.

It was then characterised from the aspect of age, pedagogical and regional specificities of teachers, i.e. from the aspect of gender; age; length of pedagogical practice; school locality; its founder and the grade in which teachers teach at primary level. Out of the total number of respondents (N=404), women made up 97% of research sample (N=392), while men reached 3% (N=12).

From the point of view of age, teachers were included into five age categories. The most numerous one was made by teachers at the age of 41 to 50 years (N=154). Approximately groups of the same numbers were made up by the teachers whose age was up to 30 years (N=65), from 31 to 40 years (N=79), and from 51 to 60 years (N=91). The least numerous group were teachers in the age of 61 years and more (N=15).

The research sample was also characterised by the length of teaching practice. Based on this, primary school teachers were put into five respective categories: up to 30 years; from 31 to 40 years; from 41 to 50 years; from 51 to 60 years; and over 61 years. In the category, the most numerous group of the research sample was made up by the teachers with the length of pedagogical practice more than 15 years (N=239), the least numerous group consisted of teachers with their pedagogical practice from 11 to 15 years (N=35). Teachers with pedagogical practice less than 5 years (N=74) and from 5 to 10 years (N=56) were relatively equally represented in the research sample.

As for the locality of the school in which the primary school teachers work, the most represented were cities. If compared with the country (N=99), the research sample was made up by as many as 305 teachers working in the cities, which was 75.5% of the research sample total.

Based on the type of school according to its founder, 369 teachers from state schools participated in the research (91.4%). The representation of teachers working on private (5.4%) and church (3.2%) schools was comparable with the representation of teachers working at state schools.

#### 3.3 Research methods

Based on the set research aims and questions, the following diagnostic instruments were selected:

- *Autodiagnostic questionnaire of factors influencing the teacher's teaching style,*
- *Autodiagnostic questionnaire for the assessment of the teaching style of primary education teachers (Grasha, A. F., 1996).*

As the first research instrument, we designed an auto-evaluation questionnaire that consists of five conceived groups of factors and determines a measure of influence of these factors on teachers' teaching styles. Individual factors and their classification into groups were selected not only as a result of our theoretical starting points, but they were also based on the research of C. A. Evans (2003). The teachers' task within each group was to add points to the factors based on the influence they may have on their own teaching styles, e. g. 1 – the given factor has *least* influence on a teacher's teaching style and 8 – the given factor has *biggest* influence on a teacher's teaching style, and the values added to the factors cannot be within a group repeated.

The second research instrument was the questionnaire whose author is A. F. Grasha (1996). It is an auto-evaluation questionnaire to determine the measure of application, or preference of the five categories of teaching styles (i. e. the teacher Expert, teacher Formal authority, teacher Personal model, teacher Facilitator, teacher Delegator), whose classification is given in the theoretical part of the paper. The questionnaire consists of 40 items, and every teaching style in

the questionnaire is saturated by 8 items. The selected diagnostic instrument was adapted to our conditions of primary education. We used quantitative and qualitative methods to process data. The questionnaire was evaluated through mathematical-statistical methods. The new data, acquired through the above methods, are analysed and processed with qualitative methods of logical operations and procedures: deduction, induction, analysis, synthesis, analogy, comparison.

Statistically, the data were processed by the software IBM SPSS ver. 21. For their description, methods of descriptive statistics were used: *number, mean, standard deviation, standard error of the mean, and percentages*. Before the application of inferential methods, the normality of data distribution was being detected. Based on Shapiro-Wilk test, it was found out that the data are distributed normally, and for further analyses parametric tests were opted for: *the Pearson correlation coefficient and Student's t-test*.

#### 4 Analysis and interpretation of research findings

The theoretical analysis not only allowed several views of a teacher's teaching style, which can be understood as certain applied didactic procedures and preferred attitudes and opinions on teaching, but also pointed to many factors which may significantly determine individual didactic procedures, attitudes and opinions of teachers. Our aim was thus to explore the extent of the influence of selected factors on the teaching styles of primary school teachers. We searched for an answer to the research question: *What is the measure of the influence of selected factors on the teaching styles of primary school teachers?* Individual selected factors were put into five proposed groups, given in the theoretical part. The following part will present exploration of the factors related to the pedagogical and personal history of the teacher. Table 1 presents factors related to the pedagogical and personal history of teachers and the measure of their influence on preferred teaching styles.

Tab. 1: Factors related to pedagogical and personal history of primary school teachers and a measure of their influence on preferred teaching styles

Variables	N	M	SD	SEM
6. The knowledge I have in individual subjects.	404	5.70	0.091	1.831
8. The way I prefer and apply in learning, i.e. my learning style.	404	5.64	0.108	2.180
7. The history of participation in further education and self-study as forms of self-education.	404	5.32	0.113	2.269
3. Knowledge and skills in a given field (which I acquired the preparation for profession both at theoretical as well as practical level).	404	5.28	0.102	2.054
4. The experience I acquired in the position of a beginner teacher.	404	4.82	0.107	2.145
1. Style of upbringing in the family (in which I was brought up and educated).	404	4.18	0.117	2.355
2. My experience from the teaching of my teachers (their teaching style, or the way in which I was taught).	404	4.15	0.108	2.172
5. The success I experienced as a pupil/student, or learner.	404	3.68	0.105	2.101

Key: N – number; M – mean; SD – standard deviation; SEM – standard error of the mean.

Table 1 results show that average figures range from 3.68 to 5.70. They indicate that the factors whose influence on teaching styles was marked by teachers as most significant are related to their knowledge (items 3, 6, 7), and, consequently, to a way they prefer in learning, i.e. their learning style (item 8). A slightly lesser measure of influence on teaching styles was recorded in item 4 (the experience I acquired in the position of a beginner teacher), while least influential were factors involving some retrospective influence on the teachers' teaching style (items 1, 2, 5). A detailed look at the factors with highest value points to their mutual relation. The highest level of influence was identified with *the knowledge from individual subjects* (M=5.70), *the knowledge and skills in a given field* (M=5.28), and a great significance was given by teachers to the

*participation in further education and self-study* (M=5.32). It may be stated that the acquired high scores in these items gives a clear picture of the fact that pedagogical knowledge and skills are the most influenceable layers of teachers' teaching styles. The group of factors with the highest score also includes the *teacher's preferred way of his/her own learning, i. e. his/her learning style* (M=5.64). The results indicate that what procedures teachers use in their own learning may significantly influence the procedures applied in their teaching. In this context, it is important to compare and consequently modify one's own teaching style with pupils' learning styles. Some kind of harmonisation, or respect of pupils' learning styles, may significantly increase the teacher's role in the successful learning of his/her pupils. Somewhat lower figures were recorded with the factor *experience acquired in the position of a beginning teacher* (M=4.82). It may be inferred that teachers give great significance to the experience acquired in the position of a beginning teacher. This experience may thus have significant influence on their teaching style. Therefore, it is assumed that a teacher's teaching style at the beginning of his/her teaching career may be quite different from the teaching style applied with the increasing length of his/her pedagogical practice. I. Turek (2014) claims that it is the beginner teachers for whom a nondescript teaching style is typical. At the beginning of their profession teachers as if they were looking for themselves, applying teaching styles depending on the situation (especially on the attitudes of pupils), once trying to be authoritative, another time liberal or democratic. It is important to draw attention also to the factors with the lowest figures in the monitored group (items 1, 2, 5). They may be characterised as the factors involving a kind of retrospective influence on a teacher's teaching style, namely *style of family upbringing (in which the teacher was brought up and educated); experience from his/her teachers (or their teaching style) and success the teachers experienced as pupils/students, or as learners*. These factors may be considered to have direct influence on teaching styles, but, in comparison with the above-mentioned ones, teachers attribute a lower measure of impact to them.

Based on the analysis and interpretation of research findings, it may be stated that the hypothesis assuming that teaching styles are most significantly influenced by the way teachers prefer and apply in their learning, i.e. their learning style, has not been proved.

May authors agree with the idea that teachers pay only very little attention to the evaluation of educational process, its conditions or overall performance. A greater attention is paid to the acquisition of a set of key competences for successful performance of the teaching profession. Attention is focused on teachers' use of a wide spectrum of activating methods, modern technology, various alternative conceptions of teaching, and many other approaches of making educational process more effective. However, the real way of the effective performance of teaching profession does not lie in the application of ever new and modern approaches. What is important is that teachers reflect their strategies, procedures, theories, opinions, attitudes and convictions. But individual strategies, procedures, preferred attitudes and opinions may be influenced by various factors. The aim of this part of our research was to analyse teaching styles in a broader contextual framework of factors determining them. We were searching for an answer to the following research question: *Which factors influence teachers' individual teaching styles?* The previous part of the research brought relevant findings on the factors which are related with pedagogical and personal history of teachers and influence, to various extent, the teaching styles applied by teachers at primary level of education. A more detailed analysis is focused on the relation between individual teaching styles and the selected factors which influence them. The findings are given in Table 2.

Tab. 2: Relation between the applied teaching styles and the factors influencing them

Variables		1	6
Formal authority	r	0.131**	0.141**
	p	0.008	0.005
	N	404	404
1. Style of upbringing in the family (in which I was brought up and educated).			
6. The knowledge I have in individual subjects.			
Variables		6	
Personal model	r	0.109*	
	p	0.028	
	N	404	
6. The knowledge I have in individual subjects.			
Variables		5	6
Facilitator	r	0.110*	0.109*
	p	0.027	0.029
	N	404	404
5. The success I experienced as a pupil/student, or learner.			
6. The knowledge I have in individual subjects.			
Variables		6	7
Delegator	r	0.154**	0.105*
	p	0.002	0.035
	N	404	404
6. The knowledge I have in individual subjects.			
7. The history of participation in further education and self-study as forms of self-education.			

Key: N – number; r – Pearson coefficient, p – statistical significance level.

Table 2 presents the results which indicate a relation between the applied teaching styles of primary school teachers and the factors which influence them. Using the Pearson coefficient, it was found out that between the variables there is a statistically significant relation at the level of 0.01, and statistically significant relation at the level of 0.05, but the relation is not evident between all analysed variables. In view of the length of the data, Table 1 shows the variables between which this relation is evident.

The proved results indicate that a statistically significant relation is evident for the variables Formal authority, Personal model, Facilitator and Delegator, and certain factors determining them. This relation was not recorded, however, with regard to the Expert teaching style. It means that the application of this style is not determined by the factors associated with teachers' pedagogical and personal history. It is assumed that the Expert teaching style may be influenced by factors of different kind.

The indicated results also allow one to notice that the common factor influencing the styles *Formal authority*, *Personal model*, *Facilitator*, and *Delegator* is the *knowledge teachers have in individual subjects*. Given the fact that teachers at primary level teach subjects of different nature, it is desirable that they have enough and adequate knowledge from all the taught subjects. It may be said that knowledge, and consequently also experience, make up one of the layers of teaching style, the one which is considered most influenceable. This fact brings a very interesting result. Nowadays teachers use various forms of further education and self-study. One may claim, to a certain extent, that the acquired knowledge then influences the selection of didactic procedures by the teacher, i. e. his/her teaching style. One can assume that it is based on further education that teachers vary, or change, their teaching styles, while teachers who do not show any interest in self-education apply routine and well-established teaching procedures.

Similarly interesting is the finding that teaching styles Formal authority, Personal model, Facilitator and Delegator are influenced by the *knowledge in individual subjects*, though the teaching style characteristic by its presentation of detailed knowledge and invitation of pupils to increase their abilities and competencies is the Expert teaching style.

As for the teaching styles Formal authority, Facilitator and Delegator and factors influencing them, certain differences could be identified as well. While the Formal authority teaching style is influenced by the *style of family upbringing*, the Facilitator is

influenced by the *success teachers experienced while they were learners*. What is interesting about the Facilitator teaching style is that teachers lead pupils to responsibility to take over the initiative to reach the results in various roles, and independent, active and collaborating pupils move forward in such environment. Thus, the results indicate that the Facilitator style teachers try to lead pupils to reach success in learning themselves. This analogy means that teachers want to achieve the same success with their students as the success they experienced when they were learners.

The factors influencing the Delegator teaching style include not only the *knowledge teachers have in individual subjects*, which is a common factor for several other teaching styles, but, at the same time, *participation in further education and self-study*. There is a certain relationship between individual variables. The application of the Delegator teaching style assumes the development of pupils' abilities to act autonomously. It is a pupil-centred approach. The teacher takes the role of a guide and often requires pupils to work either independently or in groups in which they have to work effectively and manage various interpersonal roles. It may be estimated, from what has been said, that teachers with the Delegator preferred teaching style attribute an essential influence on their procedures exactly to the self-study and further education. It thus means that these teachers do not only try to act autonomously themselves, but develop this ability in their learners as well.

## 5 Conclusion

In recent years, the teaching profession has become a frequently discussed topic, especially because of constantly increasing demands and requirements put on it. Contemporary teachers are no longer only mediators of knowledge to pupils, they are expected to meet requirements connected with the necessity to develop the pupils' personalities as regards their individual needs and possibilities. Increased demands are becoming the key in case of pre-primary and primary level of education where teachers educate children at the age of their most rapid development. The quality performance of teaching profession is significantly influenced by teachers' teaching style, which is a key component in this process. Our research shows that one may speak about various factors determining, to certain extent, teaching style. It follows that contemporary teaching styles of primary schools teachers are to the greatest extent influenced by the knowledge in individual subjects, knowledge and skills in a given field as well as participation in further education and self-study, with a relatively high figure recorded also for such factor as the teacher's preference of the way of his own learning, i.e. his/her learning style. In comparison with the previous ones, the learning style is less influenced by the experience acquired in the position of a beginning teacher. However, the lowest level of influence on teachers' teaching styles is exerted by such factors as style of family upbringing (in which the teacher was brought up and educated); experience from the teaching of their teachers (or their teaching style) and the success the teachers experienced as pupils/students, or as learners. Consequently, research results showed that there is a statistically significant relation between teaching styles and factors influencing them, but this relation is not evident for all the analysed variables. The findings indicate that the application of the teaching styles Formal authority, Personal model, Facilitator and Delegator is significantly influenced by the knowledge teachers have in individual subjects, while there is no a statistically significant relation between the selected factors and the Expert teaching style. Moreover, it was found out that the Formal authority teaching style is influenced, in addition to the knowledge in individual subjects, also by a style of family upbringing, the Facilitator style is influenced by the success teachers experienced when they were learners, and the Delegator style is influenced by the history of participation in further education and self-study. Because there are many factors influencing the style of teacher education, we feel free to claim that the most important, if not decisive, role in teaching profession is played by the reflection of one's own pedagogical activity, and, consequently, its determinants as well. Drawing on the above mentioned, we also

agree with the ideas of G. D. Fenstermacher and J. F. Soltis (2008), who have noticed that teachers become real professionals only when they reflect and attentively consider the approach to their profession, which directs and support them in such important work as the education of people.

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## DEVELOPMENT OF ADULT EDUCATION IN INTERWAR SLOVAKIA (1918 – 1938)

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The paper is a part of the research task VEGA no. 1/0303/17 "Adult Education in Slovakia in the Conditions of the Existence of Czechoslovakia (1918–1938)".

**Abstract:** New social conditions of the interwar Czechoslovakia (1918-1938) enabled the state authorities to focus, for the first time in Slovakia, on the domain of adult education. Several central state bodies were established and adopted the first legislative measures that laid the foundation for the future regional institutions of popular education and public libraries. Congresses of popular educators from Slovakia were organized on a regular basis and increased attention was paid to education of individual target groups of adults. The time was right for some individuals to shine in their efforts to provide theoretical background and practical guidelines for the future field of adult education.

**Keywords:** history of adult education in Slovakia, legislative measures, enlightenment boards and committees, congresses for popular educators, education courses for women and unemployed youth, K. Kálal, A. Zbaviteľ.

### 1 Introduction

The end of WWI (1914-1918), as an important historical milestone of the 20<sup>th</sup> century, brought a radical change in organization of states within the European region. After a foundation of a new independent state of Czechs and Slovaks on 28 October 1918 and its confirmation by the Declaration of the Slovak Nation (the Martin Declaration) on 30 October 1918, adult education was given immediate priority. Any popular educational endeavours until then were dependent on volunteer collaboration of many individuals, associations, and societies. Soon the state-governed cultural – enlightenment activities and policies started to develop, too. Some institutions, for instance, *Matica slovenská* and *Živena* resumed their activities. Favourable postwar conditions, however, provided a space for creation of the new institutions.

The supreme body responsible for education was the *Ministry of Education and National Enlightenment* [Ministerstvo školstva a národnej osvety] established in 1918 with its seat in Prague. The *Department of Enlightenment* [Osvetový odbor] formed an integral part of the Ministry's organizational structure. In 1922, the *Slovak Office of the Ministry of Education and National Enlightenment* [Referát Ministerstva školstva a národnej osvety] was created in Bratislava with the authority over primary and secondary school administration in Slovakia. Educational, enlightenment, and religious branches merged in one central Office in charge of management, control, human resources, and administration (Pavlík, 1985, p. 163).

First, it was needed to address terminological ambiguity accompanying both theoretical and practical aspects of educational activities performed by professionals and teachers involving adult population. The term *osveta* – enlightenment – was gradually replaced by the term *ľudovýchova* – popular education in order to ease the authoritative pressure of the intellectual elite trying purposefully to form the masses mostly by disseminating academic knowledge. If we interpret *ľudovýchova* as "education of the people" then by the people, we understand broad and low-educated masses of lower social rank, mostly manual workers whose education was rather fragmental (Šerák, 2005).

*Pedagogická encyklopédia Slovenska* [Pedagogical Encyclopaedia of Slovakia] defines *ľudovýchova* as "an intentional and purposeful educational endeavour of Slovak intelligentsia in specific conditions of economic, social, and national oppression aimed at raising national and political awareness of people, improving their economic and social standing and increasing their education level" (Pavlík, 1984, pp.

521-522). The Encyclopaedia links this concept to the activities undertaken before the establishment of Czechoslovakia [ČSR], but the term *ľudovýchova* was also used after 1918 mostly for ideological purposes as a counterweight to the term *osveta*, which had a slight bourgeois connotation.

The term popular education was used in relation to activities aimed at satisfying the needs of working class people. Czech Pedagogical Encyclopaedia *Česká pedagogická encyklopedie* [Czech Pedagogical Encyclopaedia] links the term *ľudová výchova* [a Czech equivalent of *ľudovýchova*] to the following terms "adult education, non-formal, post-school education, that is continuous education outside of school aimed at people beyond their school age, with the purpose of active development of their intellectual strengths and spreading knowledge among them" (Chlup, Kubálek, Uher, 1938, p. 251).

The entry *osvetová činnosť* [enlightenment activity] in *Príručný pedagogický lexikón* [Pedagogical Lexicon] compiled by J. Čečetka in 1943 reads "it includes every extracurricular and non-formal educational activity which is intentionally directed at increasing cultural awareness and acquiring general and professional knowledge in civic education" (Čečetka, 1943, p. 33). The Lexicon specifies it further: "After 1918, enlightenment activities were placed in the service of civic re-education in the spirit of the new Czechoslovak Republic. Enlightenment activities, especially those governed by the state take on educational character in relation to civic upbringing" (Čečetka, 1943, p. 34).

In general, the interwar period can be described as the period of searching for optimal structures and laying foundations for the state-wide public enlightenment, in terms of legislative measures, a network of institutionalised provision, practical educational activity and work of several prominent figures.

### 2 Legislative measures in the adult education sector

The first legislative measure that laid the organizational foundation of the state-governed and institutionalised public enlightenment was the *Act No. 67 Coll. on the Organization of Popular Courses of Civic Education* adopted on 7 February 1919. Article 1 of the Act states that "in the whole territory of Czechoslovakia free courses of civic education shall be organized in order to provide professional, yet popularized explanation of the system of government, all aspects of state's operation, and about the rights and obligations of its citizens" (Škoda, 1960, p. 15).

These courses were to "educate the citizens and deepen their political education and strengthen the moral fitness of individuals" (Škoda, Paška, 1977, p. 30). In accordance with the Act No. 67, free courses in civic education were organized with an aim to provide the citizens with professional, but still very clear and accessible explanation of the abovementioned issues. The *Instruction No. 28 480 3554 "on the Organization of Popular Courses of Civic Education in Slovakia"* issued by the Ministry of Education and National Enlightenment on 14 July 1920 addressed the implementation of the Act No.67/1919 in the Slovak part of the new republic. The Instruction specified the main goal of the courses as follows: "educate the citizens for the republic, deepen their political education, and strengthen the moral fitness of individuals" (Jelínek, 1936, p. 10).

The Instruction also outlined the content of the courses:

- civic education (system of government, citizen's rights and obligations, activities of public institutions, political parties' programmes);
- national economy (economics of state, municipalities and organizations);
- history of Czechoslovak independence, historical events of the last century, world history;

- d) importance of democracy (moral foundation of the state);
- e) social foundation of living in a state;
- f) social healthcare and physical education.

Executive orders or decrees of the Ministry (e.g. No. 61.796 dated 15 December 1919; No. 61.977 dated 19 December 1919) provided the detailed structure of the enlightenment societies responsible for the enlightenment policy implementation:

- a) *okresné osvetové zbory* [district enlightenment boards] – consisted of no more than 20 people – representatives of political parties, local governments, district school boards, prominent educational associations and popular educators. Their main duty was the inspection in municipalities;
- b) *mestské osvetové zbory* [municipal enlightenment boards] – established in municipalities with over 10 000 residents, in larger cities, there could be more than one board; they were not subordinate to the district enlightenment boards;
- c) *miestne osvetové komisie* [local enlightenment committees] – local branch of the district enlightenment board in a particular municipality, had 3-4 members.

For practical reasons other bodies were established too, for instance:

- *ústredie osvetových zborov* [the Central Office for Enlightenment Boards]: covered the territory of a župa [a county] and ensured the coordinated organization of all cultural-enlightenment events. Its responsibilities were: popular educators' training, keeping records of all activities within the county, arranging meetings between individual district boards, maintaining a county library, etc.
- *menšinové okresné osvetové zbory* [district enlightenment boards for minorities]: established in a district with over 2 000 members of a particular national minority.

A prominent historian Š. Pasiar said: "In accordance with the Act on Civic Education free educational courses shall be organized on the whole territory of Czechoslovakia. The courses provided people with information about the state's structure and administration, and about their rights and civic duties, etc. It encouraged learning about the new reality – the newly established republic - which was very different from the state in which Czechs and Slovaks had lived before 1918" (Pasiar, 1975, p. 215).

The second legislative measure that contributed to the development of enlightenment activities was the *Act No. 430/1919 Coll. on Public Communal Libraries* adopted on 12 July 1919. Article 1 of the Act states: "to complement and deepen the knowledge of all social classes, the political municipalities are ordered to establish public libraries providing truly valuable books of educational, scholarly, and entertaining nature" (Bakoš, 1996, p. 36). In Slovakia, the Act No. 430 together with the regulation No. 607/19 Coll. did not come into force until 21 March 1925 due to unsatisfactory conditions and lack of financial resources.

In accordance with the Act, every municipality, within its own limits, was to establish a public library by the end of 1925. The district enlightenment boards in cooperation with district chiefs were to ensure compliance with the Act. The association libraries shall be made public; every municipality shall establish a library board members of which were to be a teacher, a notary public, and a local secretary. The district board also observed that municipalities allocate from their budget a certain amount of money to the establishment and a further support of public libraries.

To develop and organize popular librarianship the Slovak Office of the Ministry of Education and National Enlightenment issued on 21 March 1925 a decree No. 17-743 asking teachers of all categories to accept librarian posts, run public communal libraries and deliver lectures on the importance of libraries in accordance with the Act on Public Libraries (Jelínek, 1936, p. 144). District library officials were recommended to inform local

secretaries about the popular librarianship, to organize lectures in municipalities, where a library was to be established and to cooperate with Matica slovenská in Turčiansky Sv. Martin.

Table 1: *Public communal libraries in ČSR in 1926 – 1930*

year / number of	libraries	volumes	borrowers	books lent	income
1926	14 755	5 079 907	866 725	13 476 148	16 062 697
1927	15 355	5 444 884	880 326	14 440 593	16 275 308
1928	15 896	5 768 887	892 087	14 383 625	16 958 762
1929	16 168	6 334 319	961 769	14 899 798	19 036 524
1930	16 461	6 635 844	953 775	16 226 805	20 885 886

Source: Matula, 1934, p. 403

The library boards governed public communal libraries and the association libraries that were made public. Four people sat on the board in municipalities with over 2 000 residents, six people served on the board in municipalities with 2 001 – 10 000 residents, and the board had eight members in municipalities with over 10 000 residents. Half the members of the board were elected by the municipal council adopting a principle of proportional representation from among the municipal electorate (including representatives of local authority) and other members were initially co-opted into the board from among popular educators and later elected by the borrowers (Jelínek, 1936, p. 137). The head of the local enlightenment committee joined the board as its last (odd) member.

Library boards met at least four times a year to exercise their duties, which were:

- to appoint a librarian and auxiliary staff, to ensure that the municipal authority pays them their salary;
- to be responsible for financial administration of the library;
- to approve purchase of new books and removal of inappropriate books based on the librarian's proposal;
- to establish a set of rules for borrowing books from the library and for using the reading room;
- to safeguard the interests of the library against the municipal authority and the general public;
- to compile an annual report on their activities supplemented with a balance sheet and statistical statements, and send it to the municipal authority and the Slovak Office (Jelínek, 1936, p. 155).

Minority libraries were governed by a special library board, all the members of which were members of the national minority for which the library was promoted. At least four people sat on the library board in a municipality with over 2 000 members of a national minority. The board had six members in municipalities with 2 001 – 10 000 members of a particular minority and in municipalities with over 10 000 members of a particular minority, the board comprised of eight members. The composition of the minority library board was approved by the respective district enlightenment board. The board members were appointed for a two-year term and their service was gratuitous. The board elected a chairperson, a manager, and a treasurer. Besides the auxiliary staff and a skilled person responsible for financial administration, the library could also hire a music expert.

All libraries were under the close supervision of the Ministry of Education and National Enlightenment, and other special bodies created by the Ministry, as well as the district and county authorities. The supervision over the legal matters concerned provision of material and personnel costs. The supervision over the technical issues concerned suitable location and equipment of the library, and supervision over the ideological and educational matters concerned mostly suitability of book collections.

Librarians were responsible for their library's agenda; they were members of the library boards in an advisory capacity and they

could also be managers in local enlightenment committees. Initially, insufficient education and management skills hindered librarians in their efforts to establish a library, which often resulted in lack of initiative and ineffectiveness. Therefore, the short-term or the three-week librarian training courses were organized. The development of libraries, the choice of books, planned (not random) restocking of shelves rested with librarians. They were also responsible for keeping statistical records of:

- inventory of a number of volumes at the beginning and the end of the calendar year by making reference to the local inventory and in smaller municipalities to the accession register;
- a number of lent volumes in individual groups according to entries in statistics diary after every hour of lending (according to the manual for public libraries in Slovakia);
- a number of borrowers per year, according to a number of issued library cards (Kraus, 1932, p. 131).

A public librarian was in charge of all sections of the library – i.e. the circulation section, the magazine reading room and the reference library. The reading rooms also served as places for organizing exhibitions, lectures, art soirees, talks, puppet shows, and similar cultural enlightenment events. It was expected that libraries would be involved in public enlightenment.

Articles 2 and 3 of the *Governmental Decree No.607/19* addressed the content unsuitability of the books kept in public libraries. In accordance with the regulation No. 65.273 issued by the Ministry of Education and National Enlightenment on 21 September 1933, the Ministry published lists of suitable books. *The Slovak Enlightenment Association* [Osvetový zväz pre Slovensko] was responsible for compiling the lists in Slovakia. In accordance with Article 2 of the Decree, every communal library should contain works of national importance, and valuable informative and entertaining literature.

Article 3 of the Decree specified the kind of books that were not permitted in public libraries: books of no artistic value or creations of indecent nature that is: chronicles, crime fictions that provoke reader's imagination, defamatory books, books that belittle the whole social class or books that compromise the integrity of the Czechoslovak state. For this purpose, a special *Committee for Selection of Good Reading for Public Libraries* was established with an aim to compile lists of suitable books. According to Article 8 of the Decree, the responsibility for adhering to suitable selection of books (or for their removal) rested with librarians and library boards.

The above-mentioned Decree was complemented with a Decree No.142.153 issued by the Ministry of Education and National Enlightenment on 11 December 1933, which banned books of German provenience in community libraries dissemination of which had previously been banned by regional courts. The Decree also ordered the removal of foreign books whose transport to Slovakia had already been banned.

Prohibited was also dissemination of all printed material that had already been published or was in print in Hungary after 28 October 1918, including publications whose date of origin was impossible to determine. Distribution of Austrian-Hungarian political periodicals was also prohibited based on their ideological content, which was deemed defective in terms of Czechoslovak law and order.

The Act on Public Libraries also contained specifications about vocational training of a librarian. The Act required a librarian to have completed education in a public town school followed by a three-week librarian course before passing a state required exam (in municipalities with 2 000 – 10 000 residents) or to have completed secondary education and one-year education in school for librarians (Repčák, 1935, p. 98).

Table 2: *Public communal libraries as of 31 December 1935*

municipalities /number of	Municipalities in Slovakia			
	up to 2 000 residents	2 001 to 5 000 residents	5 001 to 10 000 residents	over 10 000 residents
libraries	2 807	152	32	12
volumes	388 071	89 772	5 4207	133 370
borrowers	112 785	19 257	7 154	8 341
books lent	721 255	206 708	118 988	204 197

Source: Kraus, 1936, p. 69

The implementation of the Library Act in Slovakia proved difficult. Some municipality officials were reluctant to endorse the Act and establish a public library claiming that the people did not read books anyway, or that nobody could possibly make them read. Other excuses included library maintenance costs and expensive purchase of books, a low number of library boards in which participation was not salaried, the required two-year term of library board service or lack of their activities (Lukáč, Mayer, Lenhardtová, 2018, pp. 57-66).

Another legislative measure concerning popular education was the *Act No.80/1920 on Communal Commemorative Books*. Under this Act, initially applied only in Czech lands, every municipality was required to issue and financially support the keeping of a municipal commemorative book. The books were to be issued by the end of 1922. For Slovakia and Carpathian Ruthenia, the deadline was extended to 1 July 1933. The books would preserve local history for future generations. The chronicle was to be publicly displayed once in three years for the duration of 14 days and every citizen had a right to propose appropriate amendments. Chroniclers were offered short courses and they had to collaborate with the Historical Committee, which approved all texts that were going to be written in the chronicle.

The Act No.75/1920 adopted on 29 January 1920 is often considered the fourth popular education act, which addressed establishment of the Economic Volksschule. These schools provided young people in villages with an opportunity to broaden their general knowledge after the completion of their compulsory primary education and to be trained for practical life by providing education in economics and agriculture, or prepare them for a study at lower vocational agricultural schools. It was a two-year study with a possibility to open up a third year focused on special economic discipline. This school was compulsory for those who did not attend any other schools after completing their compulsory education at the age of 14.

*Regulation No. 9581 on Classrooms Provision for the Purpose of Popular Education* was issued by the Ministry of Education and National Enlightenment on 6 March 1919. All teachers were obliged to participate in organization of popular education courses without expecting to be paid and had to work at least four hours a week as organizers, tutors, or librarians. Many of the teachers had already been appointed to enlightenment boards or committees. They were taught to do that in the last year of their teacher's training when they were given lectures on:

- a) popular education – importance of popular education, reading of laws and regulations on enlightenment, organization and forms of popular education, a teacher's role in popular education;
- b) public librarianship – the Act on Public Communal Libraries, library administration, selection and purchase of books, organization of a library.

### 3 Congresses of popular educators

The first congress of popular educators in Slovakia was held between 3 and 6 June 1922 in Prešov, a town with rich cultural and school tradition. Minister of Education and National Enlightenment Vavro Šrobár, representing the Šariš region, proposed Prešov as a suitable location for the congress. On the agenda was:

- the assessment of individual areas of public enlightenment;
- the analysis of activities carried out by various institutions, for instance by Matica slovenská, Sokol, Spolok sv. Vojtecha, Slovenská liga, YMCA (Young Men's Christian Association) and YWCA (Young Women's Christian Association);
- legislative measures concerning public enlightenment and the participation of different fields of culture in these activities;
- urgent fight against alcoholism.

Congress delegates had an opportunity to attend various cultural events, among them unveiling of two commemorative plaques – one dedicated to poet P. O. Hviezdoslav who studied at the Law Academy of the Evangelical Collegium in Prešov in 1870 – 1872. The other plaque was dedicated to writer Jonáš Záborský and put up in a nearby village of Župčany, where he was a parish pastor.

In the final hours of the congress, the participants adopted a formal declaration in which they defined “the aim of popular education - pious, moral, and educated nation” (Prvý slovenský, 1922, p. 1). They also appealed to the members of the intelligentsia and urged them to dedicate all their energy and capacities to public enlightenment.

Other appeals concerned: the use of Czechoslovak language in all spheres of public administration; improvement of teacher's education, as an essential prerequisite for increasing the educational level of working class; enforcement of the Act on Public Libraries; protection of nature and national heritage; the support from politicians and journalists in dissemination of knowledge in a joint effort to “rid Slovakia of alcohol”, etc. The first congress will also be remembered through a poem entitled *Vitajte nám, bratia! (Účastníkom slovenského kultúrneho zjazdu v Prešove)* [Welcome brothers! (To delegates of Slovak cultural congress in Prešov)] composed by Anton Prídavok with a date of 2 June 1922 (Prídavok-Umkin, 1922, p. 1).

The next congress, held in Štubníanske Teplice on 22 – 24 May 1926, was attended by 128 delegates of district and municipal boards and local enlightenment committees, 70 students of teacher training college and another 60 guests. In his presentation, Matula, a head of the Popular Education Department of the Ministry of Education and National Enlightenment, defined the term *popular education* as “a systematic stimulation of intellectual development and life of adults outside of the regular schooling” (Matula, 1926, p. 15). Other terms used at that time were: adult education, after school education, non-formal education, popular education, national enlightenment, workers' enlightenment, or demo-pedagogy. From the perspective of the state and the citizen, the ideal goal of popular education was to re-educate the passive serves into able, i.e. active, agile, enlightened, and disciplined citizens who would be conscious of their rights and duties.

Krčméry, a secretary of Matica slovenská, opposed the idea of educating people into being “Czechoslovaks”. Instead, he defended the preservation of cultural particularities of Czechs and Slovaks and promoted education in statehood based on nationality, which would arouse in people permanent and growing patriotism (Krčméry, 1926). In the adopted resolution, the congress delegates demanded:

- to establish county enlightenment associations;
- to adjust working hours for teachers who were particularly active in performing culturally enlightening activities;
- to exempt public enlightenment events from fees;
- to start at least one puppet theatre.

A compilation of 17 selected articles with discussions entitled *Zjazd ľudovýchovných pracovníkov zo Slovenska v Štubníanskyh Tepliciach na Turíce 1926 dňa 22. 23. a 24. mája* [Congress of Slovak Popular Educators in Štubníanske Teplice on the Day of Pentecost 1926, 22 – 24 May] was published after the congress. The compilation also contained an overview of 74

district enlightenment boards in Slovakia together with a list of personnel.

The congress in Banská Bystrica was held between 2 and 6 July 1927. The delegates adopted a resolution in which they demanded clerks and other intelligentsia circles to have a duty to participate in enlightenment activities, just as teachers did. They also suggested attaching more importance to the radio, launching new radio stations in Bratislava and Košice, monitoring trashy literature and screening of unsuitable films. At the same time, the congress participants lodged a formal objection to municipalities refusing to finance the purchase of books and remunerate librarians.

The Resolution adopted at the congress of popular educators of Slovakia and Subcarpathian Ruthenia held in Spišská Nová Ves on 8 – 10 July 1929 addressed similar issues. It reads: “We are fully aware of the growing interest in organising popular educational activities not only among public officials, but also among individuals. We know that the number of active public educators from all different walks of life has been growing too. There are, however, some unresolved issues that require urgent intervention from the authorities and the general public alike” (Rezolúcia [The Resolution], 1928, p. 9).

The pressing issues mentioned in the Resolution were: systemization of vacancies for female teachers who could teach courses for women in Slovak villages or help out in schools; popular educators having an option to borrow books from teachers' libraries; extra attention given to communal libraries in Eastern Slovakia and Subcarpathian Ruthenia, etc.

The chosen location for the next congress was Zvolen, but eventually 131 representatives of the enlightenment boards and committees met in Žilina on 4 to 6 July 1930. They went on trips to Rajecké Teplice and Lietava Castle. The congress called for greater engagement of the intelligentsia in the cultural-enlightenment work. The 1930 Resolution proposed travelling cinema in every county and the establishment of *the House of Culture* [kultúrny dom] in every municipality, etc. (Rezolúcia zjazdu [The Congress Resolution], 1930, pp. 14-15).

Exactly one year later, enlightenment workers and representatives of *the Federation of Slovak Students* [Zväz slovenského študentstva] and regional student associations met at the 5<sup>th</sup> Congress in Zvolen on 4 – 6 July 1931. The delegates remarked that “Slovakia, too, was hit by the economic crisis. Its negative effects are also felt in popular education; subsidies for the popular educational activities were reduced” (Snemovanie [Session], 1931, p. 5).

In the discussion that followed the main presentations, delegates pointed out the need to focus on dissemination of informative as well as entertaining literature for adults, organization of courses for the illiterate, promote development of amateur theatres, organise courses for theatre directors, combat alcoholism, etc. The biggest problem seemed to be the economic crisis. Despite several resolutions and petitions, the authorities were forced to reduce the budget assigned to cultural-enlightenment activities and staff salaries.

For instance, in 1933, the budget for popular education and public libraries totalled 2.2 million, which was down by 3.2 million (60%) in comparison to 1932 (Štátny rozpočet [State Budget], 1933, p. 66). In those difficult times, the congress was convened to Nitra and it was held between 5 and 6 July 1933. The congress petitioned to adopt an amendment to the Act on Public Libraries, which would clearly define the competencies of library boards, their supervision, and the legal status of librarians (Zjazd ľudovýchovných pracovníkov [Congress of popular educators], 1933, p. 11). The financial crisis hit hard. In 1935, only popular educators from the Eastern Slovakia attended the next congress and in 1936, the congress was not convened anymore.

#### 4 Education courses for adults in ČSR (1918 – 1938)

The development of educational activities in the interwar period was greatly affected by the economic crisis (having negative effects on economy, politics, culture, etc.). Most notable was the impact on the economy, resulting in budget cuts for many ministries, including the Ministry of Education and National Enlightenment. The crisis contributed to high unemployment rates, deterioration of the standards of living, and even pauperisation of people. Demoralization of society was just a natural consequence of the crisis.

In some regions with extremely high unemployment rates, "hunger valleys" emerged. The government tried to soften the negative impact of unemployment with different supporting projects (food and milk projects) and with financial incentives. The Slovak Office at the Ministry of Education tried to eliminate unemployment with popular education and enlightenment activities. In cooperation with enlightenment boards and committees, municipalities, trade unions, workers' associations, public school administration and the Kuratorium for Shelters for Unemployed Youth, the Ministry decided to fight the unemployment with education using trained popular educators, teachers, methodologists, and other professionals. For that reason, the Ministry organized different educational activities and courses in towns and villages: courses for the unemployed, for librarians, directors, women, popular educators or those working with alcoholics, etc. (Jelínek, 1936, p. 17).

Educational courses for the unemployed and the young were defined within the legislative framework of ministerial regulations.

- *Decree No. 118.920 issued by the Ministry of Education and National Enlightenment on 10 November 1923* stipulated that the courses were to be offered in municipalities with more than 200 unemployed people on benefits within a radius of six kilometres;
- *Decree No. 48.067/32 issued by the Ministry of Education and National Enlightenment dated 7 June 1932* supplemented and amended the Regulation No. 118.920 on Free Courses for the Unemployed issued on 1 November 1924 specifying special education courses for the unemployed (especially young people) of at least 40 hours focusing on *general education* – lectures on economics, social and political issues, labour laws; the Constitution and administration of Czechoslovakia; questions – about culture, upbringing, literature, healthcare; and professional training – language courses, stenography, course of typing, bookkeeping, technical courses and courses for unemployed women;
- *Decree No. 148.209/33 issued on 19 December 1933* on practical domestic skills courses for women.

All courses had to adhere to certain guidelines determining course specialization (lectures), a number of classes, and practical tasks to build up mental and physical strength. Highly skilled professionals, teachers of further education and office workers were in charge of delivering lectures. This general program was modified and adapted to local circumstances and needs, or supplemented with other appropriate activities (trips, free visits to events organized by enlightenment boards and committees, and to theatres and cinemas (Jelínek, 1936, pp. 63–65).

Based on the decrees of the Ministry of Education, several courses for the unemployed youth in Bratislava were organized together with educational courses for women provided by different institutions.

##### 4.1 Courses for the unemployed youth in Bratislava between 1931 – 1934

In 1931, at the instance of the former minister of education and national enlightenment, Dr. Markovič, the Bratislava city council decided to offer four educational courses for juvenile labourers.

The courses stretched over two months; the participants met twice a week (259 hours of instruction in total) and were provided with free lunches. The Slovak Enlightenment Association was in charge of the courses to which 180 men and 50 women enrolled in a short time.

Women were taught in one group since they usually had a good command of an official language. The lectures were briefly summarized in German or Hungarian languages, too. The course consisted of nine two-hour long lectures on physical culture, social intercourse, female body development, home hygiene, personal hygiene of children, sexually transmitted diseases, important documents, social legislation, and civic education. Other activities such as watching films, a Slovak language course, a German language course, handiwork, sewing, and dressmaking were also included in the educational process.

In order to facilitate understanding, men were divided into two sections: Czechoslovaks and Germans; and Hungarians. The courses for men consisted of seventeen two-hour long lectures: health science, social intercourse, male body development, sexually transmitted diseases, physical culture, important documents, and civic education. They were complemented by watching films, physical education, games, swimming, Slovak language classes, and German language classes. Some men also received professional training at apprenticeship vocational schools (*Bezplatné kurzy pre mladoletých nezamestnaných v Bratislave*, [Free courses for the unemployed youth in Bratislava], 1931, pp. 145–146).

Since the courses in Bratislava met with positive response, their mission continued. *Kuratórium pre pečlivosť o mladoletých nezamestnaných*<sup>2</sup> [The Kuratorium for Care of Unemployed Youth] developed a programme for the unemployed aimed at their successful placement into vacant jobs. Boys and girls aged 14 to 20 were given an opportunity to expand their knowledge and acquire new skills for their future practical lives. 159 boys and 62 girls enrolled and the *Kuratórium* created three departments. The courses contained 63 cycles of lectures (199 hours of instruction 5 days a week) on the subjects of medicine, social legislation, social protection, civic education, history, and geography. Language courses (Slovak, German, French, and English) as well as swimming, physical education and games were also available.

Women had to attend 85 lecture cycles (381 hours of instruction) on the same subjects as men complemented with classes of housekeeping, swimming, sewing, and handiwork. The English language was not offered to women.

Course participants were given free board (expenses covered by the city council) – breakfasts and lunches for men, women were also given dinners. In addition, they were offered shoes and stockings and the poorest ones were given winter coats too (*Kurzy pre mladoletých nezamestnaných v Bratislave* [Courses for the unemployed youth in Bratislava], 1932, p. 123).

In his work *Nezamestnaná mládež* [The Unemployed Youth] (1933, pp. 135–136), Štefan Juraš states that in 1933 the Slovak Enlightenment Association organized three courses for the unemployed youth. The courses were attended by young people aged 17 to 20, mostly from the environs of Bratislava, who had previously been employed in different professions (artisans, carpenters, upholsterers, musicians, shop assistants...) but had lost their jobs. Men (47 boys of Czechoslovak nationality and 50 boys of German and Hungarian nationalities) attended 64 half-day meetings (359 hours of instruction) in the YMCA building.

<sup>1</sup> "Mladoletý" – an archaic term meaning non-adult, juvenile (Bělič, Kamiš, Kučera, 1979).

<sup>2</sup> "Kuratórium pre pečlivosť o mladoletých nezamestnaných" – "The Kuratorium for Care of Unemployed Youth" comprised of the representatives of the city and the following institutions: Osvetový Sváz [Enlightenment Association], Okresná pečlivosť o mládež [District Care of Youth], Dorastový sbor [Youth Association], Odborová rada [Trade Union], Nemocenská poisťovňa [Health Insurance Company], Rodinná škola [Family School], and the representatives of vocational apprentice schools and other institutions (*Kurzy pre mladoletých nezamestnaných v Bratislave*, [Courses for the unemployed youth in Bratislava], 1932, p. 123).

Young women (20 of them were of Czechoslovak nationality and 13 of German and Hungarian nationalities) attended 48 half-day meetings (209 hours of instruction) in the YWCA building. Contentwise, the lectures covered Slovak, French and German languages, civic education, geography, history, maths, physical education, social legislation, healthcare, engineering, sports and sewing and handicraft for women.

Another course for the unemployed youth took place in Bratislava in the beginning of 1934. It was again the Slovak Enlightenment Association who organized the courses in the YMCA and YWCA for men and women respectively. One hundred and thirty men enrolled and they were divided into two sections (Czechoslovaks and Hungarians; Germans). The lectures of Slovak language, maths, German, engineering, physical education and games were planned for 50 half-day meetings (345.5 hour of instruction). Other subjects included agriculture, social legislation, watching films and slide transparencies.

Sixty-five women were educated together in one section. Just like men, women were taught every day (except for Sunday) and then two times a week in the afternoon (total of 48 half-day meetings – 187.5 hours of instruction) the following subjects: Slovak language, German language, social hygiene, civic education, anatomy, first aid, maths, chemistry of everyday life, lectures on social legislation, family education, geography, history, sewing and patching, and handiwork. Once a week they went to a spa and were given free tickets to the theatre and concerts by the director of Slovak National Theatre.

While courses for women were a success, many men became frustrated since they were unable to find a job despite having completed several courses. Instead of courses, they now demanded jobs or labour camps (*Kurzy pre mladoletých nezamestnaných v Bratislave* [Courses for the unemployed youth in Bratislava], 1934, pp. 122–123).

## 4.2 Education courses for women

The trend suggested a need for a higher level of women's education. The change came with the Decree No. 112.234/1924 issued by the Ministry of Education and National Enlightenment in Prague on 10 October. The decree ordered the district boards to provide courses for a broad network of women. Courses promoted by the Slovak Enlightenment Association in Bratislava were organized with an aim to awaken an interest in public, civic, and economic life of the whole society, in self-education and domestic economy in relation to general public interests.

The Congress of popular educators in Spišská Nová Ves (10 July 1929) reinforced this idea, too. It was difficult to design a course curriculum ad hoc due to vast differences between regions in Slovakia. Important also was to find the best methodology which also had to be adapted to individual regions and towns where the courses were offered. There were two types of courses: theoretical courses focused on expanding horizons and education of public affairs; and practical courses dedicated to cooking, sewing, housekeeping, childcare, etc. Courses were offered in Trnava, Dolný Kubín, Turčiansky sv. Martin (the women's association *Živena*), Spišská Nová Ves, Rimavská Sobota, etc.

Popular educators also encouraged education of women from the rural areas, either directly in their villages, organising courses focused on practical skills – cooking, cooking and sewing, sewing in combination with other theoretical subjects, as of 31 December 1931, 35 courses were running in 21 districts (*Kurzy pre ženy na dedinách* [Courses for the women from rural areas], 1932, pp. 90–91), or in towns, such as *Kurz slobodného učenia sedliackeho* [Course of free farmer's learning] sponsored by the *Vyššia škola ľudová SÚS* [Higher Volksschule] aimed at girls aged 17 – 26.

The course was the most suitable addition to vocational schools. The most important institutions providing education for women were the Slovak Enlightenment Association, *Živena*, Institute of

M. R. Štefánik, Higher Volksschule and the Slovak Fruit-Growing Association, all of which organized one-year courses, so called *náukobehy* for the general public. During the years of economic crisis, women were required to get involved in economic processes too (household expenses, housekeeping, and making traditional folk products) so they could become more independent and become open to better job opportunities. This was particularly relevant during the times of early twentieth-century emigration or the times when men were leaving homes for seasonal work. The childcare and housekeeping rested on women. Apart from these practical activities, civic education, promoting democratic ideas, remained the priority.

## 5 Prominent figures and their contribution to the development of adult education and public enlightenment

In the newly established republic, very important was to build the Czechoslovak statehood, and to educate the population so that they would become conscious of their own democratic citizenship. The educational process does not cease after completing compulsory schooling. Very important in this regard is enlightenment. Contentwise, the priority was given to civic education focused on the promotion of democratic ideas. The popular education greatly influenced overall cultural changes within Slovak society. Concerning the formal aspect of popular education in the interwar period, traditional forms of enlightenment prevailed – mostly courses of varied duration and intensity, lectures complemented with educational films and activities associated with libraries (Kázmerová et al., 2016).

Educated people who volunteered and got involved in the cultural-enlightenment work sought to raise the level of general cultural knowledge among people and challenged prejudice, superstitions and other social evils such as alcoholism and self-indulgent lifestyle. They introduced new ways of life to rural people and taught them about healthcare and hygiene, explained new techniques in agriculture. They wanted to turn the illiterate mass of the rural population into readers and awaken in them love and interest for the printed word. "The enlightenment activities differed from region to region based on social structure of the population. There was a difference between popular education in towns and in rural areas, between popular education of adults and young people, men and women, manual labourers and farmers, and on an ethnically Slovak territory and in nationally mixed areas" (Orosová, 2016, p. 20).

Not only did Czech teachers teach Slovak students, they also build Slovak schools. Many of them assumed positions of directors, school inspectors or worked in the administration of the Ministry of Education and National Enlightenment. Many Czech teachers authored first Slovak textbooks and became scholars in the field of education sciences. One third of the Czech secondary school teachers got involved in cultural and enlightenment societies. They brought to Slovakia a tradition of physical education and sport, established first clubs of Sokol, Orol, etc. (Pšenák, 2001).

### 5.1 Karel Kálal (1860 – 1930)

One of the prominent figures was Karel Kálal who worked as a teacher in different schools. After 1918, he was appointed secretary for popular education in Slovakia. In 1922, he assumed a position of a director of the Business College in Banská Bystrica.

In the 90s of the 19<sup>th</sup> century, he participated in the development and strengthening of Czech and Slovak relations. As an active Slovakophile, he was an ardent advocate for Slovak culture in the Czech lands. Kálal closely collaborated with the representatives of Slovak national movement – mostly with *Hlasisti* (members of Slovak intelligentsia grouped around a periodical *Hlas* [the Voice]). He promoted Czech-Slovak reciprocity as a necessary defence mechanism against Magyarization and Germanization. Kálal was one of the leading representatives of *Československá jednota* [the Czechoslovak Association] (Bakoš, 1996) and the *Luhačovice meetings*; he

initiated the first congress of *Friends of Slovakia* (Pedagogická encyklopédia Slovenska, 1984).

He had great organizational, rhetoric and literary skills. His numerous articles were published in both Czech and Slovak periodicals: *Učitel'ské listy*, *Posel z Budče*, *Česká škola*, *Komenský*, *Učitel'ské noviny*, *Pedagogické Rozhledy*, *Osvěta*, *Květy*, *Zlatá Praha*, *Dětské Květy*, *Noviny Malých*, *Malý Čtenář*, *Naše Doba*, *Nový Lid*, *Národné Noviny*, *Slovenské Listy*, *Slovenský Denník*, *Slovenský Východ*, *Česká Divka*, *Národní Listy*, *Moravská Orlice*, *Opavský Týdeník*, *Jiskra*, *Národní osvobození*, *Ruch*, *Ľudovýchovný Vestník*, *Slovenská škola*, *Sokolský Věstník*, *Hronské Noviny*, *Naše Orava*, *Vestník Detvana*, *České Slovo*, *Kostnické Jiskry*, *Husův Odkaz*, *Kritika*, etc. Particularly valuable are his articles published in the Slovak pedagogical journal *Dom a škola* (Zbaviteľ, 1929). This journal provided space for promotion of the idea of Czechoslovak reciprocity. Karel Kálal in the Czech lands and Karol Slava in Slovakia embarked together on a bloodless journey to Slovak freedom.

Karel Kálal authored several Slovakophile publications such as *Slovenské pohádky*, *Co si dva chlapci dopisovali*, *Na krásném Slovensku*, *Nevěsta z Tater*, *Obrázky z pod Tater*, *Z posledních let jařma*, *Slovensko a Slováci*, *Češi na Slovensku*, *Dejiny Slovenska*, *Jiný svět*, *Národné poviedky*, *Nové rozprávky*, *Obrazy z dějin Slovenska*, *Die Unterdrückung der Slovaken durch die Magyaren*, *Vyhubit!*, *Slovensko, země budoucnosti*, *Účinky lihových nápojů*, *O kouření*, *Omamování*, *Životní program*, *Na cestu životem*, *Dívka dospívající*, *Palackého mladá léta*, *Čtení o Fr. Palackém* etc. He co-authored *Slovník slovensko-český a česko-slovenský* [Slovak-Czech Dictionary] (Chlup, Kubálek, Uher, 1938). Other his books had informative character: *Slovenská vlastivěda* and *Přehled slovenských dějin*. A book entitled *Na krásném Slovensku* asks for a detailed study. Kálal penned over 40 publications about theory of education, didactics, and psychology of adolescents (Pedagogická encyklopédia Slovenska, 1984).

## 5.2 Alojz Zbaviteľ (1889 – 1977)

Kálal was a teacher and motivator of other Czech scholars passionate about Slovaks who were coming to Slovakia to teach. One of them was Alojz Zbaviteľ, a pioneer in popular education in Slovakia. He greatly contributed to the intensification of mutual Czech-Slovak relations. Zbaviteľ linked his educational activities with public enlightenment. He was a teacher and a school inspector, a chronicler, a museologist, an archivist, a founder of the Sokol movement and local enlightenment committees. He laid the theoretical foundations of popular education; he organized courses and congresses of popular educators. He worked in the Radio Košice and was a director of the first boarding popular education school (with a month stay). Zbaviteľ worked in Slovakia between 1919 and 1933, and his primary goal was to “slovakise” the Slovak population – i.e. to rid them of Magyarization, but not only in terms of a language, but especially in terms of nature and mentality (Plachý, Vojtek, 1969).

A spoken word (a lecture) and theatre came first in his hierarchy, only then came reading (a magazine or a book). He arrived in Slovakia as a skilful public speaker, but this did not satisfy him. Zbaviteľ constantly worked on his improvement and soon he became teaching speakers. He penned many articles on how to master the word and he published his own handbook for popular educators: *Uvedenie do rečníctva* [Introduction to Art of Public Speaking]. Zbaviteľ also organised rhetorical courses. He delivered 161 lectures for radio stations in Brno, Prague, Ostrava, and Košice.

Experience with cultural-enlightenment work and practical knowledge Zbaviteľ gained in organizing various activities, especially in the Slovak countryside, he transformed into a manual for popular educators, which he entitled *Ľudovou výchovou k zaisťovaniu slobody* [Popular education towards freedom] in which he stresses how important it is to know the

psychology of the people and the soul of the listener, when being a good speaker does not suffice. The publication addresses the need of popular education; Zbaviteľ specifies the tools of popular education and characterizes a popular educator. He also focuses on the psychology of the listener who is the recipient of popular education. On 149 pages, Zbaviteľ provides a very valuable insight into popular education and his handbook proved to be a source of information on almost every question related to popular education. Zbaviteľ thus provided a solid theoretical foundation for popular education.

In Slovakia, Zbaviteľ also managed Slovak amateur theatre in Modra. He translated Jirásek's play into Slovak, and the rehearsed with actors and even performed. The spoken word, however, was his number one priority. He never stopped emphasising how important it is to hear the spoken word, especially during his time in Košice where he was appointed a secretary of the district board, a head of the county enlightenment association and the general secretary of *Slovenská liga* [the Slovak League]. For students, he founded the Holuby's society for self-education at the Teacher's training college and the Hviezdoslav's society for self-education at the Land Development Vocational School.

He actively participated in discussions at the mayors' meetings in municipalities, where he eagerly encouraged them to organize cultural and public life there. He visited Barca, Beňakovce, Moldava, Buzinka, Poproč, Rudno, Čaňa, Haniska, Ždaňa, Chrastné, Šaca, Michalovce, Silvaš, Nižný Čaj, Buzice, Kráľovce, Nižný Tejkeš, Krompachy, Siplak, Košické Hámre, Košická Belá, Rákoš, Kokošov, Nové mesto pod Sal., Kalša, Prešov, Bardejov, Nižná Myšľa, Vyšný Olčvár, Zlatá Ida, Kysak, Kokošovce, Gelnica, Zlatá Baňa, etc.

Zbaviteľ organised courses for popular educators and librarians. In 1929, he organized a course of economics education in Spišská Nová Ves. In 1930, he participated in the Slovak congress of popular educators in Žilina, in working congress in Prešov and in 1931 at the course for librarians and popular educators in Košice. In the same year, he was appointed a director of the first boarding school in Spišská Nová Ves. In 1928 -29 he presided a “jubilee” committee joining all political organisations and associations for the common goal of popular education. In 1931, the Ministry of Education and National Enlightenment appointed Zbaviteľ the county's official of the state enlightenment service responsible for the administration units of district enlightenment boards in Dobšinej, Jelšava, Liptovský Mikuláš, Liptovský Hrádok, Kežmarok, Levoča, Poprad, Rožňava, Spišská Nová Ves, Stará Ľubovňa and Veľká Revúca (Plachý, Vojtek, 1969).

In 1932, Zbaviteľ published another handbook for popular educators with a title *Ľudová výchova na vidieku* [Popular Education in the Country] as a methodical recommendation for practical implementation of popular education. With regularity, Zbaviteľ addressed burning issues concerning popular education in articles in a monthly *Náš ľud – ľudovýchovný vestník pre Slovensko* [Our People – Bulletin of Popular Education in Slovakia] published between 1928/29 – 1937/38. Some of his articles are listed here: *O potrebe výchovy kultúrnych pracovníkov*, *Utuženie pomeru medzi Okresnými osvetovými zbormi a miestnymi osvetovými komisiami*, *Ekonomizácia síl ľudovýchovného pracovníka*, *K sedemdesiatke Karola Kálala*, *Reklama k ľudovej výchove*, *Tlač a ľudovýchovný pracovník*, *K podmienkam zdaru ľudovýchovnej práce*, *Služba na poli ľudovej výchovy službou národu a štátu*, *Do služieb ľudovýchovných najlepších ľudí!*, etc.

Zbaviteľ and other passionate Czech popular educators working in the Slovak Enlightenment Association introduced into the Slovak enlightenment movement some consistency and system. They developed methodology; spoke about education agents and tools, clarity and visualisation, chronological sequence and other principles of enlightenment work (Pasiar, Paška, 1964). For Zbaviteľ, popular education was a continuation of the nation's liberation process. Although he left Slovakia in 1933, he was

always remembered for his efforts and dedication to the field of popular education in Slovakia.

## 6 Conclusion

The organizational and legislative foundations of how we perceive enlightenment work today were built upon the foundations of a new state - the Czechoslovak Republic. The establishment of the common state of Czechs and Slovaks made it possible to adopt laws and decrees, which, for the first time in our history, governed the area of adult education and enabled the establishment of special educational institutions, training of professional educators and librarians and granted subsidies to cover the expenses of this domain. Thanks to them, adults became, for the first time, a specific target group of national educational activities and were given the opportunity to acquire elementary education about the state's mission and competences. After the establishment of Czechoslovakia, congresses of popular educators in Slovakia became an indispensable part of educational activities for adults, which provided a space for representatives of the Ministry, its Slovak Office, representatives of the district and municipal enlightenment boards, local enlightenment committees, librarians, representatives of other organizations, associations, and societies. Their discussions reflected current problems in legislation, organization, and personnel provision of cultural enlightenment work, as they reflected the development of adult education theory and enabled the confrontation with practice. The delegates always formulated their demands in a form of resolutions. They also included responses to socio-political events that affected the everyday life. In the interwar period, the increased attention was paid to the education of juvenile unemployed, who were negatively affected by the crisis. Women who had few opportunities to acquire education in the past suddenly became subjects of special interest in the field of education. This enabled saturation of their educational needs and increased their employability. In the early postwar years, a small number of Slovak teachers called for members of the intelligentsia from the Czech lands and Moravia, so that they could help launch the enlightenment movement in Slovakia. Among them were Karel Kálal and Alojz Zbaviteľ, who will always have a place in a history of enlightenment and popular education in Slovakia.

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Primary Paper Section: A

Secondary Paper Section: AB

## CHOSEN ASPECTS OF THE PARENTAL ROLE FROM THE POINT OF VIEW OF THREE GENERATIONS

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**Abstract:** Parental activity is an elementary assumption of the existence and continuity of the society. Parents are supposed to bring up their children in a correct way, to look after their nutrition, education, health and adequate opinion orientation. They are responsible for fulfilling of these social tasks. In the article we present our research aimed at examining the chosen aspects of the parental role and childlessness as its alternative from the point of view of three generations. In our research participated a chosen sample of respondents, consisting of representatives of three generations - students, parents and grandparents. The research results were processed by means of chosen statistical methods - methods of qualitative analysis. The research confirmed that opinions of respondents on the current parental role, i.e. its chosen aspects, statistically significantly depend on the fact which generational group they belong to - students, parents and grandparents.

**Keywords** *parental role, child, marriage, childlessness,  $\chi^2$  - test*

### Introduction

A parental role is an important part of the identity of adult people. This role is primarily a biologically-conditioned role and, at the same time, it is also mentally and socially significant because it represents a key change in the life of every person (Vágnerová, 2000; Knoester, Eggebeen, 2006; Kurincová, Turzák, 2018). Its impact on the people's personalities and their subjectively perceived happiness or life satisfaction is really evident (Hansen, 2011). Parenthood is a transformative experience imposing a unique mix of stress and rewards for those who enter (Nomaguchi, Milkie, 2003). The birth of a child is a major life course transition that requires a reshuffling of roles, routines, and schedules (Vágnerová, 2000; Umberson, Pudrovska, Reczek, 2010).

### 1 Parental role, its transformation and realization

The tradition of parenthood has its uninterrupted, continuous line. Despite this fact, there have occurred many qualitative changes in the character of parenthood. One of them is the altered motivation to parenthood. According to Dytrych (In Dunovský et al, 1999, p. 111), it was thought in the past that parenthood was guided by instincts and, therefore, the role of maintaining the lineage was very important in this perception. People believed that there existed almost omnipresent maternal instincts that influenced the woman in such a way that she felt an irrepressible desire or urge at certain age to enrich her life with the birth of a child. In the past, children were considered to be part of a natural process because they guaranteed the care about their retired parents, they were the heirs of the family property and they were also the working force (already at a relatively early age). However, these aims do not represent the motivational basis of the parenthood anymore. Nowadays, there is characteristic a transition from the economic points of view to the emotional ones. The importance of the child for the life satisfaction and happiness of parents is a subject of many studies (Hansen, 2011; Pollmann-Schult, 2014; Ruppanner, 2018). They all emphasize the psychological and emotional aspects of parenthood. According to Matějček (2017, p. 25), the worldwide tendency is oriented to the psychologization and emotionalization of the family relationships. This attitude supports the satisfying of personal psychological needs of adult people in their coexistence with children.

Changes have also occurred in the contents and performing of the parental role. The current society tends to equalize the roles of both parents gradually and they become mutually substitutable. Maternal and paternal roles have been influenced by the fact that many women do not consider the maternal role as the only role for them and they want to grow also professionally. In our society the roles of both genders have been

changing and for this reason many women want to shorten the time of performing the maternal role in favour of professional and other activities. Such an attitude has been typical mainly of men until very recently. Several years devoted to the motherhood have changed from the lifelong task into a significant but only short episode in the prolonging life. As a consequence of the changed maternal role, fathers have been taking over some traditional tasks which were reserved only for mothers before. Sociological researches confirmed that the function of a father has changed more significantly than the function of a mother during the last decades (e.g. Možný, 1990; Miller, 2011; Bosoni, 2014).

Family is the framework for performing the parental role. Demographic changes, occurring in our society after the year 1989, caused the pluralization of the forms of family where the parental role is carried on. We think about the increase of nonmarital cohabitation, single-parent families, as well as homosexual partnerships. Whereas in the past the majority of children was born into a married family, nowadays it has become a trend (mainly in the case of the first child) that the child is born to unmarried parents. According to Tydlitátová (2011), the number of children born outside the institution of marriage has been growing continually and incessantly in Slovakia after the year 1989. In the period shortly after the Velvet Revolution, the marker showed the value of less than 10%, in the year 1991 there were 19.7%, in 2009 the number has overpassed the level of 31% and the last data (Šprocha, Šídlo, 2018) state that the number of these children has already reached almost 40%. The consequence of these demographic changes in current families can be seen in the altered structure of families, i.e. the decreasing number of complete, two-parent families and the increasing number of single-parent families. Zartler (2014) says that the rise in single-parent families by way of increases in divorce and nonmarital childbearing has been one of the most strongly pronounced trends in family behaviour over the past decades. The fact that children are brought up just by one parent does not cause any deviation in their development. According to Kendig, Bianchi (2008) single mothers do not spend less time with their children than married mothers, but they have more problems in the economic and social areas (Neises, Grüneberg, 2005). "Parenthood is associated with higher levels of distress for the unmarried than the married" (Evenson, Simon, 2005), single mothers reporting worse mental and physical health outcomes for this group, compared to married mothers (Davies, Avison, McAlpine, 1997).

Parenthood brings in positive experience, but it is also a certain burden. For this reason, it does not have to be completely accepted. In certain circumstances adult people can postpone parenthood or they prefer childlessness. According to Umberson, Pudrovska, Reczek (2010), recent decades have witnessed a trend toward increased childlessness and delayed childbearing. This fact is confirmed by statistics, as well as by several authors (Vajda, Kósa, 2005; Matějček, 2017). According to them, despite relative well-being in the western cultures the number of born children has had a descending tendency in the last decades. Therefore, the postponing of parenthood to higher age (Mills et al., 2011) and the increase of (un)voluntary childlessness (Hašková, 2009; Beaujouan et al., 2017) have become very discussed topics in the current society. Mills et al. (2011) see the reason of postponed parenthood mainly in the growing educational level of women and their increasing participation at the labour market. According to Matějček (2017, p. 19), some people think that children will endanger their inner balance. However, the reasons do not have to be only negative ones, but also positive ones - not only egoism, but also responsibility. Hašková (2009) studied factors influencing the voluntary childlessness and she mentions the following factors as the most decisive ones: the level of education, type of education, type of occupation, concentration of young people in big cities and the family status. Another significant factor is the fact that there

increases the number of young people who do not have a stable partner at the age of 25 - 30 (the majority of their parents became parents at this age) and this shortens the period of starting a family at the age of the highest fertility.

## 2 Research of chosen aspects of parenthood and childlessness from the point of view of three generations

### 2.1 The project of the research

Current frequent forms of family life (nonmarital childbearing, single parents, homosexual partnerships) provoke many public as well as professional discussions about their impact on the performing of the parental role. Based on occurring changes in the family life mentioned above, we aimed at finding the opinions of the public on chosen aspects of parenthood in the current family from the point of view of three generations. We examined the parental role and we focused on three aspects: 1. „legalization“ of the child with the marriage of parents (parenthood and nonmarital family), 2. parenthood in the alternative type of a family, 3. childlessness.

*The aim* of the research was: 1. to obtain the opinions of the public on chosen aspects of parenthood and childlessness in the current family from the point of view of three generations, 2. to find out whether the age and belonging to a certain generational group determines the opinions of respondents on chosen aspects of parenthood and childlessness, i.e. to find out whether there exists a statistically significant difference in opinions of respondents on parenthood and childlessness from the aspect of three generations.

For the needs of our research we set the following research questions: 1. Is it necessary “to legalize the child” with the marriage of parents? Does the society require so that the child is born to married parents? 2. Are the traditional opinions on the upbringing of children still dominant? Does the society connect the upbringing and care about children mainly with the maternal role? 3. Are there more frequent negative or positive opinions of the public on the upbringing of children by single parents or parents of the same gender? 4. Is the voluntary childlessness evaluated negatively as an expression of egoism?

The research sample consisted of students of universities, their parents and grandparents from different regions of Slovakia. The total number of respondents was 333 and they were divided into three groups. The first group was formed by 132 students of universities, in the second group were 118 parents and the third group consisted of 83 grandparents. In the set there were represented respondents of both genders and all marital statuses, coming from villages and towns and having a different level of achieved education.

In order to obtain the research data we used a non-standardised questionnaire - the same for all three research sets. The questionnaire involved the Likert scale for measuring the attitudes and opinions of the respondents with the aim to specify their level of agreement or disagreement with the given statements on a 5 - degree scale: 1 - I totally agree, 2 - I rather agree, 3 - I cannot express myself, 4 - I rather disagree, 5 - I totally disagree.

Based on the results of our research, we found out that the opinions of respondents of the relevant generational groups differ from each other. The aim of the statistical analysis was to ascertain whether these differences are also statistically significant, i.e. whether the answers of the respondents of three groups to the particular statements are dependent on the belonging of the respondents to their age group (students, parents or grandparents). Therefore we tested the dependence of two nominal characters  $A, B$  where the character  $A$  - the status of the respondent - achieved three levels: a student, a parent or a grandparent and the character  $B$  - represented possible answers to the given statement.

In the statistical analysis of the obtained data there was used the  $\chi^2$  - test for verifying the independence of two qualitative characters  $A, B$ . We tested the zero hypothesis  $H_0$ : the characters  $A, B$  are independent versus the alternative hypothesis  $H_1$ : the characters  $A, B$  are dependent. The testing criterion is

the statistics  $\chi^2$  defined by the relation  $\chi^2 = \sum_{i=1}^k \sum_{j=1}^m \frac{(f_{ij} - o_{ij})^2}{o_{ij}}$ ,

where  $f_{ij}$  are empirical numbers and  $o_{ij}$  are forecast numbers.

We deny the tested hypothesis  $H_0$  at the level of significance  $\alpha$  if the level of the tested criterion  $\chi^2$  exceeds the critical level  $\chi^2_{\alpha}(r)$  (Markechová, Stehlíková, Tirpáková, 2011).

We performed the test by means of the programme STATISTICA. In the output set of the programme we obtained the contingent table, the value of the testing criterion  $\chi^2$  - test and the value of  $p$  meaning the probability of a mistake we make if we deny the tested hypothesis. If the calculated value of  $p$  is relatively small ( $p < 0,05$ , resp.  $p < 0,01$ ), we deny the tested hypothesis  $H_0$  about the independence of the observed characters  $A, B$  (at the level of significance 0,05 resp. 0,01). We will evaluate the test on the basis of the calculated  $p$ -values and, subsequently, we will present the results in the tables.

### 2.2 The analysis of the research results

Regarding the research aims mentioned above, in the analysis of the research data we verified by means of  $\chi^2$  - test whether the opinions of three groups of respondents about the given statements are significantly different. Therefore we tested the dependence of two nominal characters  $A, B$  where the character  $A$  - the status of respondents - achieved three levels: a student, a parent or a grandparent. The character  $B$  - answers to the statement - achieved five levels (1 - I totally agree, 2 - I rather agree, 3 - I cannot express myself, 4 - I rather disagree, 5 - I totally disagree).

*The first set of statements* (No 1 – 2) was focused on the topic of “legalization of the child” with the aim to find out how it is important for the respondents so that the parents get married before the birth of the child. We tested the statistical significance of differences in the opinions of respondents from particular groups on the following statements:

1. For the child it is not important whether the parents are married or not.
2. It is not important so that the parents get married before the birth of the child.

We tested the statistical significance of the differences in the answers of the respondents of three groups to the statements No

1 and No 2 by means of the  $\chi^2$  - test. The results are stated in the Table 1.

Table 1 Results of the  $\chi^2$  - test

Statement	$\chi^2$	$p$
No 1	10,554	0,228
No 2	52,446	0,000*

The values of probability  $p$  smaller than the stated level of significance  $\alpha = 0,05$  are marked with an asterisk \* in the Table 1. Based on the results mentioned in the Table 1, we can state that respondents of three groups answered to the statement No 2 statistically differently, but they answered to the statement No 1 without a statistical difference. When we were evaluating the statement No 1, there was not evident a statistically significant difference in the answers of respondents of three generational groups. We found out a rather reluctant or rejecting attitude in all three groups of respondents to the statement which

says that for the child it is not important whether the parents are married or not. The highest level of disagreement was expressed by grandparents (66%), followed by parents (58%). The lowest level of disagreement could be seen in the student group (48%). This disagreement of all three groups of respondents with the statement *"For the child it is not important whether the parents are married or not"* confirms the norm that requires so that the child is born to married parents. According to the opinions of the respondents, the marriage of parents represents an important matter for the child.

Based on the results obtained with the analysis of the answers to the statement No 2 *"It is not necessary so that the parents get married before the birth of the child"*, we can confirm different evaluations of this statement from the point of view of three observed generations. The highest level of disagreement with the statement No 2 was expressed by grandparents (74%: I totally disagree 29%, I rather disagree 45%) and by parents (59%: I totally disagree 19%, I rather disagree 40%), i.e. according to their opinion it is necessary so that the parents get married before the birth of their child. This condition of getting married was the least important for students who agree with the given statement (44%: 17% I totally agree, 27% I rather agree). According to students, it is not necessary to get married before the birth of the child. 44% of students, 36% of parents and 20% of grandparents agreed with this statement. The statistical analysis confirms that the mentioned differences in the answers of respondents are statistically significant, i.e. they are statistically significantly related to the fact which generational group the respondents belong to. Regarding to the mentioned results, we can assume that the generations of grandparents and parents have more traditional opinions on the legalization of the child with the marriage of the parents, compared to the generation of students.

The second set of statements (No 3 – 5) was focused on the gender aspects of parenthood and other types of family (single-parent family, homosexual family). Our aim was to find out whether there prevail traditional opinions on the upbringing of children, i.e. whether this task is connected primarily with the maternal role. We also wanted to obtain the opinions on the upbringing of children in different types of family. We tested the statistical significance of differences in the opinions of the respondents of particular groups about the following statements:

3. Women can care about children better than men.
4. Single parents are able to bring up children in the same way as the complete families.
5. The upbringing of children by partners of the same gender can be as good as the upbringing by parents of both genders.

Once again we tested the statistical significance of the differences in the opinions of three groups of respondents about the statements No 3 - 5 by means of the  $\chi^2$  - test (Table 2).

Table 2 Results of the  $\chi^2$  - test

Statement	$\chi^2$	p
No 3	50,257	0,000*
No 4	7,200	0,515
No 5	18,068	0,020*

Based on the results mentioned in the Table 2, we can state that respondents of three groups answered to the statements No 3 and No 5 with a statistically significant difference, but they answered to the statement No 4 without any statistical difference. In the evaluation of the statement No 3 *"Women can care about children better than men"* we found the highest level of agreement with this statement by grandparents (61%: I totally agree 43%, I rather agree 18%). From these results it is evident that the generation of grandparents has the most traditional opinions and they perceive the parental role primarily as the maternal role. Parents (45%) and students (27%) agreed to a lesser extent with the fact that women can care about children better than men. They connect the parental role with the mother, as well as with the father. At the same time, we can see that

students disagree with this opinion about better care about children provided by women than by men the most (41%: I totally disagree 11%, I rather disagree 30%). The opinions of students and parents witness about the weakening of the traditional conviction that the parental role is primarily a maternal role. Statistically significant differences were evident also in the evaluation of the statement No 5 about the upbringing of children by homosexual parents. The most rejecting attitude to the upbringing of children by homosexual parents could be seen in the group of grandparents. 72% of grandparents disagree with the opinion that the upbringing of children by these parents could be as good as the upbringing by parents of both genders (I totally disagree 48%, I rather disagree 24%). Comparing these three groups of respondents, students and their parents have a less rejecting attitude (55%, 55%) to the upbringing of children by homosexual partners, i.e. only a half of parents and students perceive the upbringing of children in this type of family negatively. A very interesting finding is the fact that relatively a big group of respondents (students 20%, parents 32%, grandparents 18%) could not express their attitude to this question. This is probably related to the lack of scientifically verified facts about the impact of the homosexuality of parents on the development and upbringing of children.

The statistical analysis of the answers to the statement No 4 did not show any statistically significance of differences between the groups. We found out ambivalent attitudes of respondents to the upbringing of children by a single parent. Comparing their opinions, we found out a similar level of agreement, as well as disagreement with the statement *"Single parents can bring up children in the same way as the complete families"*. 46% of students, 46% of parents and 47% of grandparents agreed with this statement. Disagreement was expressed by 40% of students, 37% of parents and 34% of grandparents. We can state that an explicitly rejecting (or accepting) attitude to the upbringing of children by a single parent was not expressed by any group of respondents.

The third set of statements (No 6 – 8) was focused on the topic of childlessness because the natality in Slovakia and in other European countries has a decreasing tendency. On one hand, there increases the number of infertile couples and, on the other hand, there increases also the number of those who have decided for the childlessness. For these reasons we wanted to obtain opinions of the public on the value of a child in their lives. We asked them if they perceive a child as one of their life aims and

how they evaluate voluntary childlessness. By means of the  $\chi^2$  - test we tested the statistical importance of differences between the three groups of respondents in their opinions about the following statements:

6. Who does not have a child, cannot live a happy life.
7. It is not correct if people do not have children as a meaning of life.
8. Voluntary childlessness is an expression of egoism, careerism and indolence.

The results are recorded in the Table 3.

Table 3 Results of the  $\chi^2$  - test

Statement	$\chi^2$	p
No.6	20,213	0,009*
No.7	28,622	0,000*
No.8	28,752	0,000*

From the results mentioned in the Table 3 it is evident that respondents of three generations have statistically different opinions on all statements related to childlessness we presented to them. The answers confirm a disagreement with the statement No 6 *"Who does not have a child, cannot live a happy life"*. All three groups of respondents expressed a similar level of disagreement with the given statement (students 58%, parents 46%, grandparents 50%), but they had a different level of agreement with this statement (students 14%, parents 33%, grandparents 30%). Parents and grandparents agree with this statement more than students, they attribute a bigger meaning to the child in the context of life happiness. Respondents perceived

the child as the main determinant of life happiness in a different way. They agreed with the statement *"It is not correct if people do not have children as a meaning of life"*. Parents agreed with this statement the most (67%: I totally agree 31%, I rather disagree 36%), then students (57%: I totally agree 30%, I rather agree 27%). The least level of agreement was expressed by grandparents (53%: I totally agree 33%, I rather agree 20%). Grandparents questioned the meaning of the child as the life aim the most.

We also found out differences in the opinions of respondents when we were evaluating the voluntary childlessness. Parents (46%) and grandparents (45%) agree to a greater extent with the statement No 8 *"Voluntary childlessness is an expression of egoism, careerism and indolence"*, i.e. they evaluate the voluntary childlessness more negatively than students who agreed with this statement the least (31%). At the same time, we can see that students disagree with the negative evaluation of voluntarily childless couples the most (49%), compared to parents (35%) and grandparents (36%). On one side, there is the acceptance of voluntary childlessness which is perceived as the right of option (more presented by students). On the other side, there is its criticising and negative evaluating categories such as egoism, indolence and careerism (expressed more by parents and grandparents).

### 3 Discussion and conclusions

In the presented study we aimed at the topic of the parental role and childlessness as its alternative. Parenthood is considered to be a natural, if not implied phase of marriage /partnership and it has a significant influence on the personalities of people, their thinking and emotional feelings, as well as on their interpersonal relationships. Moreover, people have a tendency to believe that parenthood is a synonym of meaningful and satisfying life. During the last decades we have witnessed many changes in the family life, e.g. increase of nonmarital cohabitations, single-parent families, homosexual partnerships. For this reason, we analysed opinions of respondents of three generations on childlessness and parenthood in these types of family. Our aim was to find out values and norms related to chosen aspects of the parental role.

Our research findings confirmed the following conclusions:

- acceptance of the norm about the "legalization" of the child with the marriage of parents, i.e. the norm to get married before the birth of the child,
- a decreasing preference of the mother as a more competent person in the care about children,
- an ambivalent attitude to single parents,
- a rejecting attitude to the parenthood of people of the same gender
- a weakening negative evaluation of the voluntary childlessness.

From our research findings it is evident the decreasing norm about the "legalization" of the child with the marriage of parents, i.e. there increases the acceptance of the nonmarital form of parenthood. We can mention that the generation of grandparents is inclined to the norm of upbringing children in a married family the most. However, the nonmarital form of parenthood is gradually becoming more accepted. This fact is certainly related to the fact that the stigma of a "child born out of a wedlock" is getting weaker or even lost in our society. We also found out the weakening preference of the mother as a more competent person in the care about children. From the opinions of students and parents it is evident that the traditional understanding of the parental role as primarily the maternal one is getting weaker. On the other hand, grandparents connect the upbringing and care about children primarily with the maternal role.

When we were examining parenthood in alternative types of family, we found out an ambivalent attitude of respondents of all three generations to the parenthood in a single-parent family. This fact corresponds with the opinion of Zartler (2014) who

thinks that although these families are accepted as a reality, moral undertones have not disappeared from public and scholarly discourses. Currently is more openly presented the topic of cohabitation of people of the same gender and their right on parenthood. McCann, Delmonte (2005, In Goldberg, Downing, Moyer, 2012) state that parenting can be viewed as a core human issue and the desire to parent as one that crosses the lines of sexual orientation. Our research findings confirm rejecting attitudes of the Slovak public to the legislation of relationships of people of the same gender. We can say that the older is the generation of respondents, the more rejecting attitude they have to the upbringing of children by people of the same gender. At the same time, the younger is the generation of respondents, the more liberal opinions they have on this topic. An increasing number of voluntarily childless people focuses the attention of researchers also on this change in the area of family life. Our research findings confirmed the fact that respondents did not agree with the negative evaluation of voluntarily childless people. This points out to the fact that the prejudice about the obligation of adult people to look after and bring up children, has already been overcome. The opinions of the public lead to the perception of parenthood as an option, not as an obligation. We can say that respondents do not perceive a child as the only source of life happiness, but they attribute a significant role to the child in the meaning of life. People who have decided to be voluntarily childless for any reason, are not negatively evaluated by the society.

We can conclude our study with the fact that our hypothesis, i.e. the assumption of a statistically significant difference in the opinions of respondents on chosen aspects of parenthood and childlessness according to their generational group, was confirmed. Statistically significant differences were evident mainly between the generation of grandparents when they were compared to the generation of parents and students whose opinions were more liberal. We can suppose that opinions of respondents depended on the fact if they already perform the parental role. We agree with Kurincová, Turzáková, Turzák (2018) who think that the ability for parenting does not come automatically when one gives birth to a child. It's a long and difficult way to become a parent, to become a mother or a father.

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**Primary Paper Section: A**

**Secondary Paper Section: AO**

## APPROACHES AND RELATIONSHIP TO HEALTH AND HEALTHY LIFESTYLE OF UNIVERSITY FEMALE STUDENTS

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**Abstract:** In their contribution, the authors describe the issue of health and healthy lifestyle of university female students of the Faculty of Education of Comenius University in Bratislava, who study in the study program - pre-school and elementary pedagogy. The aim of the article is to describe and interpret, according to the questionnaire consisting of 29 questions, the answers of 101 female students of bachelor's and master's study concerning their attitudes towards health and realization of healthy lifestyle as part of their overall mental hygiene. Based on the questionnaire evaluation by the percentage-frequency analysis and the results obtained from testing the 10 hypotheses using the Chi-squared test, we can conclude that our college students in their value perception tend to have a positive relationship to health and try to respect the basic attributes of a healthy lifestyle. Most of the students are aware of their reserves in this area and therefore they want to improve their eating habits, drinking regime, using their free time and they want to be more active in the means of regeneration and relaxation from fatigue and stress, by increasing the number of hours in several of their leisure activities.

**Keywords:** health, healthy lifestyle, university female students, rational nutrition, relaxation, physical activity.

### 1 Introduction

Part of a healthy lifestyle of every individual is, in addition to appropriate exercise, also healthy rational nutrition with plenty of drinking regime and proper mental hygiene. Eating habits is undoubtedly a habit that most affects people's health. The habit of eating is constantly repeated throughout a person's life. According to some authors, up to 90% of all diseases, when not considering infectious diseases and injuries, are related to diet.

On the contrary, according to Pamplon-Roger (1996), nourishment does not depend on the voluntary nature of the individual, and it is completely involuntary. It includes all the processes and transformations by which food in the organism passes through to its complete transformation. Under normal conditions, if there is no pathological process in the body, good nutrition is reflected in good nutritional status.

The issue of rational nutrition, adherence to the drinking regime and mental hygiene has been given great attention in recent years, also because of that many diseases nowadays arise as a result of unnatural and unsuitable food, non-compliance with the drinking regime and also failure to comply with the basic rules of mental hygiene. We meet with this in the works of many authors for example Carper (1998), Sullivan (2002), Horáková (2009), (Piťha-Poledne (2009), Grotto (2009) and others. According to Gregor (2007) we still meet lots of people who do not want to admit that these health problems may also be related to the non-compliance with these basic rules of a healthy lifestyle.

Many people often do not have time to eat, and when they find it, they usually eat fast food and they do not realize what negative consequences this diet can have on the body, which is mostly rich in fat and cholesterol. If we realize that many children and students have also this eating habits, this issue is still current. Sports nutrition was mainly addressed by authors: Clarková (2000), Kalečík (2000), Konopka (2004), Fořt (2005), Žák (2005) and others. In the application of rational nutrition, the knowledge of Clark (2000) is very important, with emphasis on natural nutrition, where fruits and vegetables contain 70-85% of water and should be the major, ideal food.

And we must not forget that for every individual, in addition to rational nutrition, it is extremely important to maintain adequate physical activity. With the exercises as part of a healthy lifestyle, we meet in the work of several authors, for example Kalečík (2000), Škovierová (2000), Murgová (2001), Novotná-Merica

(2007), Dahlke (2008), Hřčka et al (2011), Merica (2012), and others. In particular, these authors emphasize the need for recreational, but regular exercise, as the inevitable need of each individual.

### 2 Methodology

*The aim* of this work was to find out attitudes and relationship to health and healthy lifestyle of university female students of bachelor and master studies at the Faculty of Education of Comenius University in Bratislava, who study in the study program - pre-school and elementary education.

*Tasks.* Based on our goal, we set out the following tasks: choose university in Bratislava for solving our issue, compile a questionnaire with 29 questions and, based on this, gain knowledge about a healthy lifestyle of the students. The results obtained are statistically processed and evaluated on the basis of percent-frequency analysis and Chi-squared test. In educational research, the application of Chi-squared test can be found e.g. in the authors (Barot, T., Krpec, R. 2018, 2019).

*Hypotheses.* Based on the goal and tasks of the work we built 10 hypotheses, which we approach in the results of this work.

*Methods.* Quantitative Analysis Applied on Achieved Results of Observed Students. In the quantitative research, results of questionnaires achieved from observed students were analyzed using statistical methods of the mathematical induction. 46 samples of a bachelor studies and 55 samples of master degree studies were appeared in this observed population file. The population included students which belong to Faculty of Education at Comenius University in Bratislava.

### 3 Results and discussion

Following particular statistical hypotheses 1H – 10H were considered in the form of zero and alternative hypotheses:

1H0: There are not statistically significant dependences of an assessment of a current healthy state on a type of a study (bachelor or master degree).

1H1: There are statistically significant dependences of an assessment of a current healthy state on a type of a study (bachelor or master degree).

2H0: There are not statistically significant dependences of a frequency of eating food on a type of a study (bachelor or master degree).

2H1: There are statistically significant dependences of a frequency of eating food on a type of a study (bachelor or master degree).

3H0: There are not statistically significant dependences of a frequency of eating fruits and vegetables on a type of a study (bachelor or master degree).

3H1: There are statistically significant dependences of a frequency of eating fruits and vegetables on a type of a study (bachelor or master degree).

4H0: There are not statistically significant dependences of monitoring the caloric value of eating foods on a type of a study (bachelor or master degree).

4H1: There are statistically significant dependences of monitoring the caloric value of eating foods on a type of a study (bachelor or master degree).

5H0: There are not statistically significant dependences of a frequency of drinking alcohol on a type of a study (bachelor or master degree).

5H1: There are statistically significant dependences of a frequency of drinking alcohol on a type of a study (bachelor or master degree).

6H0: There are not statistically significant dependences of a form of spending free-time on a type of a study (bachelor or master degree).

6H1: There are statistically significant dependences of a form of spending free-time on a type of a study (bachelor or master degree).

7H0: There are not statistically significant dependences of a frequency of smoking cigarettes on a type of a study (bachelor or master degree).

7H1: There are statistically significant dependences of a frequency of smoking cigarettes on a type of a study (bachelor or master degree).

8H0: There are not statistically significant dependences of an appearance of experiences with drugs on a type of a study (bachelor or master degree).

8H1: There are statistically significant dependences of an appearance of experiences with drugs on a type of a study (bachelor or master degree).

9H0: There are not statistically significant dependences of an appearance of physical activities in a life style on a type of a study (bachelor or master degree).

9H1: There are statistically significant dependences of an appearance of physical activities in a life style on a type of a study (bachelor or master degree).

10H0: There are not statistically significant dependences of using regenerative or relaxing possibilities against stress or tiredness on a type of a study (bachelor or master degree).

10H1: There are not statistically significant dependences of using regenerative or relaxing possibilities against stress or tiredness on a type of a study (bachelor or master degree).

As can be seen in Table 1, the statistically significant dependences between pairs of categorical statistical variables are assigned to a particular hypothesis. In this table, numbers of questions are declared.

Table 1 Description of Pairs of Statistical Categorical Variables for Purposes of Testing Hypotheses

Hypothesis	1 <sup>st</sup> Categorical Variable	2 <sup>nd</sup> Categorical Variable
1H	Question 3	Bachelor or Master Degree
2H	Question 5	Bachelor or Master Degree
3H	Question 7	Bachelor or Master Degree
4H	Question 14	Bachelor or Master Degree
5H	Question 17	Bachelor or Master Degree
6H	Question 18	Bachelor or Master Degree
7H	Question 21	Bachelor or Master Degree
8H	Question 22	Bachelor or Master Degree
9H	Question 24	Bachelor or Master Degree
10H	Question 26	Bachelor or Master Degree

With respect to categorical type of observed statistical variables, statistical method Chi-squared test were applied in the frame of testing hypothesis 1H – 10H. As value 0.05, a significance level  $\alpha$  was considered for purposes of an educational quantitative research. According to achieved p-values in PAST Statistics (Hammer, et al., 2001), conclusions of testing hypotheses can be seen in Table 2.

Table 2 Testing Hypotheses Using Chi-Squared Test

Hypothesis	p-value	Conclusion
1H	$0.05509 > \alpha$	1H <sub>0</sub> is failed to reject.
2H	$0.57472 > \alpha$	2H <sub>0</sub> is failed to reject.
3H	$0.16288 > \alpha$	3H <sub>0</sub> is failed to reject.
4H	$0.04905 < \alpha$	4H <sub>0</sub> is rejected in favor of 4H <sub>1</sub>
5H	$0.96231 > \alpha$	5H <sub>0</sub> is failed to reject.
6H	$0.72137 > \alpha$	6H <sub>0</sub> is failed to reject.

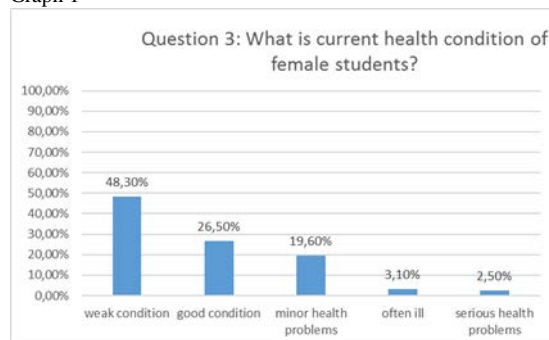
7H	$0.79816 > \alpha$	7H <sub>0</sub> is failed to reject.
8H	$0.66813 > \alpha$	8H <sub>0</sub> is failed to reject.
9H	$0.28904 > \alpha$	9H <sub>0</sub> is failed to reject.
10H	$0.61030 > \alpha$	10H <sub>0</sub> is failed to reject.

Due to achieved results of testing hypotheses, only 2H indicated an existence of statistically significant dependences on the significance level 0.05. In other cases, there were not confirmed existences of statistically significant dependences on the significance level 0.05.

Furthermore, we will present some of the results from the questionnaire, based on percent-frequency analysis and on the basis of the assessment in the form of zero alternative hypotheses of the Chi-squared test with simultaneous opinion on the ten hypotheses (1 H, 2 H, 3 H, 4 H, 5 H, 6 H, 7 H, 8 H, 9 H, 10 H). To these hypotheses, some selected questions from the questionnaire are included in the text, which contained 29 questions in total.

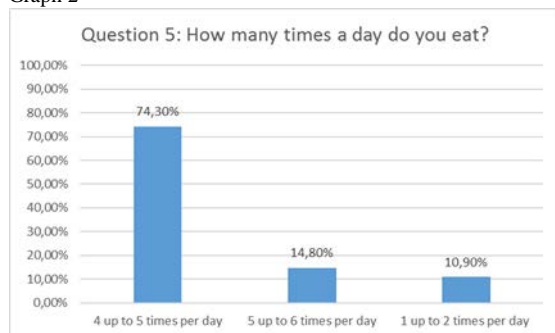
1 H (Question 3: How do you evaluate your current health condition?). We found out that when evaluating their current health condition, most students find themselves healthy, but 48.3% feel healthy, but they are aware of their weaker condition. Another 26.5% of students feel healthy with good condition. 19.6% of female students have minor health problems, 3.1% of female students are often sick and only 2.5% of female students have serious health problems (Graph 1). Based on the assessment in the form of zero and alternative Chi-squared test hypotheses we note that there are no statistically significant dependencies in the assessment of their health status among bachelor and master students in the form of a zero hypothesis, but there are statistically significant dependencies in the assessment as an alternative hypothesis.

Graph 1



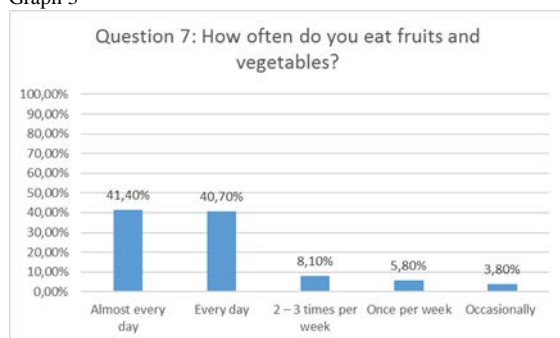
2 H (Question 5: How many times a day do you eat?) We found out that female students eat mostly 4 to 5 times a day (74.3%), followed by female students who eat 5 to 6 times a day (14.8%) and 10.9% of female students eat 1-2 times a day. The research indicated that nearly half of the students cook by themselves from the food they brought from home and bought in the store (Graph 2). At the same time, we note that there are no statistically significant addictions at frequencies of eating among bachelor and master students in the form of a zero hypothesis, but there are statistically significant dependencies on the significance level of 0.05 when assessed as an alternative hypothesis.

Graph 2



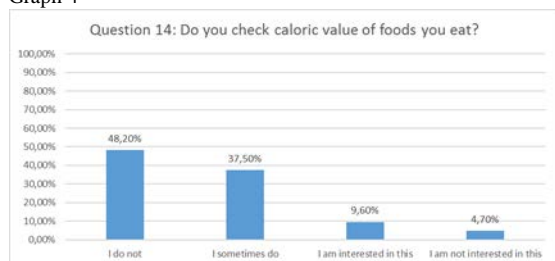
3 H (Question 7: How often do you eat fruit and vegetables?). We discovered that in the largest percentage (41.4%) there are students who eat fruit and vegetables often, almost every day. They are followed by female students who eat fruit and vegetables every day (40.7%), followed by female students who eat fruit and vegetables 2-3 times a week (8.1%), once a week (5.8%) and occasionally (3.8%) – (Graph 3). At the same time, we note that there are no statistically significant dependencies in the frequency of fruit and vegetable consumption among bachelor and master students in the form of a null hypothesis, but there are statistically significant dependencies in the assessment as an alternative hypothesis.

Graph 3



4 H (Question 14: Do you check the caloric value of the foods you eat?). We found that most students (48.2%) do not check the caloric value of the foods they eat, and sometimes it is checked by 37.5% of the students. 9.6% of female students are interested in this information and 4.7% of female students are not interested (Graph 4). At the same time, we observe that there are no statistically significant dependencies in the observation of the caloric value of food consumption among bachelor and master students in the form of a zero hypothesis, but there are statistically significant dependencies in the assessment as an alternative hypothesis.

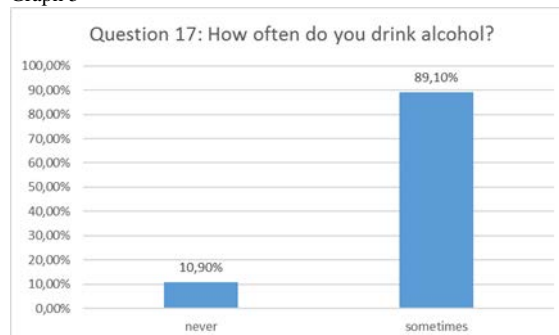
Graph 4



5 H (Question 17: How often do you drink alcohol?). We found that 10.9% of students have never consumed alcohol and 89.1% of students drink only occasionally, for example while meeting with friends, celebrating, at disco, after exam or while having fun (Graph 5). At the same time, we note that there is no statistically significant dependence on the frequency of alcohol consumption among bachelor and master students in the form of

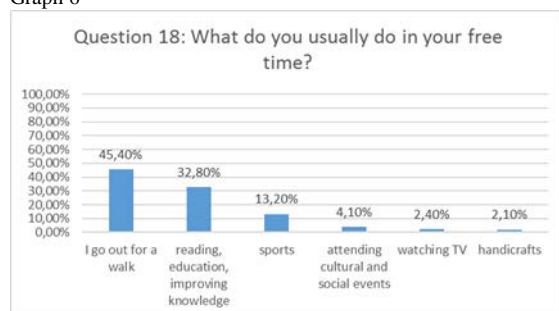
a zero hypothesis, but there are statistically significant dependencies when assessed as an alternative hypothesis.

Graph 5



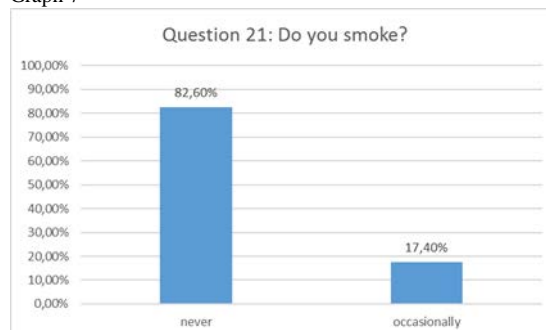
6 H (Question 18: What do you usually do in your free time?). We found that the majority of students spend their free time in nature (45.4%) and that 32.8% of them read, educate and increase their professional knowledge. Other 13.2% female students are doing sports, others are attending cultural and social events (4.1%), then watching television programs (2.4%), doing handicrafts (2.1%) – (Graph 6). At the same time, we note that there are no statistically significant dependencies in the forms of spending free time among bachelor and master students in the form of a zero hypothesis, but there are statistically significant dependencies in the assessment as an alternative hypothesis.

Graph 6



7 H (Question 21: Do you smoke?). We found that the most female students do not smoke at all (82.6%) and other female students smoke occasionally (17.4%) – (Graph 7). At the same time, we note that there are statistically significant dependencies in the frequency of smoking among bachelor and master students in the form of a null hypothesis, but there are no statistically significant dependencies in the assessment as an alternative hypothesis.

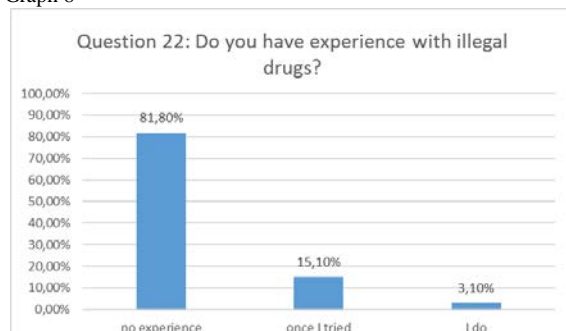
Graph 7



8 H (Question 22: Do you have personal experience with illegal drugs?). We found that most female students have no experience with illegal drugs (81.8%), but 15.1% of female students tried it once and nothing more. The remaining 3.1% of students have personal drug experience (Graph 8). At the same time, we note that there are statistically significant addictions in the case of the

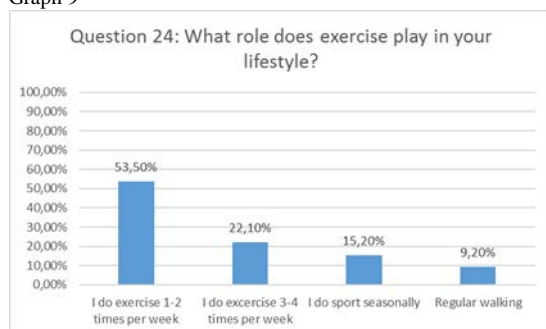
drugs experience among bachelor and master students in the form of a null hypothesis, but there are no statistically significant dependencies in the assessment as an alternative hypothesis.

Graph 8



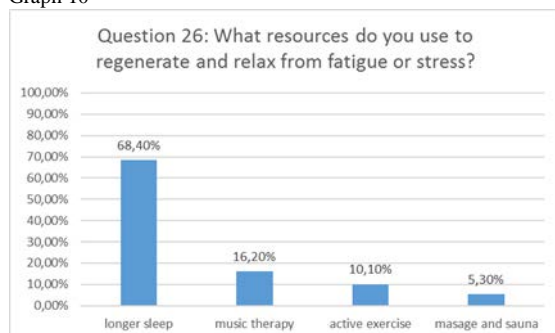
9 H (Question 24: What role does exercise play in your lifestyle?) We found that most students (53.5%) do exercise 1-2 times a week, other students do sports 3-4 times a week (22.1%). Female students who only sport seasonally are represented by 15.2% and female students who do not do sports, but try to keep fit at least by regular walking by 9.2% (Graph 9). At the same time, we note that there are no statistically significant dependencies in the occurrence of physical activity among bachelor and master students in the form of a null hypothesis, but there are statistically significant dependencies in the assessment as an alternative hypothesis.

Graph 9



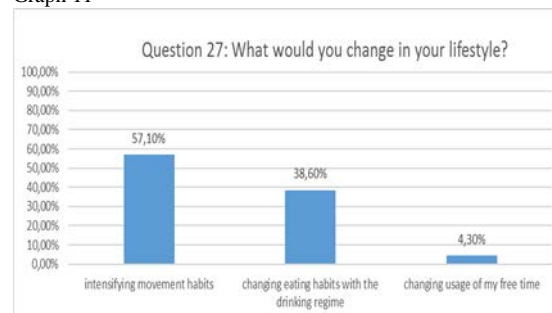
10 H (Question 26: What resources do you use to regenerate and relax from fatigue or stress?). We found that the majority of students (68.4%) use longer sleep to regenerate, other students use music therapy (16.2%), other students use an active form of exercise (10.1%). 5.3% of students go for massage and sauna for regeneration (Graph 10). Based on the assessment in the form of zero and alternative hypotheses of the Chi-squared test, we state that there are no statistically significant dependencies in the occurrence of physical activity among bachelor and master students in the form of a zero hypothesis, and there are no statistically significant dependencies in the assessment as an alternative hypothesis.

Graph 10



An interesting finding among the studied students was the answer to Question 27: What would they change in their lifestyles? We found that most students (57.1%) would like to change (intensify) their physical habits, other students (38.6%) would like to change their eating habits along with the drinking regime and 4.3% would like to change their use of free time. More than 39% of the students work along the study because they want to have better life and at the same time they want to help their parents (Graph 11).

Graph 11



A positive finding among the female students of our group was that most female students do not consume sweets and drink clean water from beverages. However, most female students are still aware of their reserves of healthy lifestyle issue and therefore they want to improve their eating habits, drinking regimes, using their leisure time and they want to be more active in devoting themselves to the means of regeneration and relaxation from fatigue and stress by increasing the number of hours in several of their leisure time physical activities.

#### 4 Conclusion

In our contribution we tried to clarify the issue of health and realization of healthy lifestyle of University female students at the Faculty of Education of Comenius University in Bratislava, who study in the study program - pre-school and elementary education. On the sample of 101 students, we also surveyed their drinking regime and overall mental hygiene as part of a healthy lifestyle in the form of a questionnaire consisting of 29 questions. Based on the results of testing the 10 hypotheses using the Chi-squared test and the percent-frequency analysis, we can conclude that our University students in their value perception tend to have a positive relationship to health and try to respect the basic attributes of a healthy lifestyle. Among the bachelor and master students in the results of the second hypothesis regarding the frequency of food consumption, we find the existence of a statistically significant dependence on the significance level of 0.05. Most of the students are aware of their reserves of healthy lifestyle and therefore they want to improve their eating habits, drinking regime, using their free time and they want to be more active in the means of regeneration and relaxation from fatigue and stress by increasing the number of hours in several of their leisure activities.

Their desire is to maintain good health during their studies as well as in their next working life. A positive finding among the students was that most female students did not consume sweets and prefer pure water to drink.

This topic as it is elaborated opens possibilities further to qualitative research (e.g. Severini, Kostrub, 2018; Kostrub, 2016).

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**Primary Paper Section: A**

**Secondary Paper Section: AK**

# THE RELATIONSHIP OF TRUST AND COMMUNICATION IN ADOLESCENTS TOWARDS PARENTS IN A POST-DIVORCE FAMILY ARRANGEMENT

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**Abstract:** The study examines the relationship of trust and communication in adolescents and their parents in divorced families. Attention is focused on the comparison of these factors in families with sole and shared custody. The research sample consisted of (N = 76, sole custody N = 48, joint custody N = 28, AM = 11.5). In order to find out the openness in communication (Hargasová, Kollárik, 1986), emotional attachment to parents (Armsden, Greenberg, 1987). Administration and anamnestic data were obtained in counseling-psychological centers with the full consent of parents. In shared care there is a positive, truthful and open relationship towards both parents.

**Key words:** early adolescence, trust, communication, openness, guardianship

## 1 Introduction

The issue of the current family arrangement includes many interpretative possibilities in relation to current behavior of the population - the partnership and family cohabitation, and the formation of family relationships (Mičková, 2015a, 2015b; Ondrejko, Majerčíková, 2006). All aspects of present family life have undergone, for a long time, major changes which resulted in historical, economic and political change. One of the types of present families is an incomplete family lacking one parent, and children living with another parent. The reason for parental absence varies. Our study concentrates on an incomplete family due to divorce. In such families there is disruption and disharmony which can negatively interfere with the formation of a child's personality. There are studies that confirm problems in children after divorce, but there are also opposite studies that highlight the ability to manage problems. Research studies point to the relationship between the quality of the family environment and physical and mental health (Mirowsky, 1996; Shaw, Krause, 2004; Vaananen, et. al. 2005). However, all studies agree that the parent-child subsystem is based on mother-child and father-child bonding. This subsystem determines other subsystems (Matoušek, 2003). The atmosphere in divorced family is characterized by handling specific situations based on their degree of disruption. The most common disruption is an absence of mutual respect between parents and disturbed communications, which results in negative external behaviour (Pavlát, Šusta, 2008; Bernardelli, 2011; Mičková, 2015b,c). Problems are also found in different family formats, because they form part of everyday life, but the problems in a divorced family are specific. For example; in nurturing care, development of emotional ties with parents, and communication problems. One of the major factors of emotional existence is the parent-child interaction and the level of emotional attachment that keeps developing, and later creates trust between parent and child. Creating intimate relationships is an important aspect of openness in family communication. The breakdown of marriage brings different aspects into the family system (Krýslová, 2000; Armsden, Greenberg, 1987; Simon, 2002; Pavlát, 2012).

A significant difference in post-divorce family is usually the absence of one parent. Limited contact with one parent brings different approaches in communication development (Špaňhelová, 2009). According to Mičková (2016), family issues represent an enormous number of aspects that cannot be analyzed at the same time. Focusing on specific issues in the family makes it possible to search, discuss and find interrelationships in specific areas of a families system. Using this approach, as stated by König (and in that case), it is possible to analyze what a current family actually is. Part of every families system is a dimension that shapes the quality of life as well as the dimension of emotional thriving. The focus of the study is

the perception of trust in adolescents, and their communication with parents in a post-divorce family arrangement.

## 2 Characteristics of the Problems

The divorced family arrangement brings other types of conflict. Family members are emotionally attached to each other, and these emotions may be the cause of destructive relationships between parents, but also between parents and adolescents. Parents focus on their own rules, they ignore the demands of the other parent, which may be another reason for disruption in relationships and communication (Sturge-Apple, et. al. 2010).

Such a family environment may cause a problem in the spontaneous expression of emotions (Wilmot, Hocker, 2004) and open communication (Bernardelli 2011, Micková, 2016). One of the reasons for communication interference is existing conflicts between parents. Aspects of family crisis constitute a set of stimulants involved in creating integrity. These dynamic stimulants are linked to the ability to communicate as well as an ability to trust (Erikson, 2002; Bowlby 2012 ai.). The dynamics of a family environment are also associated with the natural overcoming of family crisis, however a post-divorce family environment shows evidence that crisis situations in a family have not been resolved. The divorce settlement brings changes that affect emotional, economical and legal areas of the family (Matoušek, 1997). Solving post-divorce situations brings a personal burden to all family members. From a Psychological point of view, it can be seen as an ability to cope with change in a new family situation. One of the major changes involves the post-divorce parenting process. In relation to adolescence, it is important to master the parental role as well as the role of being a friend. This role includes the ability to accept the adolescent's needs and thus to create space for the other parent to continuously fulfill parental tasks which are in an adolescent's interest. It is important to accept and respect the needs of the adolescent as well as accept the second parent; this creates space for the formation of parental agreements, based on the ability of both parents to cooperate in the joint plan for rearing their children. More often, however, parents battle over childcare, and are trying to exclude the other parent from the child's upbringing. Such effort in parental behavior results in escalating disputes between them (Micková, 2014). The adjustment of parental rights and obligations is implemented through a court's decision. However, with the change in current male and female family roles, the view of post-divorce care also changes. The traditional sole custody model of care is no longer the only option in post-divorce existence. Sole care is based on beliefs that a child is based in one place which should ensure stability and certainty. Legal and physical education is entrusted to one parent while the other parent is only provided with visiting arrangements. The other parent has the right to visit a child, as well as an obligation to participate in his or her quality of life by fulfilling his or her maintenance costs. For a fulfilling relationship with both parents, it is desirable to create a parental agreement that eliminates conflicts between parents and creates space for the spontaneous interaction with both parents. Another form of childcare is shared custody in separate households.

The benefit of shared custody is that it creates more options than sole custody (Warshak, 1996). Nowadays, shared custody is preferred because the role of both mother and father can be greatly enhanced. The important condition of this form of childcare is the willingness and ability of both parents to communicate about everything related to a child's upbringing. Support for this model is found in the changing roles of both men and women, and not only on the social level. As stated by Potančok (2010), the status of men and women has changed significantly toward the end of the 20th century. This change is noticeable in the ever-changing role of a mother and father in a family environment. The father's family role has changed more than a mother's over the past decade. Although women are now

more career oriented than ever before, their role in childcare has not changed much. Fathers, however, are more involved in their children's upbringing than they were a few decades ago. A fathers' role as a child's mentor is growing, thus he contributes significantly to a child's psychological development (Potančok, 2010). Therefore, both parents help to develop an interactive relationship, trust and also communication. The importance of both parents, for example, can be found in (Novák, 2012). Regardless of allocated custody, a positive emotional attachment toward both parents is vitally important (Wilkinson, Walford, 2001; Walton, 2008; Vojtová, 2012). The absence of one parent brings different routes to build trust and communication (Špaňhelová, 2009). However, it suggests that conflicts usually continue in many divorced families, posing an increased risk for problems in developing interactive relationships, managing personality problems and emotional crisis resulting in problematic children. This is considered one of the most critical periods is adolescence (Carr - Greg, 2010, 2012). According to Macek (2003), this period is considered a period of transcendence from childhood to adulthood. It is characterized by significant changes in the biological and social spheres of life. In particular, the timing of this period varies from one author to another (see Langmeier, Krejčířová, 2006; Vágnerová, 2008). The study builds on the definition of adolescence by Macek (2003), which defines early adolescence (10-13 years), middle (14-16 years) and late adolescence (17-20 years). Early adolescence, which this study concentrates on, is characterized by the dominance of pubertal changes, searching for new relationships within their environment, and the formation of their own opinions. Significant change in social relationships is the decline of rivalry among boys and girls and an increased interest in the opposite sex. Behavior in early adolescence is characterized by negativism and rebelliousness. In terms of emotions in this period, according to Mičková (2015a,b) a typical increase in frustration is normal. Carr-Greg (2012) calls this concept as 'intensifying feelings'. According to Macek (2003), it is necessary to see this new identity of the adolescent alongside the family which he or she lives in. While the adolescent still lives with his parents, his identity is tied with the family and the problems often focus on direct and indirect conflicts with parents. Emotional experiences are becoming more intense, which is one of the determinants in forming an adolescent's identity. Identity searching is a dynamic process (Mazur, 1993; Fadjuoff, et. al. (2016). Relationships with parents can be defined as one of the most important factors in shaping the identity of an adolescent (Selecká, Václavíková, 2017). Regular conflicts between parents can interfere with adolescent emotions. This conflicting behavior may be one of the reasons for losing a normal emotional spectrum toward parents. According to Majerčík (2011), broken relationships between parents may be involved in forming negative behavioral patterns. This can result in the weakening of authenticity, and congruence in relations with parents.

The authors of many research articles agree that in order for a person to function fully, they need to satisfy not only materialistic, but also specific competences (Démuthová, Balcerčíková, 2012), but also emotional needs (Prekopová, 2001; Shaw, Krause, 2004; Niedenthal, Krauth - Gruger, Ric, 2006). The authors further affirm that mutual touching, hugging, and physical contact is a confidence-building factor.

Parental support develops trust which then enhances the communication. The trust can be seen from several points of view. As an attribute (Křivohlavý, 1993), personality (Ryff, Keyes, 1995) psychic state and emotional bond (Erikson, 2002). The study examines confidence in the context of emotional attachment to parents. Relationship of trust and family ties can be found on multiple levels. At the hormonal level, oxytocin is considered to be a predictor of a secure emotional bond, has a connection to trust, and it is considered to be a significant factor in confidence – building (Raby, et. al. 2013). At the emotional level, the important factor is how adolescents perceive a relationship between their parents, openness in communication or space for expressing feelings and opinions, and their acceptance of it. According to Matoušek (2003), trust is an

important factor of expressivity (feelings expression). However, expression of feelings to parents is more complicated in post-divorce arrangements. One of the important criteria of post-divorce child-parent communication is an adolescent's perception of the relationship between parents. Imbalance and vulnerability are typical for early adolescents and may be reflected in open communication with parents. Parental relationships are also affected by the effort to get a child into childcare, and are usually reflected in damaging communication between them. Another form of parental behavior is concealment of emotions in front of their children (Satirová, 2006; Matějček, Dytrych, 2002; Severson, et.al. 1993). Such behavior potentially carries a negative change in an adolescent's behavior toward parents. One of the changes may be inconsistency due to disruption of these relationships. Incongruence is considered by Satir (2006) to be a frequent consequence of distressing relationships in divorced families. It can be said that the image of non-congenial behavior is an obstacle in the adolescent and parental communication, which can result in limited communication between adolescents and their parents, and an unwillingness to express their emotions and feelings. According to Hoppeau, Krabel (2001) in disturbed relationships, the conversation is problematic and at the same time it causes a communicational barrier. The authors believe that the most common barriers are the inability to concentrate, agility, malignancy, irritability, and lack of interest. Bakalář (2006) states that parental conflicts and attempts to bring the child on their side can lead to an uncompromising dismissal of the other parent. These conflicts can contribute to a parents' ability to reach an agreement. Trélaun (2005) in this context, points out the importance of the defeat situation, the essence of which is the acceptance of the current situation. Another useful form in trying to assert the role of a parent is the ability to form a settlement. This way of communication helps parents to partially or fully fulfill their own goals, but most importantly the needs of their child. The quality of relationships with the parent who has custody of a child is reflected in their psychological wellbeing, or psychological discomfort. Research on post-divorce childcare brings different findings. Uhláriková (2010) found that the highest life satisfaction is in adolescents living only with their mothers. Uhláriková (2010) found more dissatisfaction in adolescents who only live with one parent, found in his research, that greater support from family members leads to satisfaction. Sejšová (2008) found no difference in satisfaction among teenagers from full and incomplete families. Another research (King, 2002) confirms that the quality of the parent-child relationship is reflected in trust and positively influences interpersonal trust. Parents are often contradicting in their speeches; the adolescent seeks to avoid suffering or guilt and by doing so he or she usually hides their wishes and needs. Adolescents can also perceive their parents' lack of trust between each other, exaggerated emotional responses, and experience anger while experiencing positive emotions with a second parent, and so on. For these reasons, adolescents can interpret those parental emotional signals as problematic. Post-divorce family arrangements and perceptions of parental relationships can create a barrier in spontaneous expressions, expressing feelings, and restricted communication with parents (Kmeťová, 2006). Finding out that parents are not 'perfect' can lead adolescents to be more critical and reject and question parental views, which may then be reflected in communication with parents (Keating, 1990; Repková, 1996).

### 3 Goal

The aim was to find out the relationship between the level of trust and openness in communication between two parents (especially the mother and father). The aim was to compare the relationship of trust and communication in a post-divorce environment. Another goal was to find out the link between trust and open communication during the early adolescence period, in relation to friends.

### 4 The research sample

The survey sample consisted of 76 adolescents. (Sole Care N =

48, Shared Care N = 28, AM = 11, 5 Years). Sole care involved only the mother, and shared care involved joint care of both parents (agreed joint care). The duration of the sampling period of post-divorce living was 2 years.

## 5 Methods

Trust was tested by a questionnaire for measuring the style of emotional attachment to parents and peers; IPPA - Inventory of Parent and Peer Attachment (Armsden, Greenberg, 1987a,b). IPPA is an extended version of an older tool to measure emotional attachment, which is called the Inventory of Adolescent Attachment (Greenberg, Siegal, Leitch, 1983). The revised version of IPPA (Armsden, Greenberg 1987) also detects the perception of trust. Another questionnaire used in the research was a standardized questionnaire of the Family Environment Scale (Hargášová, Kollárik, 1992), a sub-scale of the relationship's dimension for finding the degree of openness. Both questionnaires are used in areas of family counseling and therapy.

## 6 Results and their interpretation

Table 1 Spearman's Correlation of adolescent's trust towards parents in relation to communication to parents after divorce (father's absence in the family environment after divorce)

Father's absence in the family environment after divorce (N=48)			
Trust toward mother		KM	KO
	r	.730**	-.427*
	Sign.	0,000	0,019
Trust toward father		KM	KO
	r	-.565**	.980**
	Sign.	0,001	0,000

Legend: KM (communication with mother), KO (communication with father)

\* Significant for 0.01 level of statistical significance

\*\* significant for 0,05 level of statistical significance

The variables included in the test do not have a normal distribution across the set, so the relationships between the variables are verified by Spearman's Correlation. Relationships of trust were inspected between both parents (especially mother and father); open communication with parents (especially mother and father) was detected in adolescents who live with only their mother after the divorce. The results are presented in Table 1. As we can see, statistically significant relationships are between mother-trust and mother communication, and the negative relationship is between mother-trust and father communication. At the same time, the results show that high trust for fathers is associated with low openness towards a mother which positively relates to openness to father. The results interpret that high trust towards one parent is associated with low openness, low emotional expression of feelings, and low level of communication with the other parent.

Table 2 Spearman's Correlation of adolescent's trust towards parents in connection with communication with parents after divorce (presence of both parents in family environment after divorce)

Presence of both parents in family environment after divorce (N=28)			
Trust towards mother		KM	KO
	r	.954**	-.246
	Sign.	0,000	0,226
Trust towards father		KM	KO
	r	0,075	.935**
	Sign.	0,717	0,000

Legend: KM (communication with mother), KO (communication with father)

\*\* significant for 0,05 level of statistical significance

In the table 2, we can see the relationship between parental trust and family communication where both parents look after adolescents after divorce. Higher levels of trust with a mother are associated with a low degree of openness to a father. A higher level of trust with father is associated with a higher level of openness to the father. We interpret that father's presence in the family and in close relationship is associated with an open expression of feelings.

Table 3 Spearman's Correlation of adolescent's trust towards parents in connection with communication with peers (father's absence in a family environment after divorce)

Father's absence in a family environment after divorce (N=48)		
Trust toward mother		KF
	r	0,051
	Sign.	0,728
Trust towards father		KK
	r	0,143
	Sign.	0,452

Legend: KF (communication with friends)

Table 4 Spearman's Correlation of adolescent's trust towards parents in connection with communication with peers after divorce (presence of both parents in family environment after divorce)

Presence of both parents in family environment after divorce (N = 28)		
Trust toward mother		KK
	r	0,068
	Sign.	0,742
Trust towards father		KK
	r	0,303
	Sign.	0,117

Legend: KF (communication with friends)

In tables 3 and 4 we can see that the adolescent's trust towards parents, regardless of post divorce care is not related to how the adolescents entrust and communicate with their friends. Consequently, the interest was focused on the relationship between trust and friends in relation with communication with mother, father, and friends. In table 5, we can see that the higher the trust toward the friends, the higher the level of emotional expression toward mother. From table 6 it's clear that trust in friends in joint custody, is not related to level of communication with father or mother. A significant relationship was found between trusting friends and their openness in communicating with friends.

Table 5 Spearman's Correlation of adolescent's trust towards friends, in connection with communication with mother, father and friends (father's absence in a family environment after divorce)

Father's absence in a family environment after divorce (N=48)				
Trust toward friends		KM	KO	KF
	r	.386**	0,007	.675**
	Sign.	0,007	0,970	0,000

Legend: KM (communication with mother), KO (communication with father), KF (communication with friends), \*\* significant on 0.05 level of statistical significance

Table 6 Spearman's Correlation of adolescent's trust towards friends, in connection with communication with mother, father and friends (presence of both parents in family environment after divorce)

Presence of both parents in family environment after divorce (N=28)				
Trust toward friends		KM	KO	KKF
	r	0,224	0,078	.619**
	Sign.	0,271	0,692	0,000

Legend: KM (communication with mother), KO (communication with father), KKF (communication with friends), \*\* significant on 0.05 level of statistical significance

## 7 Discussion

Family divided by divorce can cause adolescents to behave differently with both parents. In sole custody (mother) and co-care, it is difficult for adolescents to develop a congruent relationship with both parents at the same time. Findings indicate that trust in one parent reduces openness in communicating with the other parent, while under the exclusive care of mother. The research sample was composed of adolescents who had a positive emotional bond with both parents, and having a moderate and higher degree of trust in both parents. Nevertheless, the degree of open communication is considered individually to each parent. Fixation to one parent is associated with incongruence with the other parent. We think that adolescents, based on their personal experiences with parents, have a wide range of options to avoid conflicts with parents at the communication level. We believe that parental behavior may be one of the reasons for expressing positive emotions, which

relates to a parent with whom they are not in personal contact. This behavior is most likely to be established while in exclusive care of the mother. It can be assumed that in this kind of care parents are unable to reach a common parental agreement, which teenagers perceive as one of the sources of conflict between the parents. It can be assumed that the adolescent is under psychological pressure, which can be revealed by limited and selective communication with parents on both subsystems mother-adolescent, father-adolescent. Similar results in terms of communication were found by Horská and Lacinová (2015). They found that communication in divorced family is weaker than in complete families; however harmony and respect for parents does not change. Living with the mother does restricts the physical presence of the father, and therefore it can be assumed that the limited communication applies especially towards the father. Mothers' expectations, their verbal and non-verbal expressions to eliminate contact with fathers may lead adolescents to conceal emotions from the other parent. Understanding this new situation teaches adolescents to accept mother's requirements, and to adapt to new situations. It may be assumed that this is one of the reasons why the emotional relationship between the adolescent and the father can be weakened. Another can be the negative perception of their parents' relationship. Warshak (1996) states that fixation to the parent is equally linked to the effort to satisfy this parent's requirements. Another reason for limited communication with fathers may be caused in discussions with adolescents where the mother reduces the father's value as a partner. Mother's negative memories on previous cohabitation with father and their presentation in discussions may be the result of forming a mother-adolescent coalition. This disturbance in communication with father as a consequence of a new formation of a coalition with mother is confirmed by many authors (eg. Greenberg, et. al., 1983; Horth, et. al. 2000; Démuthová, Balcerčíková, 2012; Popelková, Malčáková, 2013, and others). The absence of a father in a new setting is a restriction of physical proximity, which is very important for the further development of trusted communication. Limiting communication face to face and through eye contact creates a barrier to share feelings, and spontaneous expressions of emotions. The absence of a father in everyday life contributes to elimination of joint activities to a great extent. It may be thought that the absence of a father in the family, and the need to differentiate between mother and father, may lead to a great deal of restraint in expressing their views, attitudes, and emotions. Ross, Wynne (2010) states that unfriendliness between parents can be an obstacle for the formation of harmony. The question therefore arises as to whether the isolation of a non-resident parent is one of the reasons for not having an interest in participating further in a child's upbringing. Conclusions from previous research findings indicate that the optimal form of contact after divorce is the free continuation of the family relationship. According to Warshak (1996), the understanding of both parents that their parenting responsibilities continue can help maintain a relationship with both parents after a divorce. The agreement on participation in such responsibilities, timing and form of guardianship is only applicable if accepted by both parents. Support for shared childcare is found in Matějček (2000). According to the author, two separate living environments are acceptable, but only if they do not create significant conflicts. These findings support our results with regard to joint and alternate care. We found that in such environments, the adolescent communicates openly with a father. It can be assumed that such parental agreement works if parents are able to constructively communicate. Sturge-Apple et. al. (2010) report that the ability to reach an agreement can contribute to maintaining family harmony. The other findings show post-divorce families and the relationship of trust and communication between adolescents and their friends. The social environment created by friends is an opportunity for them to express themselves spontaneously and openly. Our findings point out the importance of friendly relationships, where adolescents can share their feelings and emotions. In this context, Doktorová (2013) states that for the period of early adolescence, it is important to develop social competences. It can be said that friends act as a factor in self-expression of self-expression and open communication, and thus creates adolescent

space for congruence. Friends in early adolescence begin to take an important place in their life and are an important factor in their social environment. The need of self-expression, openness and congruence within peer groups brings also risks, mainly if adolescent does not have harmonic and stable family environment (Rojková, 2016). The results also highlight an adolescent's communication problems, but we interpret these cautiously due to the low number of respondents in the research sample. The selection of respondents was carried out in a pedagogical-psychological counseling center, where the psychologist consulted the family in a post-divorce setting. It can be said that parents have some willingness to solve the problem. This aspect has helped us to get a sample where children do trust their parents. Another situation is in families where there are serious disrupting problems of the dyadic relationship (mother - adolescent, father - adolescent) and the triadic relationship (mother - father - adolescent). In the future, it would be interesting to see research pertaining to families where trust is disturbed by both, or some of, the parents. However, the question in this case remains to what extent parents would be willing to participate, and would give their consent to complete the appropriate questionnaires. The focus on a narrow development period, namely the period of early adolescence, also represents limitation and therefore the results cannot be generalized for this reason. However, they help us to create a picture of a specific development period, such as early adolescence. The focus on two-years after the divorce period was to determine the perception of communication at a time of intense change, related to the divorce. Within this timeframe, many changes could be already applied in this new family structure, which could have affected the results. Another limitation is the focus on mother's sole care. Interestingly, it would be worthwhile to examine the trust in communication in families with sole care of fathers. However, this type of sub-family arrangement is unique. The uneven distribution of the sample did not allow us to identify gender differences, which could be considered as a further limitation of the research. We realize that other variables have not been included in this research, these include situational or personality variables.

## 8 Conclusion

Based on these results, it can be said that joint custody minimizes estrangement with the father, and it creates a certain communication strain on a relationship with both parents. The post-divorce family arrangements complicate the possibility of open communication with both parents at the same time, but do not interfere with the congruence of an adolescent's relationship with their friends.

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**Primary Paper Section: A**

**Secondary Paper Section: AN**

## IMPLEMENTATION OF INDUSTRY 4.0 IN ENGINEERING COMPANIES

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**Abstract:** The purpose of the article is to verify dependence between potential threat of industry 4.0 and present skills and knowledge of workers in engineering companies. There were defined four hypotheses, focused on connection between knowledge of industry 4.0 concept and potential threats of job loss from different points of view. To verify these hypotheses there was used questionnaire survey, distributed in engineering companies in Czech Republic, Germany and Canada. Gained data was put under statistical evaluation by Pearson's chi-square test of independence and correspondence analysis for displaying connection between knowledge of industry 4 and country of company.

**Keywords:** Industry 4.0, globalization, industrialization, unemployment, circular economy

### 1 Introduction

In present time there are increasing interest about industry performance, which provide both of higher productivity of staff and corporate prosperity. Due the globalization there is requirement for industrialization and leaving companies with little difficult technologies to developing countries. Therefore, there is expecting coming of new technologies leading to structural in employment. According to Peschner and Fotakis (2013) in European Union would not ensure target employment rate till 2022. Specific situation would be in Czech Republic, which reach problem of enough potential workers in 2018, in Hungary and Slovak Republic in 2020 (Pauhofová, Stehlíková, 2017). This situation and reasons enable creation of initiative for industry 4.0 in Germany. This initiative, is required by market economy, because by radical benefit of industrial revolution can move revolution sense, supporting potential increasing of production effectiveness.

By industrial revolution term is usually considered back-view to evolution of industrial environment and manufacturing. Therefore, industry 4.0 is rated as running process. Suggestion of new industry 4.0 platform leads to action plan, called as High strategy 2020. This platform provides cooperation across wide range of organizations, leading to development of industry 4.0 concept on the way of building strong competitiveness in participant countries (Ministerstvo průmyslu a obchodu, 2016).

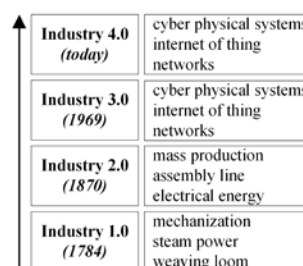
The industry 4.0 concept is considered as kind of set of activities, which are focused on corporate investments, applied science and standardization of production. It is based on integrated cyber security of digitalization processes. There are defined changes in social field because of the implementation of industry 4.0 and digitalization. Therefore, there are expected new trends of employing, which corroborates actual industrial revolution. According to technology and social changes there are expected creation of new job position and at the same time abolishment of actual positions (Rojko, 2017).

### 2 Theoretical background

Globalization of corporate environment support development of technics and technologies around all industry fields. Individual industry revolutions developing of technologies and technics for industrial production. Actual situation in industrial production reflects new era of production approach. Present concept of production – industry 4.0 – is based on high digitalization of employment. According to Cline (2017), over one third of producers are going to implement elements of digitalization into their production. In industrial development there was several

steps, which lead to present situation (see Picture 1). First industry revolution changed manufacturing practices by employing machineries (at the end of 18<sup>th</sup> century). In industry 2.0 there was applied mass production and assembling lines instead of manual fabrication with machinery support (at the end of 19<sup>th</sup> century). Third step in industry development (industry 3.0) was started in 1970s due lean philosophy with support of cyber parts (e.g. computers, networks, internet), what prepare situation for outsourcing of production and digital transformation. During all industrial steps there were required skills, abilities and experiences of workers (depended on the workers' alignment).

Picture 1 Developing of industry revolutions



<b>Industry 4.0</b> (today)	cyber physical systems internet of thing networks
<b>Industry 3.0</b> (1969)	cyber physical systems internet of thing networks
<b>Industry 2.0</b> (1870)	mass production assembly line electrical energy
<b>Industry 1.0</b> (1784)	mechanization steam power weaving loom

Source: adapted according Cline, 2017

Industry 4.0 helps to create smart factory vision as reaction to market requirements. The substance of smart factory is high integrated, automatized and continuously optimized working environment in connection to production devices into cybernetic-physical systems. Investments into development and implementation of innovative solutions would be in difficult projects, which help to stabilize long-term competitiveness of Czech industry. Producers of equipment, software and industrial companies need specific platform, which provide development, function verification and compatibility of new solutions in semi-industrials conditions and in interaction within actual technologies (Fettig et al., 2018; Ematinger, 2017; Koren, Shpitalni, 2010; Nayak, Dürr, Rothermel, 2015).

From general point of view, industry 4.0 includes combination of various technologies such additive production, cutting, robotic manipulation, automated stocks, smart conveyor systems and others. Due both of flexible connections of universal production devices and sophisticated driving systems there is possible to use same equipment in different operations, which are planned in optimal ways according to specific needs. All sophisticated systems and advanced software include possibility for new product digitalization, their simulation and virtual establishing of new production line on the way of both product's and production process optimization before beginning of production. By this whole process there is likely to reduce time for production and its costs before launching product. As kind of support there is used cloud-stores for data collection from whole production to make an analyse of these data and improve individual areas such quality management or precaution of equipment, which are typically considered as key part of industry 4.0 for modern and future production (Český institut informatiky, robotiky a kybernetiky, 2018).

The purpose of the industry 4.0 was developed from german initiative to create cooperation between academics and companies in production area as reply for market requirements in context of performance claims (Bundesministerium für Wirtschaft und Energie, 2017). In Czech national initiative, prepared by Ministerstvo průmyslu a obchodu České Republiky. (2015) there is described philosophy of industry 4.0 reflects various concepts, which are similar to each other, e.g. Industrie du future (France), Fabbrica Intelligente (Italy), Industrial Internet

(USA). All national initiatives focus on implementation digital technologies and internet into whole production systems, which require new thinking approaches of staff, their skills, abilities and other important elements. Tomek and Vávrová (2017, p.10-13) describe the concept of industry 4.0 as combination of rational and irrational thinking on the producer's side to make relevant value for customers, which are more self-confident, enquiring and more judicial to offering (Hecklau et al., 2016).

According to Gatullo et al. (2019) there is possible to look on Industry 4.0 from point of view, how it influence different management approaches. These approaches are as follow:

1. Virtualization (it helps to create replica of real environment by application of GPS system to control physical flows);
2. Service orientation (service orientation should be rated as future base on the way to realize customers' requirements which help them to solve their problem; combination of virtual space, humans, services and internet offer product composition to customers);
3. Time capability (production data are collected in real time, which convey prompt reaction to failures or their risk; all necessary documentation must be updated in real time);
4. Modularity (modular approach facilitate immediate reaction in case of changing product setup; production documentation must be modular to integrate new procedures, technologies and other required items);
5. Interoperability (it provides communication between individual elements of virtual world such human, production units and systems which could be marked as crucial);
6. Decentralization (required materials from side of company are decentralized to lower levels; in case of failures there is applied centralization to higher levels to help to solve the failure).

These steps represent corporate strategy which must reflect actual situation in various fields such technology development, innovation's context, employment's needs or used business model. Fetting et al. (2018) and Reischauer, Schober, Obermaier (2016) describe implementation of industry 4.0 as challenge to fulfill corporate vision to reach kind of autonomy, enabling progress of staff skills on the pathway to making opportunities, strengthening competitiveness and improve staff working-life balance. By virtualization as one of important part of Industry 4.0 there is possible to find the most crucial area in production and prepare preventative solution on the way of precede working injuries and safe working environment (Winge et al., 2019). By implementation of industry 4.0 conditions there would be improved situation in preventing working environment, which could provide safety environment, higher productivity and satisfied employees (Lundberg, Rollenhagen, Hollnagel, 2009; Lindberg, Hansson, Rollenhagen, 2010; Reichel, De Schoenmakere, Gillabel, 2016).

Automatization, virtualization and other parts of industry 4.0 afford apprehension, what will happen after implementation. This fear is actually boosted up by requirements for environment friendly production and reusing or repairing technologies for new purposes. This approach is based in so called circular economy, which intensifies in corporate practices with no regards to industry or country.

Circular economy helps to discover new availing of used products, generated waste or used materials on the way of creating new products. Because of raw-material shortage, there is important to get new form of source materials for advancement of companies, industries, regions and of course whole countries (Benton, Hazell, Hill, 2015).

Circular economy brings in connection to industry 4.0 new potential values for all stakeholders' group on the way to connect them with high responsibility for people, nature and other environments (Reichel, De Schoenmakere, Gillabel, 2016; Reike, Vermeulen, Witjes, 2018).

Circular economy consider all kinds of waste such ground to reuse and redesign these wastes. Specific vigilance interrogates long-term products, for which have to be find new alternate usage against to landfilling or burning. By potential utilization of waste instead of new sources there is increasing requirements on relevant workers and their knowledge, abilities and other skills in connection to their profession (Kjørboe, Sramkova, Krarup, 2015; Ingebrigtsen, Jakobsen, 2007).

### 3 Methodology

There was realized questionnaire survey between workers in engineering companies in Czech Republic and Germany. These companies operate in Brno and Stuttgart. The purpose of the research was to verify, if workers have awareness of industry 4.0 and potential changes of this industry revolution. For this survey there were asked 350 workers, from which decided to participate 110 workers from engineering companies (return rate was 31.43 %). To processing, there were used only 95 questionnaires forms, which were complete fulfilled.

Main objective of the paper is discover potential relations between defined variables (as follow). There are assigned hypotheses in connection to exception of potential threats of industry 4.0 in 10-years future:

- H1: Does exist connection between skill education and potential future threat?
- H2: In case of more professions ability there is potential future threat.
- H3: Cognizance of workers' about industry 4.0 concept could provoke potential future threat.
- H4: Foreknowledge of industry 4.0 concept raise potential future threat.

Gained data were processed by IBM SPSS Statistics 25. Then, there was applied calculation of dependency between two nominal variables by means of contingency tables and Pearson's chi-squared test. Pearson's chi-square test for independence of variables provides basic view on relationship between variables and help to show specific intensity of the dependency. For supporting of the results, there is applied correspondence analysis as visual displaying of the connection knowledge of industry 4.0 and country of companies, which explains situation in technical education (not only in schools, but in lifelong education and training).

Correspondence analysis describes relation between two nominal variables in pivot table and individual categories. In pivot table there is category combination which should become significant or not. If any categories are similar or associated, there are located in graph near themselves. There are nominal variables as input into correspond analysis, and kind of premise, that there is no ordering between variables. Correspond analysis processes dimensional homogenous data which consist only positive values or zeros. Chi-square range has become coefficient which excludes zeros, and help to define relations between rows and columns (McGarigal, Cushman, Stratford, 2000; Beh, 2010, 2008; Kudlatz et al., 2014).

The pivot table in correspondence analysis requires data matrix  $n \times 2$  with two categorical variable:  $r$  values for  $A (a_1, a_2, \dots, a_r)$  and  $s$  values for  $B (b_1, b_2, \dots, b_s)$ . The table consists  $n_{ij}$  frequency of chosen variables, which afford amount of cases, including both of  $a_i$  and  $b_j$ . For purpose of the table there was used relative frequency for relevant cases. As result of theoretical frequency evaluation there was turned chi-square statistics with adequate distribution and  $(r-1) \times (s-1)$  degrees of freedom, which lead to decision, if between chosen variables in sample population could be defined dependency (Beh, 2010; Kudlatz et al., 2014).

### 4 Results

Due processing of the gained data there was employed Pearson's chi-square test of independence between chosen variables, which

afford to define potential influence of these variables. During analysis, there was applied test of dependency with paucity of external influence. On base of described theory, there is assigned hypothesis (see chapter 2), which had to be transformed into statistical hypothesis. These statistical hypothesis are designed of null form (as follow). In case of acceptance of alternative hypothesis, there is change in explanation from “*there is no dependence*” to “*there exist dependence*”, which could be consider as statistical hypotheses (and could be put under statistical evaluation):

- H1<sub>0</sub>: working in educated profession does not arise threat;
- H2<sub>0</sub>: control skills of more professions does not evoke threat;
- H3<sub>0</sub>: workers’ opinion of industry 4.0 does not provoke threat;
- H4<sub>0</sub>: foreknowledge of industry 4.0 does not set up threat.

Main problem of Industry 4.0 concept is that it is still unknown by industrial environment, managers of manufacturing companies and as well by appropriate employees. In case they know this concept, they usually have kind of myth in their minds. Therefore, authors want to answer if working experiences, theoretical knowledge can impress potential acceptance of the concept in individual corporate fields (with no reference to the kind of industry).

There were participated 95 employees, which are employed in three locations, in German (Stuttgart area) and in Czech Republic (Brno area) and in Canada (Windsor are, Ontario). These locations were chosen on connection to their focus in heavy-machinery industry. For purpose of the research were asked their employees, from which coincide to participate and deliver fulfill questionnaire only 95 persons. Their answers were categorized and put under evaluation by chosen statistical methods.

To verify defined premises, a pivot table was created for question “Do you except threat of position in next 10 years” with (1) working in educated profession; (2) control skills of more professions; (3) workers’ opinion of industry 4.0; (4) foreknowledge of industry 4.0. Individual values of potential connection between variables are displayed in Table 1.

Pivot table shows relations between factors of threat expectation in the future and consciousness of industry 4.0 as concept. It is obvious that employees consider their working positions as substantial for the company and they don’t feel any potential threat because of the implementing of automatization. The biggest group includes respondents describes situation, that after automatization there will be still required high qualified workers (34 persons). In the second group of respondents there are 33 workers, which need of qualified workers. The third group didn’t mention any specific reason for future need (17 persons).

Table 1 Pivot table of variables in linkage to potential future threat

			No answer	no, my profession would be still required (lack of qualified workers)	no, my profession would be still required	no, my profession would be still required over automatization	yes, automatization decrease difficulty of work	yes, robots replace workers due standardization and automatization	Total	
H1	educated profession	qualified by experience	1	8	6	19	1	0	35	95
		yes	3	25	11	15	5	1	60	
H2	multi- profession skills	no answer	0	0	1	0	0	1		95
		no	1	13	1	15	3	0		
		yes	3	20	15	19	3	0		
H3	comprehension of industry 4.0	no answer	1	0	1	0	0	1		95
		fiction	0	3	1	1	0	0		
		behind us	0	1	0	1	0	0		
		computer coming	0	1	0	0	0	0		
		Robots	0	9	4	9	0	0		
		digitalization	3	19	11	23	6	0		
H4	foreknowledge of industry 4.0	hear first time	3	19	9	11	0	0		95
		do not know details	1	14	5	19	1	0		
		know details	0	0	3	4	5	1		
Total			4	33	17	34	6	1		

Source: own work by authors

According to premises there is kind of limitation because some cells have zero value, which usually requires merging of separated answers. All of these values were put into determination of proposed affinities and evaluation by Pearson’s chi-square test for variable independence.

From realized test of independence, there was employed Pearson’s chi-square test for independence. Due the processing

of the data there was important to reach significance level of 95 %. This level could be described as the situation, in which exist 5 % fault in case of choosing alternative hypothesis. This error value is recall as significance, regard as level of reliability. If the value of significance is less than 0,05, than is possible to accept alternate hypothesis and is possible to conclude existence of dependence between chosen variables.

To confirm defined hypotheses H1-H4 there are displayed relevant results in table 2. According to these values there were gained two dependencies (in the significance level of 95 %). The intensity of the dependency is given by contingency coefficient. The values of contingency coefficient range in  $<0; 1>$ , where values closed to 0 represent weak power of dependence; values closed to 1 convey strong relationship. Based on results in Table 2 there were confirmed only two hypotheses:

- There exist dependency between multi-profession skills and future 10-years' threat (significance = 0,000). The intensity of the dependency is 0,611. Hypothesis H2<sub>0</sub> is declined and is chosen alternate hypothesis.
- Between foreknowledge of industry 4.0 and future 10-years' threat is also defined dependence, which confirm value of significance = 0,002. The power of this dependence is in 0,538. Hypothesis H4<sub>0</sub> is declined and is chosen alternate hypothesis.

For hypotheses H1 and H3 there are no statistical validation to believe, that there is dependence. Their significance values are over 0,05 and is not possible to corroborate their relationship between variables. In case of H3 observed value is closed to limit significance value (sig.=0,055) and could be required to monitor this connection.

Table 2 Gained values of processed test of independence

	Pearson value	Significance	Intensity
<b>H1: Future 10-years' threat and educated profession</b>	6,412	0,268	0,290
<b>H2: Future 10-years' threat and multi-profession skills</b>	41,673	0,000	0,611
<b>H3: Future 10-years' threat and comprehension of industry 4.0</b>	37,235	0,055	0,589
<b>H4: Future 10-years' threat and foreknowledge of industry 4.0</b>	28,463	0,002	0,538

Source: own work by authors

Main problem of the industry 4.0 concept is that lot of managers and employees don't know specification and relevant definition, which help them to improve their work setup and single work. From point of view of country of company there it is obvious that industry 4.0 would be well known mainly in Europe. Arntz, Gregory and Zierahn (2016) mention that workers in OECD countries fear of the automatization, which replace them in production. Therefore, it is necessary to rebut apprehension and destroy myths, connected to industry 4.0. This situation confirm work of Krzywdzinski, Jürgens and Pfeiffer (2015). Table 3 consists values of knowledge Industry 4.0 according to countries of workers, which participated in the survey.

Table 3 Forknowledge of industry 4.0 according to country of company

	GE	CZE	CA	Total
<b>First meet</b>	4	33	6	43
	4,21 %	34,74 %	6,32 %	
<b>Know without details</b>	15	24	1	40
	15,79 %	25,26 %	1,05 %	
<b>Know details</b>	7	5	0	12
	7,37 %	5,26 %	0,00 %	

Source: own work by authors

To display the connection of industry 4.0 knowledge and country there is applied correspondence analysis. Gained map, as the result of the correspondence analysis, shows connection between country of company and industry 4.0 knowledge in two-dimensional plain. For creating correspondence analysis and its map, there is necessary to employ load indicators, which describe information about specifications of categories, located in the table. This information is assigned in percentage values. Values of these loading indicators are acquired such ratio figures of the frequencies in rows ( $n_{i+}$ ) and columns ( $n_{+j}$ ) according to all categories in the table ( $n$ ).

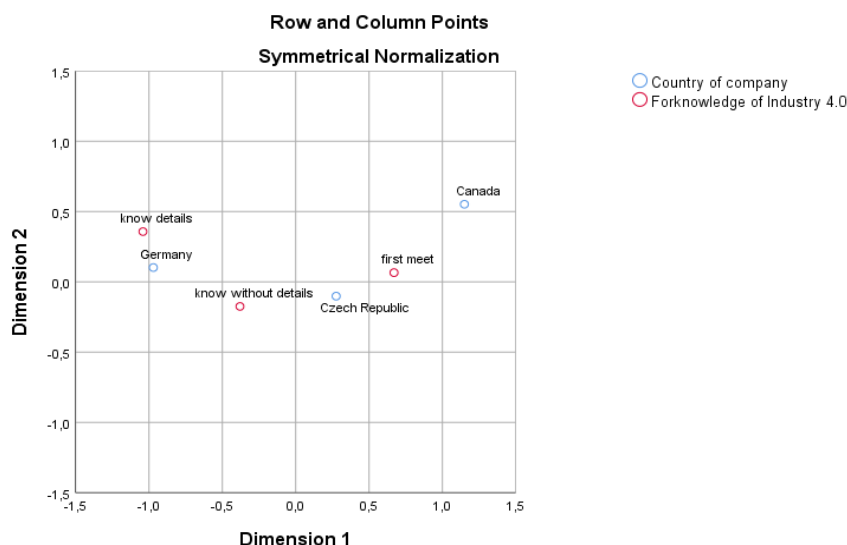
Correspondence map needs to get dimensions score, that indicate the percentage of represents' information athwart specified categories in the computing table. These scores should be figured such kind of ratio, similar for both of row ( $n_{i+}$ ) and column ( $n_{+j}$ ) frequencies of all defined individual categories in basis table.

Score values of individual variables are defined in two different dimensions, which are indeterminate in space due reduction of multi-dimension space (within reduced data in both of rows and columns). This reduction of variables does not degrade specific information of raw data, which were put into the reduction process. For confirmation of correspondence analysis there are used so called inertia indicators, which represent proportion of comprehensive information on the relevant point of view of new dimensions. The value of inertia indicators is independent on the number of original dimensions (Hebák et al., 2007; D'Esposito et al., 2014).

According to algorithm in correspondence analysis there is defined relationship between country origin of country (where companies operates) and knowledge of industry 4.0 as individual variable categories. The result of correspondence analysis (as column and row points by two-dimension solution) is depicted in Figure 1. The usage of symmetrical normalization helps to verify relationship between variables. Likelihood of application was confirmed by significance value of Chi-square test, which was gained at value 0,029.

According to results, displayed in Picture 2, it is obvious, that knowledge of industry 4.0 concept is well known mainly in Germany, where this concept was developed. There are two divergent groups of relationships. For companies, which operate in Czech Republic, are usually closely connected with companies in Germany. In case of Canadian companies this concept is quite unknown for them (according to observed data in research).

Picture 2 Symmetrical correspond map of knowledge of industry 4 and country of company



Source: own work by authors

## 6 Conclusions

According to Černíková (2018) industry 4.0 concept is regarded as key area for future development of business activities on the way of creating representative assets (both tangible and intangible). This future development of business activities requires adequate knowledge in individual national industrial environment and accurate number of skilled employers.

In general point of view, employees are afraid of loss of their job because of the automatization and digitalization of production system in their company. This fear is based mainly on the innocence of the concept. The concept of industry 4.0 provides relevant information, which are needed for fast adaptation of production processes and other technical aspects, divided from present technological progress (Rojko, 2017).

Main objective of the paper is confirm assigned hypotheses in connection to exception of potential threats of industry 4.0 in 10-years future (see Table 2):

- H1: Does exist connection between skill education and potential future threat? [rejected]
- H2: In case of more professions ability there is potential future threat. [confirmed]
- H3: Cognizance of workers' about industry 4.0 concept could provoke potential future threat. [rejected]
- H4: Foreknowledge of industry 4.0 concept raise potential future threat. [confirmed]

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**Primary Paper Section: A**

**Secondary Paper Section: AE, BB**

## RELATIONSHIP BETWEEN CHANGES IN BUSINESS ENVIRONMENT AND INTRODUCING NEW METHODS, TOOLS AND PROCEDURES OF CONTROL(-LING)

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**Abstract:** Businesses and their managers are able to face changes from the internal and external environment through the management function of controlling. They have a variety of methods, tools, and procedures at their disposal that already are or can be implemented in their organizations. Through the questionnaire method, at the turn of 2016 and 2017, we examined, among other things, whether companies operating in the Slovak Republic experienced changes related to controlling and also whether they introduced new methods, tools and procedures within controlling. Control(-ling), as a specific term, is used to highlight the difference to the German controlling theory. The aim is to determine the relationship between the perceived changes in business environment and introducing new methods, tools and procedures into this process in companies. In evaluation of the questionnaires, we used statistical methods (Phi Coefficient, Cramers' V and Goodman and Kruskal Lambda). In the result, there is no statistically significant correlation.

**Keywords:** Control, Controlling, Management function, Changes, Methods of controlling.

### 1 Introduction

The business environment is subject to constant change. It doesn't matter what kind of industry it is, even a relatively stable industry like the automotive industry appears to be turbulent currently (Diesel Gate, electric drives). These changes may come from innovations, legislative activity, due to customer and supplier demand, etc. While researching potential changes should be the work of analysts or planners, the response to change should be fully in the competence of managers at different levels of the organization.

How to respond to changes coming from external and internal environment? Well, the answer of this question is the basic function of management – controlling. It is the last in the management cycle, after planning, organizing, staffing and leading and is designed to ensure efficiency and effectiveness. If something goes wrong and is not in line with the plan, or as someone imagines it, the manager has the task of bringing it back to the track. It is irrelevant whether the manager has learned to perform this function at the university, since "knowledge what is crucial and what has minor or minimal effect on business success comes with experience." (Hanák, 2015)

It is precisely the case of controlling, in which we find methods, tools and procedures that can, on the one hand, help us in identifying possible changes and, on the other hand, can be helpful in responding to these changes. Yet, the „contemporary theory of management is overwhelmed by various ideas, trends, methods, techniques, or recommendations.“ (Jankelová et al., 2019)

### 2 Theoretical aspects of control(-ling)

The term *controlling* is used to describe the management function or the last step in the management process in dozens and dozens of basic management textbooks written in English (e.g. Certo & Certo, 2016; Griffin, 2016; Robins & Coulter, 2018). From our point of view, controlling is a constantly ongoing process of designing standards, measuring performance, comparing the performance with standards, and implementing corrective actions to ensure effective and efficient running of the organization's activities. Through controlling, every manager aims to increase the predictability of future developments and

results. Unfortunately, in the latitudes of Central and Eastern Europe (CEE), "controlling" is also used as an incorrect translation of the *German term controlling*. There are several reasons for this situation: a) older generation of CEE authors in CEE has a better knowledge of German language than English; b) mostly, publications in CEE have only title and abstract in English; c) Internet translators presume "controlling" is an English word and therefore offer the identical translation; d) "controlling" is widely represented in English written textbooks, but not that much in scientific papers. (Mišún & Mišúnová Hudáková, 2019) To address this issue, we use the term *control(-ling)* in our paper titles. The term *control* denotes an activity, while the term *controlling* refers to the alignment of these activities to a system or to the continuous performance of the activity.

In the context, forty years ago, Harold Koontz (1980) mentioned the problem with semantics in management with examples like *organization, line and staff, authority, responsibility, and policies*. Unfortunately, such a problem in controlling persists and creates its own theory jungle in a relatively lacking of the main term. Chenhall (2003) or Brenner (2009) mention the differences between *management control, management control systems, management accounting and management accounting systems*, which are used interchangeably. However, in fact, there is much more. Management control and *managerial control* are used as synonyms, but obtain different meanings; German controlling is most often translated as *Management Accounting* in the names of university departments (Mišún & Paprskárová, 2018), while another term is *organizational control*, some authors want to use *performance management* (Otley, 2003), etc. We add the another term – control(-ling), but we hope, only for a short time, till the Central and Eastern European authors assume the current German practice. We hope to solve this problem in our proposed research project in 2020/2021.

An important distinction has to be made between control done by a manager and a person without *decision-making authority*. Without the ability to decide on corrective action, the possibility of "having something under control" is eliminated. Although many members of an organization can assist in the control process (setting highly competent standards, measuring performance very accurately, comparing standards with performance using sophisticated methods, *proposing* tailor-made corrective actions), the manager needs to decide from his/her position on corrective action, which is then supported by his/her power and authority. Another important fact is that the manager mostly bears personal responsibility for the decision. Primary characteristics of controlling are *feedback* and *corrective action* and without controlling, there can be no management. (Eilon, 1971) The ability to act should be considered as the essence of control. (Coates et al., 1993) While McKenna et al. (2010) accept that the modern organizational world is built on *trust* and *empowerment*, they admit, this creates new fears about the loss of control and management without control is impossible.

Despite frequent views on controlling (especially formal controls) as harmful to innovation (e.g. Burns and Stalker; 1961; Quinn 1980; Mintzberg 1994; Bonner et al., 2002), some authors argue that it can increase capacity of an organization to derive benefits from innovation (Chenhall and Morris 1995; Simons 1995; Bisbe and Otley, 2004; Jørgensen and Messner, 2009).

Particularly very important are some terms used in this paper, since we distinguish between the Western and Eastern theory of control (Mišún & Mišúnová Hudáková, 2019). In the Eastern theory *subject* refers to the entity, which controls and the term *object* to the person, group, organization, etc. being controlled. From the perspective of these elements, we distinguish *internal control* (both, subject and object, are part of one system) and *external control* (e.g. Zhang, 2014, p. 45) (mostly the subject is from another system, whether from public administration, other

commercial entities or the third sector). Each of these terms takes on a different meaning in Western theory of controlling.

Methods represent ways to achieve a predetermined goal through purposeful and planned action. (Kráčmar et al., 2013) In controlling, methods are important for: a) obtaining information (mostly for the measurement step) and b) comparing (standards with measured results). Both “provide managers with the type and amount of information they need to measure and monitor performance.” (Benowitz, 2001, p. 172) The first group is used in controlling for clarification of the facts about the object of control and includes, for example, analysis and synthesis, comparison, deduction and induction, abstraction, historical knowledge, statistics, and others. (Kráčmar et al., 2013). In their essence, they are identical to scientific methods of knowledge. The second group of methods is often subdivided into traditional/old and modern methods (Majtán et al., 2016; Tripathi & Reddy, 2012); whether they are budget-based or not (quantitative and qualitative techniques) (DuBrin, 2012); in which area they are applied (Benowitz, 2001). To the countless examples of controlling techniques we can include: budgets, financial statements, ratio analysis, financial audits, Balanced Scorecard (Kaplan, Norton, 1996), benchmarking, quality control techniques (control chart, sampling, Six Sigma), tools for project management (Gantt Chart, Critical Path Method/Program Evaluation and Review Technique – CPM/PERT); inventory control methods (economic order form, Just-In-Time system), break-even point, etc.

Changes in the environment, we examine in this paper, are closely related to changes in controlling. These changes are linked to the new trends we are researching at in the current VEGA project. During more than two years of research, we have so far discovered the following trends in the literature: a) responding to new business organization, new organizational structures, higher employee responsibility, and the use of coordination rather than control; b) increasing the involvement of employees instead of controlling them; c) using the theory of targeting or motivation; d) better use of information technology for control, including international branches; e) adapting control to cultural differences between international and multinational companies; f) the need for increased employee monitoring to prevent productivity, financial and other losses; g) increasing aggressiveness in the workplace; h) controlling customer interactions; i) adapted corporate governance. Our own findings include: a) convergence of Western and Eastern approach to control; b) continuous monitoring through modern technology; c) struggle over the term “controlling”; d) flood of data for controlling purposes; e) excessive accent on quantitative data in a world becoming more complex.

## 2 Materials and Methods

The main goal of the paper is to determinate the relationship between the perceived changes in business environment and introducing new methods, tools and procedures into this process in companies.

The presented research results were obtained through a questionnaire survey that took place at the end of 2016 and beginning 2017. The questionnaire was filled in by respondents who were given URL, i.e. the survey was not accessible to the wider public. Data was collected via electronic questionnaire on the Google website (tool Google Forms). The final research sample had 395 respondents, although for further processing were used 331. We excluded several respondents, which were from the same companies and few questionnaires with errors. Our research sample has following characteristics (n=331):

- size of company (according to EU recommendation 2003/361), (employees in 2015): 115 microenterprises, 90 small, 56 medium-large, 70 large companies;
- respondent's management level: 120 top-management, 52 middle, 116 lower management level, 43 informed employees (although not managers, they have access to rare business information: accounting officers, economists,

employees responsible for control, without being managers);

- most frequently represented sections according to the SK-NACE classification: 69 industrial production, 66 wholesale and retail trade and repair of motor vehicles, 46 professional scientific and technical activities, 25 information and communication, 21 accommodation and catering services;
- higher territorial unit (TU) of Slovak Republic: 174 Bratislava (capital city and surrounding districts), 33 Trnava, 24 Nitra, 23 Trenčín, 30 Žilina, 17 Banská Bystrica, 22 Prešov, 8 Košice;
- legal form: 222 private limited liability companies, 66 joint-stock companies, 30 self-employed individuals, 5 branches of foreign enterprises, 4 cooperatives, 4 other legal forms;
- economic result in 2015: 254 profit, 52 loss, 20 balanced, 3 companies founded in 2016, 2 n/a;
- turnover (according to EU recommendation 2003/361) in 2015: 164  $\leq 2$ M Euro, 43  $2\text{M} \leq 10\text{M}$  Euro, 60  $10\text{M} \leq 50\text{M}$  Euro, 50  $\geq 50\text{M}$  Euro, 14 n/a.

Besides basic scientific methods, in evaluation of the questionnaires we used statistical methods and tools such as Phi Coefficient, Cramers'V and Goodman and Kruskal Lambda. These methods are used to determine association and dependence between two variables or statistical test based on comparison observed variables. In addition to quantitative responses, we have gained a deeper insight into the issues through voluntary qualitative responses (justifications).

As this paper focuses only on a small part of the results of the questionnaire survey, we would like to point out some interesting facts from our findings: - more than four-fifths of businesses consider the management function of controlling to be important, two-fifths to very important; - up to 69 percent of respondents had to increase their control efforts over the previous year; - more than 46 percent of respondents experienced an increase in the intensity with which they are controlled by another subject. In addition, at the respondent level (n = 376; from 331 organizations), more than three quarters of respondents (75.27%) had a positive attitude to controlling when they were performing it and more than half (51.33%) had a positive attitude in situations they have been exposed to controls.

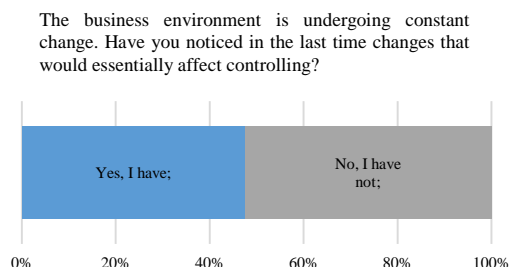
## 3 Results and Discussion

Respondents to our question about changes in the business environment affecting the control process answered mostly negatively (174; 52.57%). Although the respondents noticed changes in the business environment, none of those that would cause changes in controlling. Nearly half of the respondents (76; 43.68%) used the opportunity to give us also a qualitative answer. The overwhelming majority of respondents said that changes in controlling did not happen mainly because of the effective of controlling, so they do not see the need to change what works and deliver the desired results. Respondents considered regular checks with a clearly defined object and subject to control for a properly set up controlling. One of the respondents also reported very good economic results because of which they see no reason to make any changes in controlling when the current system yields results. Several respondents said they planned to introduce changes in controlling in the future, especially because of automation of selected business processes and increasing external control (especially by the tax office).

Respondents (157; 47.43%) responded positively to this question. Almost all respondents added a qualitative answer to this question (153; 97.45%). Both results are shown in Figure 1. The most frequently mentioned changes in controlling were the extension of the object and subject of control and the introduction of new forms of control due to legislative changes, more frequent inspections from external entities or increasing the efficiency of individual business processes. An interesting factor influencing the changes in control was also the increasing quality and demandingness of customers, which was mentioned

as a reason for changes in controlling by several respondents. Few respondents stated that the control requirements were reduced due to the strict initial setting of the control process (in the case of multinational companies, where the Slovak branch was significantly smaller or with a lower number of employees) or due to the time-consuming of current control process.

Figure 1 Changes in business environment



Source: Own Work

We choose some interesting qualitative answers (justifications) from respondents from Slovak businesses to declare and confirm our findings in table 1.

Table 1 Chosen changes in controlling in Slovak businesses

	Changes	Justification	Respondent description
1	Yes	Higher demands of customers on quality of products.	CEO, small wholesale company, Bratislava TU
2	No	The company has been thriving recently and has good results. The last control has found some shortcomings, and after they were removed, everything works as it should.	Manager, large electronics manufacturer, Žilina TU
3	Yes	Increasingly less skilled employees with smaller motivation who require more strict control and supervision.	CSO manager, large retail company with electronics, Bratislava TU
4	No	We have implemented the QMS system since 2005 and we only improve it.	Quality manager, medium large manufacturer, Bratislava TU
5	Yes	Control is a continuous process, what means changes and new opportunities come constantly.	CEO, small real estate company, Žilina TU
6	No	The control system has evolved since the establishment of company. But it is already working very well for our needs.	Owner, small wholesale company, Trnava TU
7	Yes	Mainly legislative changes. As a result of the changes, we have necessarily entered into a contract with a law firm to actually eliminate the risks of changing legislation.	Owner, small wholesale company, Banská Bystrica TU

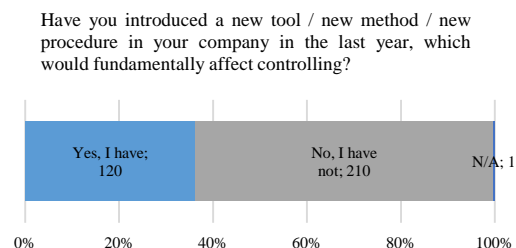
Source: Own Work

In our research, we also focused on finding out whether businesses were introducing new methods, tools for procedures in the past year into controlling. Up to 210 respondents (63.44%) said they did not introduce any new tools, methods and procedures in the controlling in the past year. Of these respondents supplemented their reply by a qualitative answer 104 respondents (49.52%). Most often, businesses have put in place, as a reason for not introducing new methods, tools and procedures, an effectively set up controlling in past that does not need to intervene, the introduction of new tools, methods or procedures two to four years ago and no changes in the business environment that would require such methods to be implemented.

As can be seen in Figure 2, more than a third of respondents (120; 36.25%) reported that in the last year they introduced new methods, tools and procedures in controlling. Of these respondents, 119 (99.17%) provided qualitative answers. The most frequently introduced methods, tools and procedures into businesses were new applications and other information and

communication tools and new methods and tools for controlling quality and costs. One respondent did not provide an answer to this question, as he is no longer than few months in company and cannot adequately and truthfully answer the question.

Figure 2 New methods and tools in controlling



Source: Own Work

We rate the measured share of positive responses as relatively high. The reason is the good development of the economy during the years of research, which does not work in favor to controlling, but rather greater freedom/empowerment of subordinates and increasing of their empowerment. On the other hand, the growth of the economy is associated with the recruitment of new employees who need increased control at the beginning.

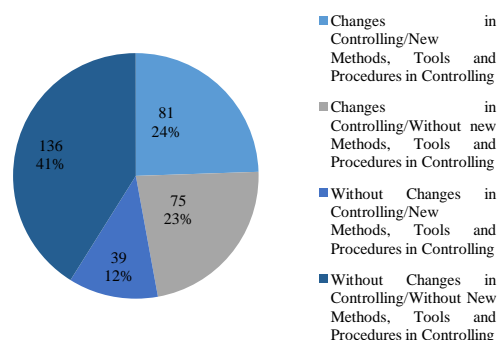
Figure 3 presents the relationship between the first and second respondents' responses. Up to 41% of the surveyed companies (136 respondents) did not notice any changes in the business environment that would affect controlling and at the same time did not introduce any new method, tool or procedure into the controlling during the last year. According to qualitative responses, this attitude of businesses was due to the effective setting of the controlling in past periods, as well as the introduction of new tools or interventions in the controlling in past years or none significant changes of the industry.

Respondents in 24% (81) said they have noticed changes in controlling and were introducing new methods, procedures and tools for control as well. New positions for controllers or auditors were created, companies automated selected business processes and started to use information-communication tools in control (e.g. CRM, SCM) and incorporated quality management systems (ISO) into the controlling.

Respondents perceived changes in controlling, but did not introduce new methods, tools and procedures (75; 23%). In their qualitative responses, respondents said that despite changes in the business environment, they did not see any importance in introducing new methods, procedures and tools, as they introduced them earlier into controlling, for example, after the economic crisis or after ISO certification.

The smallest group of respondents (39; 12%) did not notice any changes in the business environment related to controlling, but nevertheless introduced new methods, tools and procedures into the controlling. These changes were not caused by changes in the business environment, but by continuous improvement and of controlling in some businesses. Managers introduced stricter employee controls and controls of work performance, started to use more frequently CCTV and other monitoring systems, increased frequency of controlling or extended subject and object of control.

Figure 3 Relationship between changes in business environment affecting controlling and introducing new methods, tools and procedures in controlling



Source: Own Work

In the context of the presented findings, we have determined whether there is any correlation between the introduction of new tools, methods and procedures into control and awareness of changes in the business environment that affect controlling. The relationship between the two nominal variables was determined by Kramer V, the coefficient Phi and Goodman and Kruskal lambda. One of respondents was excluded due to his unanswered question (n = 330).

Both the Phi and Cramer V coefficients are 0.31 (Table 2). Thus, the coefficient is not negligible, but rather small, which means that the link between the two variables exists, but is not too strong.

Goodman and Kruskal lambda is  $\lambda = 0.05$ ,  $p = 0.10$  (Table 3). Since the lambda value is also very low and not statistically significant, since p is greater than 0.05, we can conclude that no statistically significant causal relationship has been found. The perception of a change in the business environment affecting controlling does not mean that the company will introduce new methods, tools or procedures to control.

Table 2 Crammer's V and Phi Coefficient

Symmetric measures.					
Category	Statistic	Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Nominal by Nominal	Phi	,31			
	Cramer's V	,31			
N of Valid Cases		330			

Source: Own Work

Table 3 Goodman and Kruskal lambda

Table 5 Goodman and Kruskal lambda						
Directional measures.						
Category	Statistic	Type	Value	Asymp. Std. Error	Approx. T	Approx. Sig.
Nominal by Nominal	Lambda	Symmetric	,17	,07	2,31	,02
		ChangesInProcessOfControl Dependent	,27	,06	3,92	,00
		NewMethodsInControl Dependent	,05	,10	,48	,63
	Goodman and Kruskal tau	ChangesInProcessOfControl Dependent	,09			
			,09			
		NewMethodsInControl Dependent	,09			

Source: Own Work

## 5 Conclusion

Using multiple statistical methods, we found that there is no statistically significant correlation between the introduction of new tools, methods and procedures into controlling and awareness of changes in the business environment that affect this management function. Managers and informed employees, who noticed changes in the business environment affecting the controlling, think the most important changes in business environment are more emphasis on quality of products and services, different customers' behavior, changes in legislation and opportunities arising from the development and availability of information and communication technologies. These changes also involve the introduction of new tools, methods and procedures into controlling, which are mainly focused on creating new on control specialized job positions (controllers or auditors), companies automated selected business processes and started to use information-communication tools in controlling (e.g. CRM, SCM) and incorporated quality management systems (ISO) into the controlling. Other part of managers doesn't see importance of changes in business environment and don't see

reason to implement new methods, tools or procedures into process of control as well. They claim that controlling in their company have been evolved since the establishment of company and process of control is already working very well for their needs.

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**Primary Paper Section: A**

**Secondary Paper Section: AE, AH**

## INTEGRATION OF EDUCATIONAL PROGRAMS OF PEDAGOGICAL SPECIALTIES WITHIN THE FRAMEWORK OF CONTINUING EDUCATION

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**Abstract:** This article is devoted to the problem of integration of educational programs of technical and vocational and higher (postgraduate) vocational education of the Republic of Kazakhstan, which is updated in connection with the modernization of the educational system, focused on updating the content of education. The update of the educational content, broadcast on the experience of Nazarbayev Intellectual Schools, is currently being transferred to all general education schools of the republic. Accordingly, the problem arises of training teachers who are ready for the working conditions in a new format, connected not only with the change of the objectives of the learning process but also with its organization. This problem is connected with the introduction of applied baccalaureate, which, primarily, is related to determining its place in the system of continuous pedagogical education. The authors suggest ways of incorporating applied baccalaureate on the basis of international experience in a higher education program.

**Keywords:** Technical and vocational education, higher vocational education, educational programs, integration of educational programs, applied bachelor degree, updating of educational content, continuing education.

### 1 Introduction

Integration of Kazakhstan into the world educational space, focusing on the ensuring of competitiveness and requiring the creation of a national model of average 12-year education, the transformation of knowledge of the centrist paradigm for competence, a radical change, and renewal of the content of school education.

From the 2015-2016 years, the Ministry of Education and Science of the Republic of Kazakhstan has begun the modernization of the education system, focused on the transition from the concept of "education for life" to an understanding of the need for "lifelong learning".

This means a shift in emphasis from the target to mastering the amount of knowledge and skills (knowledge-centric) to form the ability to independently acquire, analyze, structure and effectively use the information for maximum self-realization and beneficial participation in society (competence).

In the Review of Secondary Education in Kazakhstan, conducted by the Organization for Economic Cooperation and Development (OECD) in 2014, it was concluded that academic subjects are taught with a focus on theory, not paying due attention to the practical orientation of training, with the result that students are not capable of sufficient at least effectively apply and use the knowledge gained in unusual situations.

As it turned out, traditional education provides a sufficient level of academic knowledge of Kazakhstani schoolchildren but does not prepare them to independently acquire, analyze and effectively use of knowledge.

It should be noted that in the domestic education attempts to depart from the traditional system of education were made repeatedly, but the fragmentary introduction of changes superimposed on the old content of education, which led to congestion, intensification of the educational process and the transfer of a large amount of ready information, while the student continued to be a passive "recipient" knowledge and skills.

Based on the results of international studies in Kazakhstan, it was decided to transmit the experience of Nazarbayev Intellectual Schools, which for a number of years introduced the best international experience in the field of educational innovations. (1)

What is the difference between the new content of school education?

Innovation is the transition from the knowledge paradigm to the activity (2). The educational process is characterized by the active activities of the student (3). For the first time, education is not built from content to learning, when in the state compulsory education standard and model curricula, content on subjects that were subject to compulsory mastering was primarily designated, but from expected learning outcomes.

For example, in the curriculum of the updated content on the subject "Mathematics" it is indicated that on the topic of "Statistics and Data Analysis" students in 5th grade should have an idea of circular, linear and bar charts; build circular, linear and bar charts; extract statistical information presented in the form of tables or diagrams; in the 6th grade to calculate the statistical numerical characteristics (arithmetic average of several numbers, range, median and mode of a series of numerical data); in the 7th grade to calculate absolute and relative frequency options; collect statistical data and present them in tabular form; represent the sample in the form of a frequency table; check table data for consistency; present the results of the sample in the form of a frequency range; analyze statistical information presented in the form of a table or a range of frequencies. (2, 3)

A typical curriculum in the Russian language against the background of the intensive development of communicative linguistics, the theory of speech activity and modern methodical research, which develops certain aspects of teaching speech activity to schoolchildren, is focused on the formation of competencies. At the same time, linguistic competence is traditionally related to mastering the linguistic system, mastering the linguistic material itself, while communicative competence is the knowledge, skills, and abilities necessary for understanding others and generating their own speech behavior programs that are adequate to the conditions of real verbal communication. In the program of updated content, for example, by the type of speech activity "Listening and speaking", the section "Participation in dialogue" is highlighted. Pupils of the 5th grade should participate in the dialogue-inquiry, changing the position of "speaking" to "listening" and taking into account the age characteristics of the role being played; in the 6th grade to participate in the dialogue, exchanging views on the proposed topic; in the 7th grade to participate in the dialogue on the proposed problem, arguing their point of view; in the 8th grade to participate in the discussion on the proposed problem, arguing their own statements, convincing the opponent of the correctness of their position, to draw conclusions; in the 8th grade to participate in controversy, synthesizing different points of view and offering a solution to the problem. (4)

For comparison, a fragment of the traditional model curriculum in the 7th grade of Russia: "Adverbial Participation as a special form of the verb, verbal properties of a participle, adverbial signs of a participle, an adverbial manifestation of a perfect and imperfect type and impartial circulation, not with advertising, the transition of adversion to adverbs, the syntactic role of adversion in the sentence, morphological analysis of the adverbial participle." (5)

Any reform and updating of the content of education should be systemic in nature and affect all levels of education. The previous attempts were not successful, largely because they were fragmented.

The term "content update" is used somewhat arbitrarily, since not only the content itself but also the organization of the educational process and the evaluation system are subject to reform (9). The school in terms of renewal is characterized by the fact that educational achievements have a productive character, and the educational process is characterized by the

active work of the students themselves to “acquire” knowledge in each lesson. Under these conditions, the student is the subject of knowledge, and the teacher acts as the organizer of the students' cognitive activity. Learning objectives become common to the student and teacher.

With this in mind, updating educational content affects all levels of education. In Kazakhstan, pedagogical education is carried out at three levels: technical and vocational, higher vocational education and postgraduate vocational education. At the level of technical and vocational education, primary school teachers are mainly trained. At the level of higher vocational education, graduates of pedagogical universities receive bachelor's qualifications, at the level of postgraduate education graduates receive an academic master's degree.

Accordingly, within the framework of updating the content of education, changes are made in the educational programs of technical and vocational, higher vocational education, to a lesser extent - in the educational programs of post-graduate education.

Thus, the problem of ensuring the integration of educational programs within the framework of the continuity of teacher education is objectified.

## 2 Materials and Methods

The actualization of the problem of ensuring the integration of educational programs of technical and vocational education and higher vocational education is connected, first of all, with the duplication of academic disciplines in educational programs of technical and vocational and higher vocational education.

Thus, the program of colleges (technical and vocational education) includes the study of the subject “Fundamentals of Philosophy” (33 hours), the program of the university (higher education institution) - the academic subject “Philosophy” (5 credits, or 150 hours). The subject of the fundamentals of political science and sociology (36 hours) is studied at the college, and the subjects of political science (2/60) and sociology (2/60) are differentiated at the university. The subjects “Fundamentals of Law” (33 hours and 2 credits, or 60 hours), and Culturology (42 hours and 1 credit, or 30 hours) are also duplicated.

From the cycle of humanities and in college and university, the subjects “Professional Kazakh / Russian language” (71 hours and 3 credits / 90 hours), “Professional foreign language” (71 hours, 3 credits / 90 hours), “Self-knowledge” (55 hours, 2 credits / 60 hours). At the level of technical and vocational education, the subject “History of Kazakhstan” (84 hours) is studied, at the level of higher professional education - “Modern history of Kazakhstan” (5 credits / 150 hours).

Comparison of model curricula clearly demonstrates that a sufficiently large number of hours is devoted almost to the same academic disciplines at the level of technical vocational education and at the level of higher education. How expedient it is in a rapidly changing world, in a context of shifting emphasis from training, aimed at transferring factual material, which has an encyclopedic character, to learn how to obtain information; on the formation of the ability to independently extract, analyze, structure and effectively use information; to develop the ability to creatively use the knowledge gained?

The transition to the updated content of education has necessitated the creation of an innovative model for the development of the system of pedagogical education in the context of the integration of technical and vocational and higher education (10). In the Republic of Kazakhstan, this was laid down by the State Program for the Development of Education of the Republic of Kazakhstan for 2016-2019: “Taking into account the accumulated experience and international practice, the structure of the education system in Kazakhstan since 2016 has been brought into line with the ISCED levels (11). The classifier of technical and vocational specialties after secondary education has been revised. Separate educational programs of secondary

vocational education will be assigned to tertiary education (applied bachelor degree), the status of colleges will increase. For admission to an applied baccalaureate program, it is necessary to complete a full secondary education.” (6)

The last thesis is related to the fact that in Kazakhstan the level of technical and vocational education involves learning after 9 and 11 grades.

As part of the grant funding of research works of the National Academy of Education named after Altynsarin and of the Ministry of Education and Science of the Republic of Kazakhstan, it is carried out a scientific project, the goal of which is to ensure the integration of higher professional and technical and vocational education to improve the quality of teacher training, to bring the teacher education system in line with the standards of the teacher's professional activities and state general educational standards of updated content.

In this system, applied baccalaureate becomes a universal form of receiving professional pedagogical education, in which significant place is given, along with vocational training, socialization of the individual, professional self-determination, the formation of competencies and personal qualities, allowing to constantly improve their professional level in accordance with the requirements of the modern school.

A brief overview of applied baccalaureate programs in higher education in Western Europe showed that they belong to the system of higher non-academic education and are implemented both in universities along with academic undergraduate programs and in special institutions of vocational education.

It should be noted that training in applied bachelor programs in many European countries began at the end of the last century. To implement the programs, the new type of educational institutions were created, in which theoretical courses were closely linked with the development of professional skills. For example, vocational education colleges were formed in the UK in the 1960s, specialized higher education institutions in Germany in 1970-1971, state colleges in Norway in 1992, polytechnics in Finland in 1991, specialized higher education institutions in Austria in 1993, etc. (7)

In Russia, since 2009, an experiment has been started on approbation of applied baccalaureate programs in educational institutions of secondary vocational and higher vocational education. Based on a competitive selection organized by the Ministry of Education and Science of Russia in 2010, 37 universities and 65 specialized secondary schools from 47 constituent entities of the Russian Federation take part in the experiment. (8)

Thus, the basis for the participation of the Ryazan State Technological College in the experiment on the implementation of an applied baccalaureate program is the activity of the experimental site on the topic “Organizational and pedagogical conditions for the development and implementation of the program of training practice-oriented bachelors in the” profile school - college - university “system. As part of the monitoring, which was aimed at summarizing the first results of the experiment, the following key aspects were highlighted: the formation of the content of theoretical training and its methods should be carried out with the maximum involvement of the scientific and pedagogical potential of the university-social partner, and the formation of the content of practical training and its methods should be carried out with maximum possible participation of employers in the process of various types of practice.

The head of the Center for Primary, Secondary, Higher, and Additional Professional Education of the Federal Institute for Educational Development (FIO) V. Blinov argues for the attractiveness of applied bachelor's studies by favorable employment. In his opinion, a bachelor is a degree that very often does not contain a certain qualification. For example, it is not enough to indicate that you are a philologist or a

mathematician; a diploma must contain some other qualifying qualifications. Therefore, an applied pedagogical bachelor degree is just a bachelor's program, where the main, basic part is the same as that provided for in the standard, and the additional, practice-oriented one takes the teacher to a clear qualification.

Analysis of domestic and foreign literature suggests that scientists are actively searching for new educational models that allow modernizing the system of level pedagogical education in order to meet the socio-economic needs of society in terms of innovative development.

In the aspect of this study, the works of scientists (V.I. Baydenko, N.A. Selezneva, R. Wagenaar, I.A. Zimnyaya, A.V. Khutorskoy, E.N. Kovtun, Y.N. Pak, N.L. Babenko, etc.), who in their works reveal the main parameters of the Bologna process were studied. (11, 12, 13).

The experience of foreign countries in terms of Kazakhstan's reality still needs to be studied in order to generalize and replicate it. And here the problem of systemic adaptation of the parameters of the Bologna process to the conditions of the Kazakhstani system of technical and vocational education and higher pedagogical education is actualized in a special way.

It is assumed that the applied pedagogical bachelor degree, or the short Bologna cycle, will make up the first stage of higher pedagogical education, after which graduates will be awarded an academic degree of bachelor of additional education. The certificate obtained at this stage will give graduates the opportunity to work as teachers in the system of additional education and at the same time open access to training in a two-year pedagogical bachelor's program.

Successful completion of training in the pedagogical bachelor's degree, the second stage of higher pedagogical education, will be confirmed by a diploma awarding an academic degree of bachelor's degree in education.

Graduates who have studied under applied baccalaureate programs will differ in the practice-oriented nature of their skills and knowledge. This is achieved more than in traditional training, the volume of independent work and teaching practice.

The perspectivity and necessity of introducing applied baccalaureate programs dictate the increasing demand from employers for a combination of practical skills and theoretical knowledge among graduates of pedagogical universities (16). It is applied bachelors who will have sufficient professional competence and sufficient motivation to work in school.

The development of a methodology for the resource support of applying the tools of the Bologna process on the basis of innovation management in technical and vocational education, higher education will contribute to the promotion of Bologna reforms in the system of pedagogical education in Kazakhstan through the use and improvement of the tools of the Bologna process.

This will affect the enrichment of modern pedagogical science, the theory, and methodology of professional pedagogical education, as it will contribute to the development of the principles of student-oriented educational programs, the availability of high-quality higher education, continuity of education, and transparency of learning outcomes.

In general, the expected results will contribute to improving the quality of bachelor of pedagogical education by abandoning "sequential" training (linear trajectory) and creating conditions for "parallel" (nonlinear trajectory) "entry" into pedagogical training programs for different categories of students. Thus, the "profiling" of the bachelor degree will be implemented regardless of the direction of training (17).

Graduates of the educational program at this level have the opportunity to work in schools only as trainee teachers, but in order to receive higher pedagogical education, they need to complete a one-year pedagogical internship, the successful

completion of which is confirmed by a qualification certificate already assigned by the professional community (20). That is, prior to the pedagogical internship, academic qualifications are awarded by the academic community. This is the undisputed law of universities.

In addition, as at any level of each level of pedagogical education, those who do not wish to undergo a pedagogical internship can continue their professional activities, but only as a trainee teacher and without the institution of mentoring. However, they still have the opportunity to enroll in the scientific and pedagogical magistracy in the presence of at least three years of teaching experience and compliance with the conditions of admission of applicants from each university.

To undergo a pedagogical internship, a system of cathedral schools should be formed, which, in accordance with the state license, will train interns through the coaching institute, or mentoring (14). It is in the cathedral schools that there is a real opportunity for introducing into the practice of education a new system of qualifying categories of teachers: teacher-moderator, teacher-expert, teacher-researcher, and teacher-master.

The assignment of these qualifications should be carried out in the system of independent certification of teachers, whose agencies/bodies are established in social and professional communities. This equally applies to the system of independent institutional and specialized accreditation of pedagogical universities (15).

Thus, the full cycle of higher pedagogical education involves five years of training in educational programs of universities.

Moreover, these educational programs should be developed in conjunction with employers.

Getting a higher pedagogical education provides access to training programs of the scientific and pedagogical magistracy, and further - the scientific and pedagogical doctorate of Ph.D.

For access to training in the scientific and pedagogical magistracy for those with higher non-pedagogical education, it is necessary to master the programs of the specialized pedagogical magistracy with the further passage of the pedagogical internship.

Today, in the real practice of Kazakhstani education graduates of undergraduate and not only pedagogical specialties enter the scientific and pedagogical magistracy. This leads to the fact that when developing educational programs for a scientific and pedagogical magistracy, it is necessary to "level off" the qualifications of graduates of pedagogical and non-pedagogical specialties.

As a rule, this is done to the detriment of bachelors of education, who have to study the psychological and pedagogical disciplines anew. Often, it turns out that graduates of scientific and pedagogical magistracy without higher pedagogical education are employed, as a rule, in universities, without having mastered the basis of either general pedagogy and didactics nor pedagogy and didactics of higher school.

That is, the traditional practice continues when teachers who have no professional pedagogical education are allowed to study at colleges and universities. But the pedagogical process has its own specifics. For its effectiveness and quality, the teacher also needs to know the didactic features of the discipline being read, the specifics of the methods and means of explaining educational material, constructing the logic of the course, knowledge of educational psychology, theory, and technology of education are of no small importance.

### 3 Results and Discussion

A teacher, regardless of whether he is a college or university teacher, or a school teacher, should possess integrated, complex knowledge: knowledge in a special field (mathematics,

geography, history, philosophy, etc.) and pedagogical knowledge (18).

The proposed structure of continuing teacher education implies:

- Gradual rejection of the training of teachers in the system of technical and vocational education;
- 5-year education at the level of higher education;
- 5-year education at the level of postgraduate education;
- Opening access to pedagogical education to persons with higher non-pedagogical education;
- A real opportunity to enter the labor market after each cycle of all levels of pedagogical education;
- Building a flexible trajectory for obtaining pedagogical education in accordance with the individual capabilities and needs of each student;
- Increase in the percentage of successfully completed training, since each level of pedagogical education consists of short cycles - No more than two years, with the exception of the scientific and pedagogical doctoral studies of Ph.D.;
- Real opportunities for improving educational programs of pedagogical specialties (Figure 1).

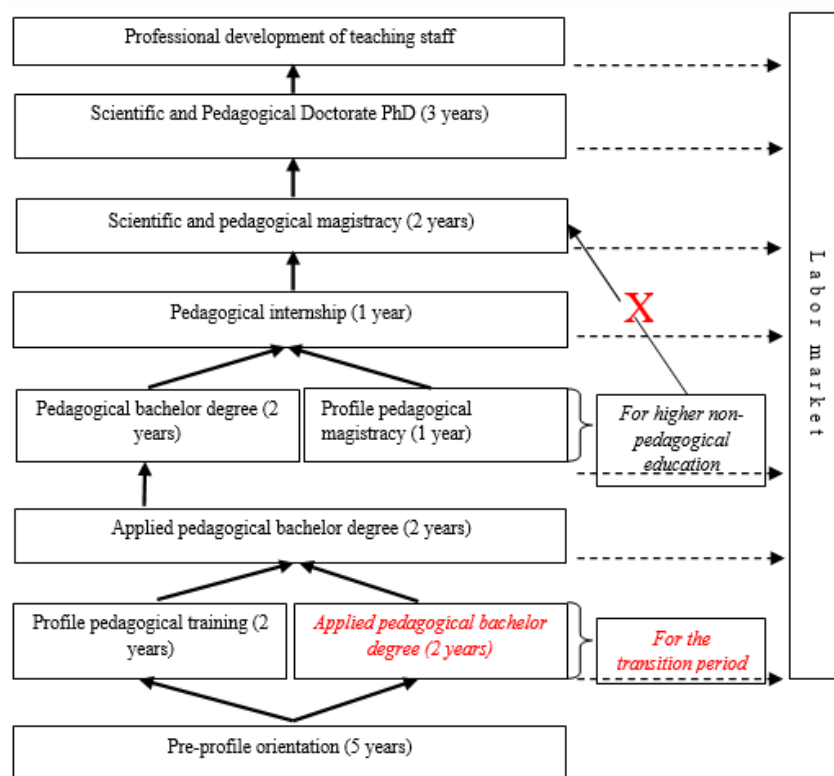


Figure 1. The proposed structure of teacher education

In Kazakhstan today, the introduction of applied baccalaureate is carried out at the experiment level. In accordance with the order of the Minister of Education and Science of the Republic of Kazakhstan dated May 26, 2018 No. 305, colleges have been established that are allowed to study as part of an applied pedagogical bachelor's program in 30 educational programs, for example, the Pavlodar Pedagogical College named after B. Akhmetova.

As part of the research, drafts of normative documents were developed for the experiment, accompanying the innovative development of level pedagogical education, providing:

- Increased flexibility and adaptability of standards and educational programs in relation to national and international contexts;
- Focus on "competencies" and "educational results", taking into account the requirements of the labor market and international trends;
- Improving the quality of education and the educational process, strengthening the role of employers and professional associations at all stages of designing educational programs;
- Designing optimal graduate competency models that are organically tied to Dublin descriptors, European and national qualifications structures.

The educational program of applied bachelor degree on qualification 0111083 - Foreign Language Teacher is submitted for testing. As the objectives of the educational program highlighted:

- Training practice-oriented specialists to work in the context of updated educational content;
- The formation of a linguistic personality, focused on the perception of the language as a spiritual value, communicatively active, tolerant in the intercultural space, ready for speech self-improvement, realizing the creative potential on the material of the target language;
- Formation of professional competence in the field of pedagogy, methods of teaching a foreign language, teaching the future teacher culture of pedagogical communication;
- Formation of a competitive personality.

The objectives of the educational program include:

- The formation of communicative competence, ensuring adaptation to the real speech reality, readiness to implement all types of speech activities: speaking, writing, reading, listening;
- Development of speech and mental activity, skills of independent information retrieval;

- Mastering the system of knowledge about language, speech, speech etiquette, mastering the norms of a foreign language, enriching the vocabulary and grammatical structure of speech, the active range of expressive means, the stylistic resources of the language.

The implementation of the educational program is aimed at the formation of the following competencies (19):

- Communicative competence, which provides the ability to implement skills in all types of speech activity, readiness for speech communication in conditions of spontaneity within different spheres.
- Linguistic, arming students with a system of knowledge about language as a science and social phenomenon, its history and development.
- Language competence, involving the assimilation by students of certain information about language and speech, language and speech units, language norms, including spelling and punctuation.
- Cultural studies, including knowledge of the culture, traditions of the people who speak the language, expressive means of language, aesthetic possibilities of speech.
- Discursive, giving the opportunity to build their own statement logical in content and form, as well as the ability to understand the meaning of the statements of other participants of communication.
- Socio-cultural, equipping students with the knowledge of the national-cultural peculiarities of the country of the language being studied, the norms of speech and nonverbal behavior and the ability to build their behavior in accordance with this knowledge in educational and actual speech situations.

The standard curriculum for the qualification "Teacher of a Foreign Language" includes the following modules.

Base module:

- The use of professional vocabulary in the field of professional activity;
- Drawing up business papers in the state language;
- Development and improvement of physical qualities;
- Application of the foundations of social sciences for socialization and adaptation in society and the workforce;
- Application of basic knowledge of the economy in professional activities;
- Understanding of the history, role, and place of Kazakhstan in the world community;
- The development of digital literacy.

Professional module:

- Modulation of educational information;
- Introduction of students to the system of social values;
- Methodical support of the educational process;
- Monitoring the quality of training, studying the level of learning of the content of education by students;
- Interaction with the professional community and with all interested parties in education.

Modules on the choice of educational organization:

The modules of choice are focused on the inclusion in the curriculum of disciplines from the university program.

Based on the analysis of educational programs of universities of the republic, the following are highlighted as data modules based on the analysis:

- Social and political;
- Linguistic;
- Introductory and pedagogical;
- Introduction-methodical;
- Educational and Cultural

The following disciplines have been introduced from the university component:

- "Basic foreign language",
- "Practical course of a foreign language",
- "Introduction to Linguistics",
- "Regional geography of the main foreign language. History and culture of the country of the studied language",
- "Latin graphics."

The following disciplines are included in the disciplines reflecting the process of updating the content of education:

- "Principles and technologies of updating the content of education";
- "The system of criteria evaluation".

The discipline "Modern History of Kazakhstan" is also transferred to the level of a pedagogical bachelor degree.

The applied baccalaureate experiment assumes that, upon completion of college studies, the hours of academic disciplines transferred from the higher education level will be taken into account when entering university. In accordance with this, each of the colleges included in the list of experimental sites will coordinate the educational program with a certain university on the basis of an agreement on recognition of the results of students' academic achievements in academic disciplines of the DTE cycle of the university component. In our case, it is Pavlodar State Pedagogical University.

#### 4 Conclusion

As part of the modernization of the education system of the Republic of Kazakhstan, aimed at updating the content of education, the system of teacher training, including the level of technical and vocational education and higher (postgraduate) vocational education, acquires special significance (21).

The continuity of pedagogical education indicated above implies the integration of educational programs, mainly according to the DLA cycle. Accounting for the results of formal education in the transition to the next level of education in the implementation of applied baccalaureate is focused on removing duplication of academic disciplines, ensuring focus on increasing the amount of study time devoted to the study of disciplines of the professional module.

Conducting an experiment should confirm or refute the expediency of transferring an applied bachelor degree to the level of higher professional education and thereby eliminating the need to train teaching staff at the level of technical and vocational education.

According to the results of the research, it is expected that the didactic and organizational support of training in the conditions of applied pedagogical bachelor's degree will be formed, the regulatory legal framework for the implementation of teacher training in the applied bachelor's system will be worked out, and didactic materials will be developed and published: scientific and methodological recommendations covering a wide range problems associated with the introduction of an innovative system of training highly qualified personnel in the conditions of applied higher education projects, competitive educational programs, guidelines and manuals for all the stakeholders of teacher education.

Such an update of the structure of teacher education will inevitably lead to an update of its content. In this aspect, at the level of basic and general secondary education it is proposed:

- Develop programs and mechanisms for the functioning of specialized pedagogical training and applied pedagogical bachelor degree at the level of TPE, taking into account the updating of the content of secondary education;
- At the level of higher and postgraduate education, develop uniform requirements for educational programs of applied pedagogical bachelor's programs, pedagogical bachelor's

programs and pedagogical internships, as well as joint and double-degree, including international, educational programs;

- To unify the content of basic disciplines of General Education Disciplines (GED) and basic disciplines (DB) for all specialties in the direction of "Education", taking into account the updating of the content of secondary education, the development of inclusive education, trilingual education, small-scale schools, per capita funding, etc.;
- To increase the share of psychological and pedagogical training in the educational programs of the applied pedagogical bachelor degree program.

The structure of continuing pedagogical education presented above is the result of the work of the working group on the modernization of pedagogical education of the Republic of Kazakhstan and the research project of the staff of the Nazarbayev University Graduate School of Education under the supervision of Professor University of Sussex (United Kingdom) Collin McLaffin.

In general, the proposed structure is designed to improve the quality of teacher education in accordance with international standards. First of all, it is connected with the Concept of Continuing Education for Sustainable Development and the principles of the Bologna process. Moreover, the proposed structure of pedagogical education does not contradict the legislation of the Republic of Kazakhstan.

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#### Primary Paper Section: A

#### Secondary Paper Section: AM

## ANXIETY MANAGEMENT IN SPEAKING IN A FOREIGN LANGUAGE IN THE CONTEXT OF COGNITIVE AND BEHAVIORAL METHODS

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**Abstract:** Anxiety and fear are ubiquitous emotions that have adaptive function and help to face the world that is unpredictable. They significantly contribute to regulation of interpersonal, group and society relationships and their level of importance is proof in an individual's achievement. They are also closely connected with the tendency of avoidant behaviour. This article presents a basic definition of these ubiquitous phenomena in a human's life. It brings a view on their dominant demonstrations and represents possibilities of anxiety management with an accent on selected cognitive and behavioral methods. The knowledge of their management with the aim of achievement support and minimizing of their negative consequences for an individual's achievement is a central topic, that can help with improvement of achievement.

**Key words:** anxiety, anxiousness, worry, fear, vicious circles of anxiety, cognitive-behavioural approach, cognitive and behavioral methods;

### 1 Introduction

The concepts of *anxiety* and *fear* are used alternatively in recent literature which does not accept the existence of *fear without an object* (i.e. anxiety in the classic meaning of the word). There always exists an object or at least "the keys" that provoke fear. The concept of *anxiety* denotes a personal feature and the concept of *worry* means the anticipation of fear and anxiety (Kondáš, 1973). Heretik and Heretik et al. (2007) agree with this opinion and they differentiate *anxiety* as a diffusive emotion that is vague, without an object and it can be verbalized with difficulties. They perceive *anxiety* as a permanent personal predisposition and *fear* as an emotion connected to a specific object. Also Praško (2005b) says that *anxiety* is an unpleasant emotional state whose cause cannot be defined more precisely. It is a feeling as if something threatening should happen, but we are not aware of what exactly it should be. We are just prepared for danger. Therefore can be defined as an emotional and physiological reaction to particular danger. When compared to anxiety, fear has a specific object. Říčan, Krejčířová (1997) say that fear is always related to manifold specific objects or particular situations. Anxiety as a more permanent characteristic personal quality is defined constitutionally. According to Matějček (2011) it is a character basis for excessively frequent feelings of uncertainty and threatening and also for excessively frequent feelings of anxiety. Anxious children and adults have useless worries, they are afraid and they anticipate failure without any reason. The outer expressions of anxiety are manifold. Some people are excessively shy and unsure in the presence of unknown people or among several people and they are not brave enough to express themselves. Another outer expression of anxiety is the fear of getting negative evaluation, fear of authorities and non-spontaneous behaviour in certain situation. An example to this can be found at a business meeting where it is necessary to speak in a foreign language. Říčan, Krejčířová et al. (1997) include anxiety and fear among normal adaptive developmental phenomena. Praško et al. (2006) agree with this opinion adding that anxiety and fear are adaptive emotions. Anxiety prepares for possible dangerous situations and fear gives an impulse to quick reactions of the body at the moment when this danger appears. It helps to preserve life in dangerous situations. They are very useful emotions even nowadays when modern people live rather "calmly". Psychological research proved the fact that people achieve the best performance when they feel slightly anxious. Other authors such as Heretik and Heretik et al., (2007)

emphasize the biological importance of fear and anxiety and they say that fear is necessary for surviving in life and health threatening situations. The intensity of anxiety and fear can be different. It may be expressed only by a slight discomfort or nervousness or, on the other hand, it can be a state of horror and panic. Anxiety can flow freely without any limitations in specific situations, or it can be expressed in attacks. If these attacks appear suddenly without any obvious reasons, we talk about the spontaneous anxiety or a spontaneous attack of panic. If they are related to specific situations (in this case - it is fear) when people are usually not worried, we talk about phobia. If this phobia develops when expecting some threatening situations, then we talk about anticipating anxiety (Praško, 2005b). It is evident that anxiety itself is not harmful and it does not cause any physical nor psychical damage. However, if people are not able to control their anxiety, they can experience unpleasant situations. In the state of excessive anxiety people are not even able to think and do the easiest things. Many people with these reactions are also worried about losing control of themselves because they are overwhelmed by fear and panic. Their physical reactions (e.g. blushing) appear also in usual and easy situations. Then we talk about hypersensitiveness to fear and anxiety. For this reason these people avoid activities and situations that cause these unpleasant feelings. When people start avoiding certain situations, they get used to it very quickly. They get into the so called vicious circle: when they stop doing certain things, they lose their self-confidence and therefore they avoid them even more frequently (Praško et al., 2006).

### 2 The main manifestations of anxiety

As aforementioned, anxiety is not only a certain feeling caused by physical reactions. It includes several components that influence us together and they cause particular symptoms of "anxiety". Praško et al. (2006), Praško, Prašková (2001, 2005) mention the following components:

Physical symptoms - physical tension, shaking, problems with irregular breathing, sweating, faster heartbeat, need to go to the toilet, etc. Some people notice their physical feelings first and they start feeling afraid. They do not realise that these physical reactions are also a way of experiencing stress and they often appear unexpectedly. For example, faster heartbeat can be wrongly interpreted as a symptom of heart attack, shortness of breath as a possible symptom of tuberculosis or another disease, etc. These unpleasant physical symptoms represent a typical reaction to stressful situations. When stress takes longer time, the mind and body get into the state of permanent tension and fear. People often have problems with breathing - their body is preparing for fighting or running away and they start breathing in a faster and more shallow way. However, it is not possible to overcome the given problem with fighting or running away because it has a psychical character. For this reason the organism remains in the state of permanent excitation and people get used to breathe in this way - breathing out excessive amount of carbon dioxide and inhaling excessive amount of oxygen. They cannot absorb it because they are not doing any physical activity. In this way changes the acid-base balance. The body reacts to this situation and the brain restricts the breathing. However, stressed people can have a feeling that they do not have enough air and they start breathing more intensively. The acid-base balance gets worse and so the brain stops breathing for a while. Otherwise there could appear spasms.

Behaviour - what we do when we are in the situation that provokes our anxiety. In these stressful situations anxious people postpone difficult tasks, they avoid problematic situations, they feel confused and ask others for help and reassuring, they start crying, etc. These expressions of behaviour can be divided into taking precautions, avoiding and hurrying (escape), expressions of aggressivity (fight) and nervous behaviour (mixture of both).

Thoughts - our thoughts, imaginations and convictions. All what we say for ourselves and all the ideas that come to our mind when we think about the given situation. These thoughts can be related to the situation that is worrying us or to our coping with it: "What if I will not be able to cope with it and I will start panicking, etc." These expressions of anxiety in thinking are based on *our worries, negative automatic thoughts and catastrophic imaginations*. This worrying increases our tension and purposeless activity. Negative automatic thoughts lead to sorrow and resignation.

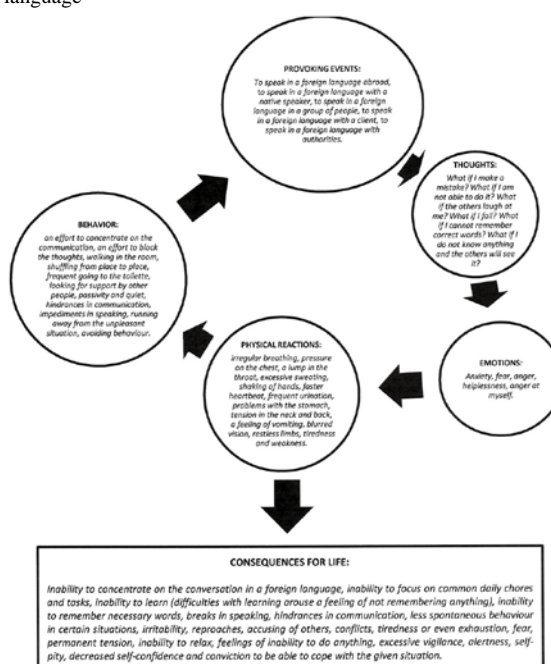
As aforementioned, a slight degree of anxiety or fear can be useful and natural. These are adaptive emotions. Anxiety and fear become a problem only if they appear too often, they are too strong or too long, or if they are present in unsuitable situations. Then they are connected with many difficulties and problems. Praško et al. (2006) say that if people suffer from the states of anxiety for longer time, their physical reactions can be hypersensitive and they can appear in usual and easy situations, too. Some people experience fear and excessive worries without being able to explain the reason. It is possible to determine specific situations when people can experience bigger fear - e.g. these are the situations related to the communication in a foreign language: they have to talk with foreigners, they have to participate at the meeting and talk in a foreign language, or they have to translate a specialized technical text into a foreign language, etc.

Picture 1: Vicious circles of anxiety (Praško et al., 2006).



Anxiety is indispensable for surviving because it prepares us for coping with threatening and stressful situations. It initiates hormonal changes in the body that allow us to deal with danger by means of fighting or running away. This reaction arouses many physical feelings which appear at the moment of anxiety - tension in muscles, faster heartbeat, sweating, faster breathing, etc. When we feel anxiety, the flow of our thoughts changes as well. The most typical sign of anxious thinking is that we concentrate only on the cause of possible threat and we do not perceive other impulses. These changes can help us immediately because our body is able to move quickly and our thinking aims at the current problem. The reaction *fighting* or *running away* is an immediate response to stress and it usually finishes as soon as that danger disappears. However, if this reaction does not "switch off" and is taking too long, we start having unpleasant physical feelings such as muscle pain, weak legs, strong sweating, shaking, shortness of breath, tension in the stomach or faster heartbeat. We start to feel worried - we always worry about the worst things, we are afraid that our problems will never disappear, we think negatively and we are convinced that our problems are caused by physical disease. In this case anxiety itself can become very unpleasant and stressful. We create vicious circles which maintain our anxiety. This anxiety gets out of control very easily. In stressful situations our behaviour changes as well. This can be manifested in unrelenting and avoiding behaviour, sitting and playing with fingers, biting of nails, running, escaping from the given situation, calming down with eating, alcohol, cigarettes, pills, or drugs, etc. A typical reaction in situations provoking anxiety and fear is running away. The relief after avoiding is only transient when we are in normal situations. Then we are overwhelmed with our remorse. Later it can be even harder to face this situation. Examples of vicious circles (Praško et al., 2006) are mentioned in the picture 1.

Picture 2: A vicious circle of anxiety from talking in a foreign language



As we can see in the picture, our thoughts, emotions, physical reactions and behaviour influence each other mutually, creating a vicious circle of anxiety (see Picture 2). When people think that they will make mistakes in speaking in a foreign language, this conviction arouses their anxiety, increases the inner tension. They may feel pressure on the chest and a lump in the throat. As a result, they will have hindrances to speak and they will prefer to be quiet because they think that they will make mistakes and everybody will see it. For this reason, they are really not able to concentrate on the communication in a foreign language and they really start making mistakes. This leads to the feelings of helplessness and self-pity which can grow into the convictions that they are not able to do anything. All these feelings have a strong impact on the physical reactions. They do not feel well, they are tired and weak. As a consequence, they can start thinking that they are not healthy and their behaviour changes. They go to bed and try to relax or they avoid any other difficult activities waiting for them. Their irritability and accusing of others leads to frequent arguments and conflicts. They start avoiding people and situations where they have to communicate in a foreign language.

All forms of avoiding and taking precautions contribute to anxiety and negative convictions. For this reason it is very important to face unpleasant situations and start doing activities they have been avoiding. This is the only way how to find out if the bad consequences will really happen. Facing to worrying situations should be a repeated and gradual process. Then anxiety decreases because we get used to the given situation. Habituation is a natural tendency of the nervous system to the "loss of sensitivity" in repeated exposure to the new impulses and situations.

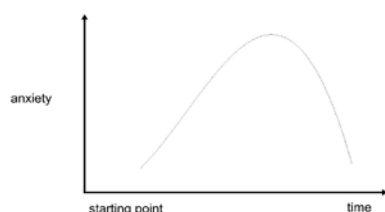
### 3 Cognitive and behavioral approach to anxiety and fear

Nowadays, etiology and research of anxiety emphasizes the biological concepts as well as the biochemical factors, the neurobiology of anxiety, and psychological and psychiatric approaches as well (Heretik a Heretik et al. (2007)). Anxiety is a central phenomenon of all clinical psychological tendencies: *psycho-dynamical, cognitive-behavioral, humanistic-existential*. Our work is based the cognitive - behavioral approach to anxiety and fear that is has two central principles: 1) *our cognition has a controlled impact on our emotions and behavior*, and 2) *our acting and behaviour can strongly influence our thoughts and emotions. We can achieve a desired change in our behaviour*

and acting by means of change in thinking (Wright, Bascoová, Thase, 2008). The cognitive behavioral approach is based on the theory that the cause of psychical problems can be found in wrong ways of thinking and behaving which are learnt and kept by outer and inner factors. We can re-learn or get rid of these wrong ways of behaving. We can also learn newer and more suitable ways of behaving that will allow us to adapt ourselves more effectively to new situations and to solve our problems. By means of the cognitive behavioral approach we can learn that ways how to think and solve our problems or how to influence what will happen later. It offers a very effective way of helping us to control our behaviour and cope with our problems. This approach explains a very important relationship between what we think, how we feel and what we do. An example of this relationship is the idea “I never do things correctly” that can arouse a feeling of anxiety. Subsequently, people thinking in this way can stop trying to do things because they are convinced that “it will not finish well”. By means of suitable techniques it is possible to find out if this conviction is true. We can also find out the way we think and discover the way how we feel. It is possible to find the way how to change our habits and get better control of our behaviour.

According to the behavioral approach, this inherited and acquired fear can disappear with repeated exposures - to the non-traumatic confrontation with originally worrying impulses (Praško, 2005b). Exposure belongs to basic methods of coping with anxious stress. Its basic principle is that people are exposed to such impulses or situations that are provoking their anxiety and therefore they have been avoiding it until now. They will learn how to deal with this feeling of fear and how to cope with their anxiety (see Picture 3). They will find out that a) *catastrophic consequences they were afraid of will not happen* and b) *after the quick initial increase, the intensity of their anxiety will stop at certain level and it is not growing incessantly. After a certain time it will even decrease spontaneously, and c) it is possible to cope with their anxiety and to get control of it* (Možný, Praško, 1999).

Picture 3: The curve of anxiety



After being exposed to the impulse we are afraid of, our anxiety increases very fast (within the course of several seconds) to the level that we experience as very unpleasant, or even unbearable. This period is called *sensibilizing phase of anxiety*. If we stop our exposure in this phase, our anxiety will decrease very quickly, but next time it will be the same or stronger. The following phase is called *habituation*. In this phase our anxiety is kept more or less at the same level. It can take several minutes or longer. The phase of habituation is prolonged if our anxiety is kept with automatic anxious thoughts. However, after a certain time the anxiety always decreases. This phase is called *desensibilization*. Even in this phase our anxiety can increase for a short time, but gradually it decreases to a bearable level. If people are repeatedly exposed to unpleasant impulses and situations, their anxiety decreases to a lower level and the period of habituation is shortened. After several exposures to the given situation our anxiety disappears completely. In some cases even one exposure is enough to get rid of anxiety. It is very important so that people believe that they can cope with their anxiety and they will stop avoiding unpleasant situations. However, exposure can be potentially a very risky method: if we run away from the situation we are exposed to, our fear of that situation will be strengthened as well as our conviction that we can never cope with this situation. Therefore it is very crucial to avoid such failure.

According to the cognitive point of view, maladaptive cognitive processes provoke anxiety. For this reason anxiety can be alleviated with the change of these wrong cognitive processes. Only the subjective meaning that we relate to the given impulse, will provoke our emotional reaction to it. (Beck, 1989, in: Praško, 2005b). Situations themselves do not provoke anxiety. Anxiety is related to the meaning we give to the given situation when interpreting it. This meaning (it is usually a meaning of possible danger) leads to the emotional reaction with corresponding behaviour. The basis of the cognitive approach is the way of influencing the meaning that was related to the situation by cognitive processing. This approach was derived from the systematic model of psychology. Biochemical processes in the central nervous system, physiological reactions, behaviour, cognitive and emotional processes are mutually connected. A change in one area leads to the changes in all other areas (see Table 1). (Libigerová, Bažant, 2018). Cognitive restructuring is the essence of cognitive methods. It is based on the fact that people experiencing strong emotions (e.g. anxiety) will make systematic logical mistakes and distorting evaluations in their thinking. Automatic negative thoughts influence our thinking and acting. They are very convincing and we do not think about their veracity (see Table 2).

Table 1: An example of connection between what we think and how we feel

A – activating (provoking) event	B – evaluating thoughts, our own conviction (interpretation A)	C – emotional consequence
A bad mark from the exam in a foreign language.	<i>I have not passed it again. What will my classmates say now? Everybody else has done that exam. I am hopeless. It is a failure.</i>	<i>Anxiety, feeling of being upset and sad, losing of courage</i>

The model ABC is based on the rational-emotional approach (RET) and rational-emotional behavioral approach (REBT) by Ellis (1957a,b, 1996) and it is completed with other steps (D - discussion, E - effective new philosophy, G - aims and values). This approach allows people to learn how to think about their difficulties in a more constructive way. It is a way how to find connection between what we think and how we feel. One part of this approach is a simple method how to identify different kinds of convictions or attitudes that lead to a wrong reaction to problems. A means the activating event or starting point. This situation has happened before we start feeling bad (e.g. for some people this A can be a bad mark from the exam in a foreign language). C is formed by emotional consequences, emotional reactions to the event A (in our case, C can be anxiety, sadness or anger). Most people think that A (activating event) causes C (emotional consequences). If we asked the people from our case why they were so upset, they would probably say: “Because I got a bad mark from the exam in a foreign language”. When we feel anxiety, anger or sadness - C, it is not the activating event A that has caused such emotional reactions. It is rather B, the interpretation of the event A that leads to emotional sadness (in our case, B is a conviction that they should have got a better mark, that they have both left hands and that they have failed totally.). Instead of learning how to change C, our emotional reaction, it is necessary to learn and understand how to change B - how to control our thoughts when evaluating problems and difficulties.

Table 2: Examples of restructuralization of negative automatic thoughts

AUTOMATIC THOUGHT	CONSTRUCTIVE POINT OF VIEW
When I make a mistake in grammar, the others will laugh at me.	Maybe I will not speak in a foreign language correctly, but there is no reason why the others should laugh at me. When they do, it is their problem, not mine.
The teacher is criticizing me.	I accept constructive criticism from people who are really interested in me. Their opinion is very valuable for me because it is their feedback. I can improve myself
I will rather not say anything in order not to make a mistake	Maybe I will make mistakes in a foreign language, but this is not a reason why it should hinder me in speaking. We learn from our mistakes.
I will fail in front of my classmates.	Classmates who like me, will accept me even though I make mistakes. They know what qualities I have.

*Within the area of cognitive restructuralization we deal first with particular automatic negative thoughts and with their substitution with alternative and more balanced thoughts. We strengthen them by means of "behavioral experiments". Only on the basis of knowing the most typical automatic negative thoughts, we are able to derive "dysfunctional core conviction" that has an impact on these automatic negative thoughts. In this way we can directly doubt the validity of this dysfunctional core conviction.*

#### 4 Targeted possibilities of coping with anxiety by means of the cognitive and behavioral methods

In the course of several decades there have arisen many cognitive and behavioral methods that have a wide application in the training of coping with anxiety. In order to cope with anxiety, we can apply methods aimed at influencing physical symptoms (*muscle relaxation, controlled breathing, etc.*) as well as methods focused on influencing evident behaviour (*systematic desensibilization, exposure, observation and planning of activity, self-rewarding, methods for creation of new behaviour, methods for changing the existing behaviour - operational conditioning, etc.*) as well as methods aimed at influencing cognitive processes (*stopping of thoughts - STOP technique, stopping of thoughts - CARDS, diverting of attention, cognitive restructuralization, self-instruction, etc.*), or complex methods (*training of increasing the resistance against stress, training of social competences, training of coping with anxiety, training of assertive thinking, training of solving problems, etc.*). In the following text we choose some of them. These methods are usually not used independently, but they are combined with other methods. They require a training with the guidance of a professional expert. More information about them can be found in the works by Ďurný, Možný, Praško (1999), Praško, Možný, Šlepecký et al. (2007), Piačková (2002), Wright, Bascoová, Thase (2008), etc.

##### Relaxation procedures

Anxiety is connected with the activation of sympathetic nervous system and higher adrenaline in the blood. This leads to many physical reactions (e.g. faster pulse frequency, higher blood pressure, higher tension in skeletal muscles, shaking, faster breathing, increased sweating, etc.). We often interpret these physical reactions as symptoms of possible collapse or physical disease ("I will faint!") and therefore our anxiety is higher. If we learn to control these physical reactions, the intensity of unpleasant physical feelings decreases in situations when we feel anxiety. Our understanding of these feelings changes as well ("I will not faint, I am just nervous"). The result of these processes is reflected in our higher self-control in difficult situations. The basic methods used for achieving the state of physical relaxation are based on the relaxation of skeletal muscles and calm controlled abdominal breathing ("calming breathing"). We can control the achievement of this state of relaxation by means of some devices - this method is called biofeedback. The aim of these methods is to reduce the activation of sympathetic nervous system and to activate the parasympathetic nervous system. In this way the state of physical relaxation can be achieved. It is proved that the activated parasympathetic nervous system effectively blocks anxiety and psychic tension (Možný, Praško, 1999). We have to emphasize that the usage of all these methods leads to skills that can be acquired only with repeated and regular practicing under the guidance of a professional expert. In the following text we recommend some relaxation exercises such as:

- *Rhythmic relaxation (psychophysical relaxation) (Žáčková, Jucovočová, 2000)*

*Lay down and listen to the sound of a metronome. Imagine a summer meadow in a forrest full of sunshine, where you are resting peacefully and from the distance you can hear the chopping of wood from a woodcutter, somebody who is fixing a hedge or a woodpecker that is pecking into a tree. The sound is coming from the distance only, while we are listening to it and at the same time we are resting, we are relaxed and calm.*

- *Spiral relaxation (a type of a psychophysical relaxation) (Žáčková, Jucovočová, 2000)*

*Lay down on the back, relax as much as is possible, and try to focus on image that in your belly button there is a small earthen marble that is nicely warming your abdominal area. This marble is starting to make a circle around your navel in the size of little a coin, the circles are getting bigger gradually. It is releasing a feeling of relaxation, peace and warmth. All touched areas are calm, relaxed and comfortably warmed. Its circles are slowly getting bigger and reach areas of the abdomen, chest, shoulders and hands. Circles continue to feet, neck and a head. They are leaving a feeling of peace and warm in all these parts of body (we repeat this formulation while we add new circles). The circle that is made by marble, involve a head and feet and creates closed circle where is warm and peace and protects us against everything that could bother and stress us out. After experiencing this feeling the marble starts to return slowly, circles are getting smaller and it ends in the navel. A nice feeling of peace and warmth, that it created is staying in our body. This relaxation is very comfortable and beside the huge calming effects has good effect on internal organs, because it starts unusually in the area of a navel that relaxes and warms up this area.*

- *Short relaxation (mostly psychophysical relaxations) (Žáčková, Jucovočová, 2000)*

*Duration 3-5 minutes: Sit or lay down comfortably, close eyes and let the body relax. Now focus on the closed eye lids, that we use as a screen where we can imagine the next pictures. These are imaginations that create calming images – a shiny surface of a pond bathing in sunshine, a blue sky with no clouds, a sunset with the sounds of crickets, a night sky with many stars, a fresh morning sunshine, the sun starts to warm up the pond's surface. We should experience and let the last image linger for a while, and think about the nice rest we had, we take a deep breath, stretch, we can also yawn like in the morning like we do after we awake, open our eyes and we feel a great amount of energy and strength flowing in our veins for another activity.*

##### Calming breathing

The state of anxiety is often related to faster superficial breathing - hyperventilation. If this hyperventilation takes longer time, it provokes unpleasant symptoms in the body, such as nausea, pressure on the chest, the feeling of shortness of breath, spasms in toes, fingers and limbs. If we can control and calm our breathing in such states, it will decrease the level of anxiety we

experience. Before the training, it is very important to know the difference between the “chest” breathing and “abdominal” breathing. If you work with clients, you have to show them how to breathe into the abdomen. Teach them to breathe in the rhythm of 8 - 12 breaths in a minute with a short pause between the breathing in and out. At the beginning it is necessary to find such a breathing rhythm that will be the most suitable for them. You can record this rhythm and they will take this recording home. In this way they can practise calm “abdominal” breathing also at home. When they get used to it, they will not need this recording and they will be breathing calmly alone (Možný, Praško, 1999). You can apply also other variants of calming breathing:

- *Breathing relaxation (psychophysical relaxation)* (Žáčková, Jucovočová, 2000)

*Lay down or sit as comfortably as possible and we focus on our breath, how the air flows while breathing. It enters our nose, continues to our lungs, we focus on how our belly rises up and also the chest and area under the collar bones. While breathing out everything descends slowly back and the airflow leaves by mouth from our body. During breathing relaxation we can count how many times we breathe in and breathe out (similar as we count sheep before sleeping). Slowly we stop focus on our breath and we try to imagine some peaceful place (beach, sea, sun). If we want to achieve deep rest or falling asleep, we imagine, how we are falling asleep on the beach under a sunshade and we hear the sounds of the sea. If we would like to be more ready for another work, we can imagine that on the beach came a couple kids who are playing and are merry. We want to join them so we wake up and breath in deeply, stretch, stand up, and feeling relaxed and refreshed we join them.*

- *Breathing exercises* (Žáčková, Jucovočová, 2000)

*First rehearsal abdominal/diaphragm breathing. Lay down on your back, put your hand on your abdomen and focus on breathing while it moves up and down. Later start to breath into the abdomen to make it move as obviously as possible. We imagine a picture of a balloon that inflates and deflates or a big inflatable balloon, that we will travel by for a trip. We also could put another light object, such as a book, on our abdomen, and focus on how it move with the abdomen up and down. After that we train chest breathing. We put a hand on the chest and focus on it's fall and rise.*

- *Calming counting* (Wilson, 1986, in: Možný, Praško, 1999)

*During the moments of high tension and anxiety breathe in through your nose into the abdomen and then breathe out slowly. By breathing out say to yourself quietly “Calm...” Continue in this way of breathing and start counting backwards in your mind. Start with the number 10 and finish with 1. If you still feel tense and anxious, repeat this counting. While counting, notice which parts of your body are tense. Imagine that this tension is disappearing. When you come to number 1 and your tension is alleviated, you can continue with the activity you were doing before this calming breathing.*

### **Know your anxiety** (Praško et al., 2006)

People experience anxiety in different ways. We do not have the same physical feelings and behaviour in stressful situations, we have other anxious thoughts in our mind. In addition to this, we react anxiously to different impulses.

Before you start learning how to cope with your anxiety, you have to examine it thoroughly. The best way is to record the time when you felt anxious, the physical feelings you had, what you were thinking about and what you were doing. It is also useful to try to evaluate how strongly you experienced anxiety in particular situations (with a range from 0 to 10). Record all such anxious feelings during one or two weeks and then read your records carefully. Maybe you will find out that you are able to answer these questions:

1. *What situations, animals or things provoke my anxiety?*
2. *What physical feelings and anxious thoughts do I have in a stressful situation?*
3. *Does the intensity of my anxiety change in different situations?*
4. *What do I usually do when I feel anxiety?*
5. *What helps me to cope with my anxiety?*

### **Know your ways of coping with anxiety** (Praško et al., 2006)

It is very important to differentiate between those ways of coping with anxiety that could help us for longer time and those ways that only alleviate our anxiety for a while, but they are rather harmful from a long-term point of view. *Suitable ways of coping with anxiety for longer time include: physical exercises, a contact with kind people, pleasant activities or supporting dialogue with yourself. Only temporary ways of coping with anxiety include: excessive overeating, chocolate, cigarettes, coffee, tranquilizing pills, alcohol, avoiding of stressful situations, swearing, and self-criticism.* Make a table with two columns and write suitable strategies in one column and unsuitable strategies in the other one. Determine situations when you often use a particular strategy. Think about alternative and more suitable ways of coping with anxiety that could substitute those strategies that are not effective and good for you. (Praško et al., 2006).

### **Our feelings and acting** (Piačková, 2002 - modified by Müller de Morais, 2018)

Emotions are usually connected with something, they never appear on their own. When we think about that vicious circle, then we understand that what we feel is influenced by what we do and how we think. For example, you can feel anxiety when you have to speak in a foreign language. However, at home you feel relaxed. Or you like reading books in a foreign language in your free time, but you feel stressed when you have to talk about them to other people. You can also notice that you have other feelings when you are with different people. For example, you feel relaxed when you talk with a friend from a foreign country, but you are nervous when you present something to a strict teacher at the lesson of a foreign language. If we summarize these facts, you will probably start noticing this model:

<b>What am I doing?</b>	<b>How do I feel?</b>	<b>What do I think?</b>
<i>I am at school and I have to present my work in a foreign language.</i>	<i>Stressed and anxious.</i>	<i>I will fail.</i>
	<i>Relaxed, calm and joyful.</i>	<i>I will not be able to do it in front of my classmates.</i>
<i>I am talking with a friend in a foreign language.</i>		<i>It is great to talk like this with my friend.</i>

Our feelings depend on what we think and what we do. Try to determine your feelings in the following exercise. Notice if your strongest emotions are related to your specific thoughts or your activities:

1. Thoughts that provoke GOOD feelings ...
2. Thoughts that provoke UNPLEASANT feelings ...
3. Activities that provoke GOOD feelings ...
4. Activities that provoke UNPLEASANT feelings ...

#### **What would i do if i did not have fear?** (Kolaříková, 2015)

It is sometimes useful to play with your imagination and look at a different reality without fear by means of easy questions. It is important to make "trips" into the world where exists our "I" without useless fear and anxiety. These trips remind us that the reality with fear and worries we live in, is not the only option we have at our disposal. If we are not in really dangerous situations, fear is only our illusion:

*Find 10 minutes only for yourself. Sit down and feel comfortably. Breathe deeply and slowly... Your body is more relaxed with every breathing out... Release all tensions... Then answer to some questions... Do not hurry, you have enough time... Let your phantasy find the nicest options...*

- *How would you live your life if you did not have fear?*
- *What would be your relationships like if you did not have fear?*
- *What would you do if you did not have fear?*
- *What is possible to change when I get rid of my fear?*

*Be patient ... do not hurry ... Give a lot of time to your phantasy ...*

*As soon as you have enough answers to these questions, stretch your body and open your eyes. Include the obtained information into your life and do not let fear influence you.*

#### **The box of worries** (Piačková, 2002)

It is sometimes hard to stop and switch off negative thoughts that appear in our mind. When it happens, it can be useful to draw or write these thoughts on the paper and lock them in the box:

- *Find a box and make your own box of worries. Paint that box and choose its place.*
- *When you find out that you cannot stop your worries, write them down or draw them on a piece of paper.*
- *Then put them into your box and lock them there.*
- *At the end of the week open your box and talk about your worries with somebody you trust.*

#### **Switch off the tape** (Piačková, 2002)

You can sometimes have the same worries or negative thoughts again and again. It is as if you were listening to the same tape that plays in your mind. This tape will never change. Its volume will never turn down. In this case it is useful to learn how to switch off this tape:

*Step 1: Imagine your record player:*

- *Imagine the record player that is playing in your mind.*
- *Look at a real record player. May it will help you to imagine it.*
- *Find out how you can switch it on and off, where you can put the tape and change the volume.*

*Step 2: Imagine how you stop the tape:*

- *Imagine how you put the tape into the record player.*
- *When you switch it on, the tape will start playing and you will be able to hear your worries and negative thoughts.*
- *Now imagine how you switch the record player off. Concentrate on that button "Switch off". After you have pressed it, these thoughts will stop.*
- *Practise switching on and off. Notice that your negative thoughts react to it and they stop. The more you practise, the easier it will be.*

#### **Distressful time** (Praško, Prašková, 2001).

This technique is suitable if you spend a lot of time thinking about negative thoughts:

- *Define how much time you spend with these obsessive and intruding thoughts. Then determine a specific "distressful time" you will be dealing with them.*
- *Do not allow to these thoughts to disturb your work, free time or mood whenever else.*
- *If you have a feeling that you forgot to deal with some ideas during your "distressful time", just write them down with a pencil or a pen. Write one or two words that will remind them to you.*

The aim is not to avoid thinking about unpleasant things completely. It is rather a way of determining a suitable time for dealing with them. Many people need half an hour of such distressful time every day. This technique works well if you really find the time for it and do nothing else when you deal with your thoughts. For example, choose a particular armchair where you will be sitting and thinking. This is not time for eating, drinking, talking, working or having fun. The knowledge that you have a specific time during the day for thinking, will enable you to think about problems and worries during another time.

#### **Technique of swelling** (Praško, Prašková, 2001)

The aim of this technique is to destroy disturbing negative thoughts by exaggerating the problem into the absurdity. In this way we will make the problem ridiculous and it will stop provoking fear. The funny aspect of the exaggerated scene shadowed the previous fear.

#### **Diverting of attention** (Možný, Praško, 1999)

This method is based on the fact that we can fully concentrate only on one thought in a certain moment whereas the other thoughts or imaginations are at the background and their influence on our mood is weakened. We apply this method in the situations when we have unpleasant thoughts we do not want to think about them. In order to make this method effective, we have to know *several ways of diverting of attention* and use those ways that are helpful and focused on our interests and personal qualities (e.g. people practising sport can weaken their attention by means of a physical activity, musically talented people by playing a musical instrument, etc.). It is important to *find such activities that will be really interesting for us*. At the same time these activities are quite demanding so that we could not do them automatically. The factor of *repeating and practising* is decisive for the effectiveness of this method - first in the calm atmosphere and later also in usual situations where we have to deal with unpleasant thoughts, imaginations or worries.

#### **Pumping** (Praško, Prašková, 2001)

Pumping is a technique aimed at the increasing of positive thoughts. Its name is derived from the expression "*load the pump*" when you put water into a dry pump so that it can start working. In this case we set or "pump up" positive thoughts into our conscience in a systematic way: *we will stop the flow of negative thoughts and start the flow of positive thoughts*.

- *First you have to make a list of positive thoughts. Think about such thoughts that are directly related to you. If it is necessary, ask your friends to tell you about your good qualities. Then write these thoughts on cards. Write only one idea on one card. In this way you will have the whole set of positive thoughts.*
- *Then start loading your "pump of positive thoughts" carrying this set of thoughts everywhere. You can read these positive thoughts whenever you want. Concentrate on what is written on the cards. If you have new positive thoughts, add them to your set.*

*Finally put some empty cards into your set. When you choose such an empty card, write down there any new positive thought that comes to your mind.*

**Face your anxiety and fear** (Piačková, 2002 - modified by Müller de Morais, 2018)

To specify tasks by means of small steps is a very useful method, but we can postpone their fulfilling because we feel too anxious. These anxious feelings often prevent us to do something we really want. Afterwards we have to cope with other emotions, like anger and sadness.

You have to learn how to cope with your anxiety and worries. The following steps could help you:

1. *step: Use small steps to specify your task by means of smaller tasks.*
2. *step: Make your own dialogue and act it.*
3. *step: Relax and imagine a successful description of your first task.*
4. *step: Try it with this first task.*
5. *step: Reward yourself for this first success.*

*Example: A student is anxious when she has to speak in a foreign language in front of a bigger group of people. She is afraid to present her work. She is afraid that she will not be able to remember the correct words and she will make many impediments in her speech. She imagines that her classmates will laugh at her and her teacher will give her a bad mark. She has had these feelings since she worked abroad during the summer holidays and local workers were amused with her accent. She decided to face her anxiety.*

*1. Step: This student decided not to avoid this situation. She wants the present her work. She would like to make it interesting for her classmates. She would also like to get a positive evaluation from her teacher and hear that she has improved a lot in this foreign language... By means of small steps she determined her following tasks:*

- *To prepare her presentation and to consult it with a native speaker.*
- *To practise her presentation at home in front of a mirror.*
- *To ask a classmate for a feedback after presenting him her work before the official date of her presentation at school.*
- *To ask two or three classmates to support her during her presentation (e.g. with the eye contact, nodding or other gestures of agreement, etc.)*
- *To try to present her work by means of presentation skills she has learnt during her studies (e.g. to move closer to her classmates, to pay her attention to all of them, to ask verifying questions, etc)*

*2. Step: This student was thinking what she would say to herself at the moment of coming to the front of the classroom: "I am calm. Nobody will laugh at me. I am going closer to my classmates..."*

*3. step: She imagined her place of relaxation. Then she imagined the scene of her calm walking towards her classmates. She also imagined that her classmates were clapping at the end of her presentation and her teacher gave her a positive feedback, too. The teacher said that she had improved her speaking skills in this foreign language.*

*4. Step: She imagined this situation several times. She practised what she would say to herself. Finally she acquired a feeling that she could try it. She decided that the best time for facing her anxiety would be during the lesson when she had to present her work. She used all methods from the first step.*

*5. Step: The student was successful and she prepared a presentation that she had consulted with a native speaker. She was satisfied and she rewarded herself with a cup of hot chocolate and a cake. Then she continued with her other tasks.*

## 5 Conclusion

The aim of this article was to elucidate the phenomenon of anxiety and fear of speaking in a foreign language and selected possibilities of their management by cognitive and behavioral method of cognitive-behavioral approach. Understanding of anxiety of speaking is nowadays a result of researches and

clinical experience, that are for current pedagogical and psychological theory and practice necessary and needed part. Our author's ambition was to provide possibilities of the management of anxiety by application of cognitive and behavioral methods, that we consider as an adequate method in the area of its reduction. Their use in the situation of verbalisation in a foreign language is effective in the area of achievement support. We expect that in a frame of conceptualisation of problems in speaking in a foreign language will be influenced by new information from research and practice and it will continue as an investigation trend of this problem with the aim to minimize negative influence on achievement.

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#### Primary Paper Section: A

#### Secondary Paper Section: AN

## ENTREPRENEURSHIP INTERNATIONALIZATION – CASE OF SLOVAK FAMILY BUSINESSES

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**Abstract:** Small and medium-sized enterprises are well positioned identities in the national economies of the EU countries. The SME sector is represented by a large proportion of family businesses, which are not addressed adequate attention. As a result of the competitive environment, the small and medium-sized enterprises are forced to seek opportunities for further development and potential growth on the market. As a potential opportunity, family businesses are trying to get involved in international entrepreneurship. Research in this field can be described as unique, however increased attention these business would deserve from the representatives of academic life and the state. This article presents the partial results of research supported by GAAA 19/2018 with a focus on internationalization of family businesses, a research conducted on a sample of 240 family enterprises. Selected statistical methods were applied to investigate the issue. Partial results of the research revealed that family businesses are trying to get engaged in international business activities. Since these business entities are more vulnerable, they feel more cautious about extending their business activities beyond the borders compared to non-family type of businesses.

**Keywords:** Family businesses, small and medium enterprises, internationalization, international entrepreneurship

### 1 Introduction

The SME sector represents a significant part of business activity not only in Slovakia, but in the European Union as well. It can be considered as a core sector of the economy, represented by 97-99% of the business entities. It is an important reason why to address adequate attention to family businesses. Partial problem emphasized regarding the sector of small and medium-sized enterprises is that they are not addressed adequate attention by governments or professional organizations. As there is no single definition applied for family businesses, neither a single family register exists that makes the research even more complicated in domestic and international measures. We can only rely on estimates of the research conducted to quantify the family enterprises. Family business have no long tradition in Slovakia. They were established as a response to economic changes and transformation in the society. In developed economies family business have long established position alongside the non-family enterprises. They are considered to be viable and innovative in the western economies. More effective, transparent and targeted attention is deserved by family owned enterprises also in Slovakia. Strengthening their position in V4 is also vital. In particular, the term family business refers to entrepreneurship in small and medium-sized enterprise sector, trade law, business economics and corporate governance. This is an interdisciplinary field of research, therefore a number of issues regarding family businesses concern a wider spectrum of business entities. The problems family businesses have to deal with are largely the same as those faced by non-family small and medium sized enterprises (Vilcekova et al. , 2018). On the other hand, they are also struggling with specific problems. The global trends are also gradually affecting the activities of family businesses, which are facing the challenge of choosing a strategy for their further development.

The domestic business environment provides limited opportunities for further development due to fierce competition on the market. The management therefore is seeking other opportunities for organic development. Strategic management aims to find an appropriate corporate strategy to achieve success (Saniuk and Gajdová, 2015). The opportunity to promote the development of business entity and ensure demand for its products and services is to penetrate international markets. Being a member of the EU, Slovakia can utilize all those opportunities provided by the market of 28 member states. Perspective

development of the entrepreneurial sector is seen by Androniceanu et al. (2018) in the field of activities comprehensively understood as sustainable development. According to Balcerzak and Pietrzak (2017), sustainable development in the EU countries has to be in line with the main objectives of the EU, which has repeatedly declared its interest in development of the small and medium sized business sector, also represented by family businesses. This idea is also supported by Grabara (2017), who emphasises that the Central European countries have many common features the businesses can benefit from, and have a potential to establish their activities on individual markets. Slovakia, the Czech Republic, Poland and Hungary are not only geographically close, but the markets, the market structure, the conditions of entrepreneurship, the competitiveness of businesses and the market itself are similar. These similarities can be detected in the Benelux countries thoroughly examined by Korauš, Mazák and Dobrovič (2018). The business environment is shaped by the ongoing globalization, which according to Zeibote, Volkova, and Todorov, (2019) or Reklaite (2015) has significant influence on internationalization of entrepreneurship by active support. Zaušková and Grib (2016), who investigated the impact of globalization on entrepreneurial activity of businesses found that globalization does not only affect the decision-making of management on strategic issues or the future of the enterprise, but also the marketing activities and the innovation processes. It is undisputable that globalization is increasingly affecting the regional markets, dominated by small and medium-sized enterprises. Pietrzak et al. (2017) examined the business environment under the influence of globalization tendencies, especially in the Polish regions, where part of the Slovak businesses (mainly in the northern part of Slovakia) conduct their business activity. Adamowicz a Machla (2016), Nesterak and Gródek-Szostak, (2016) or Macháček, (2017) emphasized the importance of regional activity of businesses and discovered that the support provided by regional governments is minimal, often only verbally declared. According to Gajdová (2013) and Virglerová et al. (2016), the strategic view should focus on the local, regional and national development of the business sector. Representatives of this group are the small and medium-sized enterprises, certain part of them represented by family businesses. Since they differ from non-family enterprises in several terms, they have different needs, requirements and attitude (Dvorský et al. 2016). The next chapters of this article will address the specific problems of family enterprises and their effort to penetrate international markets.

### 2 Literature review

There are several motives for enterprises to extend their activities on international markets. According to Mitkus and Maditinos (2017), the main incentive to enter international markets is the possibility of higher revenue, profit and acquiring new theories. Beside the opportunities that entry to international markets can offer, there are also barriers to entrepreneurial development. Conducting business activity on international field can spur the innovation activity of enterprises, as well as it might contribute to increasing competitiveness. According to many authors, the owners of family business face barriers on the domestic markets that do not allow them to expand their business or make investment to grow. This issue is addressed by Andrejovská and Pulikova (2018), Mihóková et al. (2018), Okanazu (2018) and Kljucnikov et al. (2017). They emphasized the significant tax burden on businesses and distorted financial discipline as a result. These obstacles do not contribute to business development. The financial risk these business face, has negative impact on their finances and ability to develop on the market (Virglerova et al. 2016). The discussed issue is not a specific phenomenon of the Slovak market. These barriers are described by foreign authors e.g. Baloch et al. (2018). As one of the proposed solutions, they indicate the need for more substantial financial reforms that can contribute to development of the business sector. Horecký (2018) can see the possibility of

development in free flow of goods and capital on the single market. One of the further motives small and medium-sized business penetrate the international markets is the opportunity to participate in networking (Havierníková et al. 2018), which has a long tradition in developed economies. Horská et al. (2018) added that a key to success in the 21st century is to seek and create competitive advantages that act as a prerequisite for the future success. According to the authors, the company's decision to enter international market is in close relation to management philosophy of the business oriented at territorial expansion of the business. In order to succeed in international environment it is necessary to optimize all business management tools and marketing tools as well (Kusá, 2010).

The problem of internationalization is examined particularly on the example of transnational enterprises. Less attention is devoted to internationalization process of small and medium-sized businesses, and even less attention is paid to family enterprises on international markets. This article would also like to present up-to-date data of a primary survey focusing on the internationalization effort of this specific group of enterprises. Several foreign authors can be found addressing the issue of internationalization of family enterprises. The influence of family on internationalization process of the business was addressed by Claver et al. (2010) and Monini et al. (2010). Models of internationalization and strategies applied by small and medium-sized businesses were addressed by Rexhepi et al. (2017), Suman, S. (2017) or Ubrežiová and Hotzinger (2015). The analysis provided by the authors has led to formulate a number of issues to be addressed by companies internationalizing their business activities. The most important are the following: more and more businesses are directly or indirectly forced to penetrate international markets, where they can optimize the redistribution of their production; the international markets provide an opportunity to apply differentiated strategies to address new segment of customers; expanding business activities results in increased cooperation with new foreign partners; small businesses are provided an opportunity to respond more flexibly to the needs of the foreign market compared to large enterprises; internationalization of the business activity requires specific knowledge about the target market and up-to-date information about the current situation and the possible future development scenarios. Companies in certain phase of their development and lifecycle have to make decisions that move them out from stagnation and can provide possibilities for growth (Novotná et al., 2015). Such an opportunity is the penetration of the international markets, which is associated with new opportunities to operate in a new business environment with a possibility of utilizing the market gap. However, business owners must bear in mind the need for greater security and caution (Korauš et al., 2017) in the international environment that results from inadequate information about the market, intense competition and the lack of knowledge about business partners etc. We often face the fact that family business is owned and run by female entrepreneurs. Female entrepreneurs show different attitude towards problem solution, they are more hard working and cautious (Sulíková, Strazovská, 2016). They show less willingness to take risk and therefore there is a presumption that they feel more confident as entrepreneurs in domestic environment.

The expansion of entrepreneurial activities i.e. internationalization is about conducting activities beyond the borders of the home country, crossing regional borders and being represented in different sectors of the national economy. Entrepreneurship is even getting more and more difficult in the domestic environment, this is the reason businesses are considering expanding their activities to other countries. While conducting business in international business environment, it is important to respect several aspects of the international environment e.g. international business practices, the political and economic differences, the cultural diversity etc. Internationalization is not a simple process. It takes place in the world economy as a result of international division of labour and the international economic interdependence. International entrepreneurship is a gradual expansion of business activities

beyond the domestic market that results in more complicated trade relations. Penetration of international markets is fundamentally the strategic decision of the company management. The company should coordinate the entry into new markets and implement these activities gradually. The internationalization of business activities starts with a simple form of expansion on foreign markets e.g. exports (Ključnikov and Popesko, 2017), and continues with more sophisticated forms of market entry e.g. licenses, joint ventures etc. (Milosovicova et al., 2018). The penetration of foreign markets requires a change in management, logistics, marketing and other activities that need to be addressed special attention (Khúlová, 2016). Professional experience of the older generation might be useful for the younger generation (Volodymyrivna et al., 2016; Koráb, 2014), especially in the field of customer relationship management, analytical approach to the market, establishing new business partnerships and so on. The generation gap and replacement of different positions might also be a specific problem of family businesses. Some of the companies underestimate the importance of these changes that can result in failure entering the international business environment. There are basic rules applied in international entrepreneurship, which acts as a prerequisite to succeed in international market environment. These are the following e.g. cultural traditions and practices (Šenkár, 2018), international business ethics, global principles, interconnectedness of the markets and their mutual interaction. Last but not least, the human resources are at the forefront in both the commercial and public sector (Ciobanu a Androniceanu, 2018), as well as their role is essential in conducting business activities both on domestic and international markets (Lorincova, 2018).

### 3 Data and methodology

The evaluation of entrepreneurial activities of family businesses found in scientific literature is primarily elaborated on theoretical level, less attempts can be found on practical level. Even the theoretical elaboration of the issue is not at a sufficient level considering the domestic scientific literature. Adequate foreign literary sources we can find about the family entrepreneurship. Therefore, one of the partial objectives of this article is to widen the theoretical background with a particular focus on internationalization of family enterprises. The second sub-goal is to identify the motives that incentivises the family businesses to enter the international market. The main objective is to explore the measure of internationalization in the sector of family businesses on a selected research sample. The article provides an up-to-date information on theoretical background of the discussed issue with a help of domestic and foreign scientific literature, while bringing the most up-to-date information from the terrain. We obtained empirical data during the realization of an 18-month research, with a focus on internationalization of business activities of family enterprises. We applied a questionnaire survey in Western Slovakia. We used a random selection of enterprises using the Finstat database. A total of 450 business entities were approached, representing the small and medium-sized business sector in Bratislava, Trnava, Nitra and Trenčín regions. During the initial selection process, we selected the businesses with family business character. Subsequently, we reduced the sample to 250 family enterprises willing to participate in the research. Not all of the businesses were willing to answer all the questions involved in the survey and therefore the incomplete questionnaires had to be excluded in order to maintain the objectivity of the research. The final statistical file was made up of 240 family businesses. Advanced statistical methods, Chi-Square Test and Friedman test were applied to process the obtained empirical data.

Chi-Square Test expressed as the following:

$$\chi^2 = \sum_{i=1}^n \frac{(e - t)^2}{t}$$

Friedman Test expressed as the following:

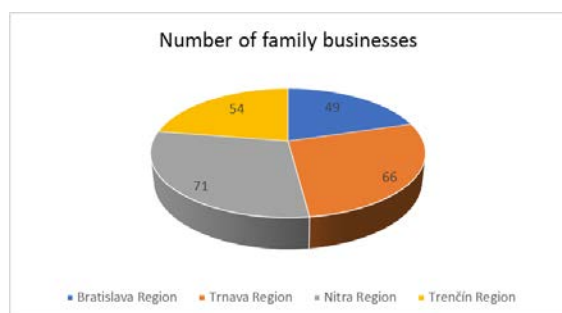
$$\chi^2 = \frac{12}{k \cdot p \cdot (p+1)} \cdot \sum_{i=1}^p \left( T_i - \frac{k \cdot (p+1)}{2} \right)^2$$

In addition to questionnaire survey, we also conducted in-depth interviews with the owners of family businesses regarding the questions we were more interested in to be answered. As a supplementary method, the methods of descriptive statistics were applied.

#### 4 Results and discussion

In territorial terms, Slovakia is divided into 8 self-governing regions. The first phase of our field research was conducted in Western Slovakia, in the territory of Bratislava, Trnava, Nitra and Trenčín regions. In the research sample, we can identify small and medium-sized family businesses representing each of the regions involved in the survey. In analytical terms we can refer to four clusters the family business are grouped in on the basis of statistical feature: company address. The findings are shown in Figure 1.

Figure 1 Number of family businesses



Source: own processing

Figure 1 indicates that the highest number of business entities represented Nitra region. Altogether 71 family enterprises were from Nitra region, 66 represented Trnava region, 54 were from Trenčín region and the lowest representation with 49 businesses was registered in Bratislava region.

The selected sample of 240 family enterprises included businesses from different sectors of the national economy. We were interested in the main field of activity, as well as the number of businesses in different sectors. The findings of primary research are shown in Figure 2. The question regarding the main field of business activity we found important because of our main objective – study the measures of internationalization process among the family businesses. We assume that the degree of internationalization and penetration of international markets is partially linked to the field of business operations.

As it is presented in Figure 2, the majority of family businesses represented the production sector (62 enterprises), almost half of them are conducting activity in the agricultural sector (35 enterprises in forestry and fishing), as well as close is the number of businesses operating in accommodation and catering services (34 enterprises). Retailing and wholesaling is provided by 32 enterprises, 22 companies operate in transport and logistics, while financial services are provided by 17 companies. 14 businesses operate in the real estate sector, construction industry is represented by 13 companies and cleaning services are provided by 11 companies.

Figure 2 The number and main field of the business activity

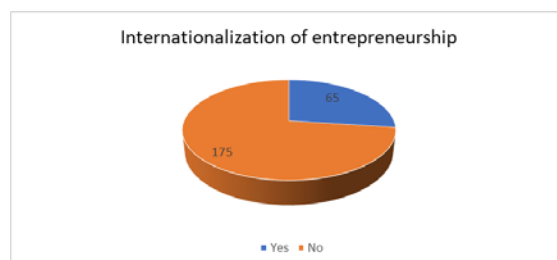


Source: own processing

The following question divided the research sample into two parts: businesses internationalizing their activities and those do not intend to enter international markets and do not want to extend their business activity in international business environment. The findings are shown in Figure 3.

65 businesses out of 240 enter the international markets, representing 27,08% of the total number of businesses involved in the research. These businesses use various ways to internationalize their business activities. The remaining 175 enterprises, representing 72,92% of the business entities surveyed, do not engage into the internationalization activity.

Figure 3 Internationalization of entrepreneurship



Source: own processing

We were closely interested in businesses internationalizing their activities. We found it important to identify the field of business activity characterized by internationalization. We assumed that not every field of business activity, not all the sectors of the national economy in which family businesses operate in is interesting or suitable for internationalization. The results are shown in Table 1.

Table 1 The most important fields of business activity showing internationalization character

Fields of business activity	Percentage
Industrial production companies	31%
Retailing and wholesaling	21%
Transport and logistics	18%
Construction industry	16%
Accommodation and catering services	14%

Source: own processing

In terms of entering international markets, the industrial production companies (up to third of the businesses) have the biggest interest in conducting business activity on international markets. A little over a fifth is made up of those businesses involved in trade activities. Less than a fifth of businesses internationalizing their activities operate in the field of transport and logistics. In the construction sector, 16% of the businesses, while in providing accommodation services and catering 14% of the businesses internationalize their activities. We have analyzed

the reasons behind the internationalization efforts of the family businesses in 5 most important areas of business. The in-depth interviews with the company owners revealed that production companies use international markets to sell their products with higher margins and thus more profit. Construction companies reported to receive orders based on reliability, quality work and being a cheaper workforce. The internationalization of the business activity in the field of accommodation and catering services is reflected in increasing number of guest nights, and the use of catering services mainly by foreign tourists. In this particular case we have identified a retrograde type of internationalization, when an enterprise does not leave the domestic business environment but is able to attract foreign visitors who are willing to pay higher price for the quality services provided than the domestic customers. This is economically more beneficial for the enterprise and therefore the company is targeting foreign customers applying the appropriate marketing tools. In case of family businesses providing their business activity in other fields, involvement in international business activity was only the minimal. This is the reason we have selected the five most important fields of activity, where internationalization of business activity can be identified.

In business cluster entering international markets resp. internationalizing their business activities we were trying to examine those major motives that accelerated the internationalization process. We have quantified these findings using descriptive statistical methods, as well as the non-parametric Friedman Test. The results of our analysis are presented in tables (Table 2, Table 3).

Table 2 Quantification of motives that result in international entrepreneurship of family businesses

Motives that result in international entrepreneurship of family businesses	Quantified Score
Saturated domestic market	5.80
Fierce competition on the domestic market	6.32
Success of other businesses in the sector	4.76
Gaining perspective markets	5.04
Involve the enterprise in network cooperation	4.26
Previous personal experience of the owner of business with international entrepreneurship	3.98
Effective utilisation of the production capacity	5.15
Closeness of foreign markets	4.44

Source: own processing

Table 3 Testing statistics of the significance of the differences between the motives of internationalization of entrepreneurship

Statistical Analysis	Value
Chi-square	18.124
Df	9.6
p	0.072

Source: own processing

Based on previous experience of solving similar issues in research projects, we based our research on the hypothesis that the motives for internationalization of business activities are perceived in different terms by family businesses in relation to entering international markets. We tested the hypothesis at significance level  $\alpha = 0,05$ .

$H_0$  there is no significant dependence between motives that encourage family businesses to internationalize their business activities

$H_1$  there is significant dependence between motives that encourage family businesses to internationalize their business activities

The result of the statistical analysis, when the value of  $p=0.072$  indicates the approval of hypothesis  $H_0$  according to which there is significant dependence between the motives that encourage family businesses to internationalize their business activities. It means that businesses are motivated by several factors to internationalize their business activities, and there is no statistically significant dependency between them.

## 6 Conclusion

The entrepreneurial activity of family businesses results in significant benefits to local, regional and the macro economy. Businesses having a character of family business belong to small and medium-sized company sector. It means that these types of businesses are in family ownership, the management of the company is represented by family members, and family members are employed in the company. Family businesses in Slovakia are not addressed adequate attention. This specific group of business would deserve far more attention by professionals. The gradual development tendency, development activities and many specifics predetermine family businesses to deserve the attention of the government, academics and other stakeholders. The main objective of this article was to address the issue of internationalization in the family business sector. Partial objective was to uncover the motives that incentivised the family businesses to enter the international markets.

Based on our primary research, conducted in four governing regions of Slovakia: Bratislava, Trnava, Nitra and Trenčín we can summarize that 65 businesses from the selected statistical sample of 240 family businesses have internationalized their business activities. It represents 27.08% of the businesses involved in the research. In terms of business sector resp. field of entrepreneurship, the highest interest in internationalization is shown by businesses involved in production activity, trade, transport and logistics. Investigating the motivation behind the internationalization of businesses, we found that the most motivating determinants are the following: saturated domestic market, fierce competition on the domestic market and the success of other companies in the same sector. We also verified the validity of the hypothesis, whether the motives of internationalization are perceived in different way by the family businesses in relation to entering international markets. Based on the statistical results we can summarize that several factors motivate the family businesses to internationalize their activities, and there is no statistically significant dependence between them.

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#### Primary Paper Section: A

#### Secondary Paper Section: AE, AH

## SCHOOL CULTURE AND THE RELATED ISSUES

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**Abstract:** The results of education process are not dependent only on methods and forms used by teachers but also on environment where students work. School culture is a topic that requires systematic attention. Different literature describes different types of school culture. The author describes them and also compares them from the point of contribution to school reality. School culture is not a problem that does not deal with other aspects, it also functions externally. School culture is very important part of school image, it consists of various aspects, e.g. pedagogical and didactical activities, organizational activities, school presentation, school routing. These basic aspects are analyzed in the relation to basic areas and also with the relation to school types. These are the main ideas the author stresses in his paper.

**Keywords:** school, culture, model, school climate, pedagogical-didactic

### 1 Introduction

The article deals with some aspects of school culture. School culture, school climate and similar related issues have occurred in pedagogical terminology in the last decades. These aspects are closely related to the fact that the results of the education process depend not only on the forms and methods applied by teachers but also on the environment where pupils work. Teachers have been aware of this fact for many years. That is why they have paid much attention to the school environment and climate. Unfortunately, under the knowledge pressure, schools used to focus on scientism a lot and some important aspects have been neglected. However, we have turned back to them recently and we have adapted them to current conditions. One of the neglected aspects is the school culture which is being discussed in this article.

#### 1.1 School culture and related aspects

The term "school culture" has been intensively used in pedagogy in recent years which is related to the need of complex understanding of school roles. School is a "miniworld" in a "macroworld", the two worlds being mutually interrelated and influenced. Their common objective is to prepare a man to social life.

School culture has several different definitions depending on the view of an author. It is thus characterized from a social, didactic, management, organization, etc. point of view. Regardless the point of view, school culture implies several functions related to all education factors. I. Lukšík (2012) mentions the following aspects:

- analytical and practical requirements, e. g., organizational needs, common language, power, status, standards of cooperation, inter-human relations, etc.
- anthropological conceptions, e. g., specific group phenomenon, value system, material aspect of culture – symbols, curriculum, school code, school rituals, etc.
- sociological conceptions, e. g. inter-connection of individual school elements related to the environment – location, festivals, etc.
- culture as textuality – various documents characterizing school.

It can be stated that school culture can be described in many ways depending on a given school function.

D. Jakubíková (2001) says: "School culture is its internal phenomenon primarily created and applied in management and relationship to its employees. It includes the complex of ideas, attitudes and values generally respected and maintained in school in a long-term perspective."

M. Pol (2006) characterizes school culture as follows: "...as a hardly defined but an omnipresent and stable factor including conviction and values, understanding, attitudes, meanings, standards, symbols, rituals, ceremonies, preferred behavior manifested in school people's conduct. School culture includes an experience basis and the potential of change. Values usually form its core."

Another point of view is given by J. Světlík (In I. Lukšík, 2012):

- formal school model – focused on the implementation of objectives, with a strong authority of school management,
- collegial model – based on cooperation and collegiality, school values are accepted,
- political model – the collective is divided into smaller groups, school objectives are not primary,
- subjective model – individual interests prevail, but member interaction works,
- model of uncertainty – unclear objectives, school is unstable, activities are unpredictable.

According to many authors school culture is manifested in both material and non-material way, not only internally but also externally. L. Eger (2006) lists the following:

Material external manifestation:

- buildings, playgrounds, school land,
- stands at fairs and exhibitions,
- external school labelling, signs, school emblems, school flag,
- façades, doors, windows,
- school color,
- clothes of employees and pupils,
- school press, visiting-cards, school promotion materials,
- school souvenirs.

Material internal manifestation:

- entries, yards, front-yards,
- playground, use and design of the land and area,
- school presentation at the noticeboards inside,
- achievements of school, pupils and alumni,
- inside school area,
- architecture,
- lights, furniture, decorations,
- information systems (orientation boards, labels, etc.).

Non-material external manifestation:

- school educational program,
- school fees,
- behavior of employees and pupils to the public,
- form and offer of education,
- communication,
- school promotion and publicity,
- relationship pupil – teacher – parent – public.

Non-material internal manifestation:

- process and organization of education,
- school climate,
- relationship superior – subordinate,
- formal and informal communication between teachers, pupils and employees,
- basic values and ethics,
- time-management, value of time,
- stories, ceremonies,
- relation to the profession and work.

According to D. Touhy (2002) to deal with school culture means to consider three aspects:

- school products – rituals, school roles and standards,
- values – main directions of pupils' a school value system,
- dispositions and school objectives – creating climate for objectives achievement.

It is obvious from the above mentioned information that school culture includes many areas which influence education activity. Therefore there has been recently paid more and more attention to it. We focus on some areas of school climate in this article. School climate is one of the significant parts of school culture as it is stated by H. Grecmanová (2008), J. Mareš (2003), E. Petlák (2006), J. Světlík (2004) and others who add that climate and culture are two inseparable phenomena.

Regarding work of school, teachers and pupils, it is necessary to emphasize that heavier and heavier demands are put not only on school and teachers, but even more on pupils. Therefore it is necessary to create suitable school climate within good school culture for them to be able to meet these requirements.

School with good culture not only teaches, controls and evaluates pupils but it is also interested in their learning problems and helps, gives advice and regulates them.

School culture has broad influence and cannot be limited to pupils only. Good school culture creates good climate which helps everybody involved in school:

- pupils, because they attend good school and good class with interest, they look forward to their teachers, schoolmates and to everything going on at school...;
- teachers, because good climate is a prerequisite of good relations, it evokes interest in educational innovations, it opens good opportunities for self-realization...;
- other school employees, because they contribute to education of pupils as well, they co-create school climate, their satisfaction and dissatisfaction also influences pupils;
- parents, because all parents wish their children have good and first-rate school, good teachers and schoolmates. Good school significantly stimulates parents' cooperation. Parents are informed in detail about what is going on at school via their children. Thus the parents are familiar with school culture via their children.

There are undoubtedly many reasons to care about school culture. We do not deal with the terminological differences between school climate and culture in this article as there are many authors who do not see any differences between them and consider them more-less equal.

In the contemporary literature is school climate defined and described in various aspects. This is because there are used different terms with regard to the climate of the school. Most often, climate is described by those terms, eg.: atmosphere of the school, school spirit, school ethos, school culture, school conditions, school environment, subculture of the group, social system of the school etc.

E. Eders' opinion is that the terms "school, teaching and class climate are just beginning to establish itself in the conceptual repertoire of education science in the German-speaking area" (In Seebauerová, R., 2005). We add that this statement can be applied not only in the German language area, but has a wider validity. The influence of the number of views overlap, for example what one author refers to school climate, another calls it school culture, school spirit etc. However, we are of the opinion that this inconsistency in terminology does not substantially affect the pedagogic and didactic work of teachers in relation to the creation of a class or school climate. But we do not want to say that we should not strive for standardization of terminology. (This does not apply only to this concept. In Pedagogy still exist some terms, which the authors mean the same thing, but otherwise are named differently.)

Stoll (2018) writes: „School culture is one of the most complex and important concepts in education. Culture describes how things are and acts as a screen or lens through which the world is viewed. Each school has a different reality or mindset of school life, A school's culture is shaped by its history, context and the people in it. The school's age can impact cultural change. School culture is influenced by a school's external context. School cultures vary between primary and secondary schools. School culture is influenced by the school's pupils and their social class background. Changes in society pose challenges to a school's culture.“

T. Pilch (2003) summarized and analyzed various definitions from the Polish and also from foreign literature and concluded that some definitions explain the school climate more complex (wider), other less complex (restricted).

In the more complex definitions are explained: the relationships between personality and environment, social climate as a school culture with its values, norms, opinions, climate as a set of subjective views of participating individuals, relationships of the school staffs etc.

Narrower definitions describe: climate as an organizational ideology - the objectives and values of school, climate as "mood", psychic state, as social climate typical for the class, climate as the overall rules of life in the classroom, climate as a mediator between students and teachers, etc.

Another criterion for defining the school is culture of didactic process and the social aspect, so called social climate. Culture of didactic process is expressed as: the quality of the school environment, as a link of educational content with the life orientation of the pupil in the educational process, the chances of success and the emphasis is on the process of education etc. Social climate is expressed as: involvement of teachers in the work, relationships between teachers and pupils, participation, relationships pupil - pupil, mutual coexistence etc.

These approaches were introduced to indicate the possibility of multiple approaches, but also to help the reader realize what all falls under the school climate, climate of the class and what affects it.

Another opinion has L. Pytka: "School climate is subjective image of phenomena situated in an environment, the specificity of the institution and its activities and behavior of each member of the institution, behavior and activities of the whole institution, organizational regulations." (In Pilch, T., 2003)

Czech authors define school climate as follows: "School climate is socio-psychological variable that reflects the quality of interpersonal relationships and social processes within the school as their value is perceived and experienced by teachers, students or school staff." (Průcha, J., Walter, E., Mares, J., 2013)

According to H. Grecmanová school climate includes the overall quality of the school environment:

- Ecology of the School (physical and aesthetic aspects of the school);
- Social environment (relationships among pupils, teachers, parents, school management);
- Social system, the social dimension related to the level of communication and cooperation between pupils, teachers, parent.
- Cultural and social dimension relating to the value patterns, new system ... (Grecmanová, H. 1988).

We believe that for the understanding or explanation of the school climate, it is not necessary to give further definitions. More important is to know that the school climate may vary. Understanding of the types of school climate can also serve as a

basis for some self-evaluation of the schools, their management, and even the staff. This knowledge also makes sense because:

- School climate is in its fundamentals also everything what can experience all those who belong to this school, therefore the knowledge of the climate, and in particular its improvement contributes to creation of a positive and motivating climate;
- School climate affects the behavior of all those who belong to the school;
- School climate this is not just a description or characterization of the school in terms of its activities, but it is a set of qualities to which may be included - the work system, moral values, respect for rules, relationships among all who belong to the school etc.

In connection to what we said, we should remind that the school culture is assessed and evaluated from the following points of view.

**Involvement of teachers.** We can consider a large exposure - a team of teachers or majority of the team shares the roles of the school, perceive them as a progress in the collective effort of innovation. Adequate exposure is normal execution of the tasks of the school. Low involvement represents little interest in the performance of tasks or even indifference to school work and to its result.

**Burden on teachers.** Also in everyday life is known that people can also perform more demanding tasks and do not feel aversion to them, while in performing the tasks they see sense. This is also true for the climate of the school. Teachers should be required tasks, which they believe are meaningful and should not be formal (eg. meetings without a clear objective reporting of non-essential activities, etc.).

**Spirit of School.** Previously mentioned points and also a number of other activities generate some school spirit. That is reflected in the satisfaction or dissatisfaction with the performance of the tasks of the school in accordance with the attempt to informal tasks performing, the human relationships to pupils etc.

**Relationships among teachers.** Although we write about this aspect at different places, we would like to emphasize just the informal relationships to pedagogical - didactic aspects of the work - mutual exchange of experiences, mutual observations, and peer support up to the informal cordial relations. (From the opinions of beginning teachers: "After completing my university studies I had good luck on the school team. Teachers advised me, assisted, helped, made me a teacher." Or " After completing my university studies, I was reliant on myself. I did not feel interest nor assistance from the teachers.")

**Reticence of the management.** For this approach is typical some distance from the Headmaster or staff. This can be obvious in little interest about the problems of teachers, small interest in innovation of the educational process (sometimes up to their rejection), lack of communication with teachers, formal approach to team members etc.

**Emphasis on performance.** School management or headmaster who promote mainly performance are "losing people" with their daily joys and sorrows. Crucial are particularly results of the If we often talk about overloading students by content and by teachers, then it may be in some sense replicated for the school team. Although teachers may be "overloaded" by the drive for results of the school. This may influence the overall climate of the school.

**Charisma of the Headmaster and the School management.** Here we mean the particular personality of the Headmaster. It is ideal when the school management is an example for other teachers and requires innovations not only from them, but the

management is an example. Energy, enthusiasm, informal interest in the progress of the school, these are also important factors by the school management, which affect its climate. Of course, not only the progress of the school is important, but also the attitudes to the staff and pupils of the school, the level of communication and dealing with the school staff, etc.

**Responsiveness of School management and the Headmaster.** Good leadership and good school headmaster have "always open door" for teachers and pupils of the school. Ability to listen, understand, advise and help are features that are highly valued since ancient times. In the schools in which these features are recognized is good and informal climate.

Finally, it should be stressed that in creating a climate of the school, which has an impact on the results of the school is involved a wide range of actors in the interconnection. We list the following aspects based on the evaluations of students, teachers and parents, but also on what the requirements are for a good school climate, and thus its culture. This stems from the introduction of our contribution in which we stated the features that can characterize the culture of the school.

## 1.2 Pedagogical-didactic aspect

**Satisfaction of pupils with teaching and the process** - already lower grades pupils know to say and express their views on teaching and evaluate it by saying: I do not like it at school, it is boring, we are only tested in the school etc.

**Objectivity of evaluation** - is highly influenced by the emotional state of mind of pupils, they are affected by their relationship to school, class, teacher and classmates;

**Innovation of teaching** - pupils like various innovations - cooperative work, project solutions, walks and excursions (such education contributes to the development of social relationships among pupils);

**Informal teachers' approach to pupils** - pupils and parents also very significantly appreciate teachers' approach to them (pupils often say and remember their teachers: our teacher was very human, teacher was able to unite the class, he was very nice, always had time for us. ..). Generally more directive approach is positive in that shorter time to achieve better performance, but the negatives are that it reduces the quality of performance and the relationship of people to what they do.

**Attention not only at the teaching, but also at personality development of pupils** - good school must also pay attention to educational tasks. Teachers assess climate from the pedagogical - didactic point of view and in particular, according to what their further education possibilities are, what is the level of mutual cooperation and what efforts is developing the school management to enhance the innovations. (G. Siváková 2016, K., Tišťanová 2016)

## 1.3 Organizational aspects

**Good organization of activities, leadership and management of the school** - this aspect is dominant in terms of teachers, but also higher grades students can often quite objectively, express their view of school life or selected areas of school life; Organising various events for learners in extracurricular time - learners like to participate in various events organised by the school, evaluating them positively if they are informal; Learners must see a sense in the activities required from them by the school, they have to be meaningful for them; Attention to informal relations among school staff; Learners feel that the school is a place of development, always offering them something new, enriching them and contributing to their development; Cooperation of the school with other schools (exchanging letters by learners, exchange stays, various competitions...) - also this

area is perceived as part of a climate by learners; Cooperation of the school with parents – the level of cooperation influences a school's activities, learners have interest in the parents' helping the school.

In several places in the text it was indicated that the classroom climate and teaching climate are influenced by several factors. Summarising of the opinions of several authors (H. Grecmanová S. Bellová 2018), Ch. Kyriacou 2012, J. Mareš 2003, J. Průcha 2003, S. Guewert, T. Whitaker, 2015 and others), the following factors may be singled out:

*Communication and teaching procedures.* Undoubtedly, there is no need to explain specifically that in the classroom in which the teacher communicates with learners, so to say, "at a higher level" – giving them adequate explanations, willing to listen to them, to discuss with them, objectively evaluating them, etc. – reigns a pleasant and amicable climate. Learners respect their teacher, one another, etc. This climate is called supportive (responsive, supportive) communication *climate* – characteristic for a kind of learners' mutual openness. True, one can notice also opposite approach in the classroom, when the teacher is not communicative enough, when learners do not listen to the teacher, do not communicate with one another, are closed to one another, not expressing their feelings, etc. This climate is called *defensive communication climate*.

It is also important for a school's culture what attention it pays to social aspects of its life. This includes especially the following: Task needs of the social system: comprehensibility, practicability, adequacy...; efficient communication (non-distorted information, providing fast information about problems, availability of information); optimum distribution of power (well-proportioned distribution of the influence of school management on the concentration on objectives (their clarity, staff, subordinates must feel that management is not indifferent to them, that it is not indifferent to their opinions).

The needs related to the system maintenance: using sources (efficient use of staff in such a way that they are not overburdened, but, on the other hand, that they do not avoid work either; their individual requirements must be in agreement with the school's requirements ...); solidarity (teachers are influenced by the school, they are proud of it, the school attracts them...); the employee morale (manifested in the general satisfaction of school staff).

Growth and development needs: innovations (new procedures and objectives emerge...); autonomy (the school is not passive in its environment, it is not dependent only on external stimuli...); adaptation (the school is able to change itself, adapt to the times and new requirements, to improve and develop...); efficiency of problem solutions (solution of problems is not postponed, they are solved with the exertion of little energy, solution results are strengthened) (Miles, M. B. according to Ježek, S., 2006).

It is evident of what has been said so far that climate is a complicated structured area, a phenomenon and, at the same time, a process. A process because, in spite of the relative stability, the stakeholders (teacher, learners, as well as the school's other staff) are in continual mutual contacts influencing their behaviour. Taking into account what has already been mentioned, everyone must be aware of the fact that the acts of a particular learner are not just manifestations of his/her individual qualities. These manifestations are influenced by the climate of the school and classroom, i.e. by the social environment in which learners live, which influences them and to which they, more or less, get adapted. Social environment has different influence on different learners. One learner may get more adapted, another one less. They are also the learners who resist climate. There is no doubt that the classroom's climate may stimulate learners to positive acts – a learner may want to prove that he/she is different than the classroom. For example, a

classroom "in which it is modern not to study or to achieve just average results" may encourage a learner (or a group of learners) to be "different than the class". Naturally, the opposite holds true as well, i.e. the climate in the class may encourage a learner's negative acts. The influence of the climate on a learner may in this case be compared to, for example, the learner's assessment. Every teacher must have come across the fact that students respond differently to their assessment. There are learners who feel that they have been wronged (thinking that the teacher did not assess them correctly or objectively), but are provoked by this to further work and effort to prove that they are different than their assessment by the teacher. However, there are also learners who in such case give up, and often neither their parents nor teachers or classmates can evoke in them further interest in the study.

The social climate has a significant influence on learners. This fact is often not sufficiently taken into account, though it is acknowledged. Teachers and parents quite often produce the following statement about learners: "It is a pity that he/she got into such class." or vice versa: "We were lucky that he/she got into such good class."

"Social climate of the classroom refers to social-psychological phenomena (interaction, communication, their subjective and shared perception and evaluation) long typical for a given classroom and teacher, even after several months or years. It is created by: learners, groups of learners, individual learners, teachers teaching in a given class and teachers as individuals. However, the classroom's social climate is influenced by the school's climate as well as social climate of teaching staff." (Mareš, J., 2005)

Because of the existence of different levels and types of schools, learners and teachers, it is possible to distinguish different types of social climate as well:

According to the level of school – climate in the nursery school, in the classroom on the first level of primary school ... up to the climate in a study group at a higher education institution.

According to the type of school – climate in the classroom of primary school, in the classroom of secondary school, secondary vocational school.

According to the prevailing type of teaching – climate in the classroom with the so-called classical teaching, classroom with humanistic and alternative teaching.

According to the specificity of learners – climate of the classroom with the prevalence of good learners, climate of the classroom with the prevalence of the so-called weaker learners, climate of the classroom integrating learners with various learning disorders.

According to the specificity of teachers – climate of the classroom with a novice teacher, with an experienced teacher, climate of the classroom in which the teacher prefers innovative teaching, the classroom in which the teacher pays attention especially to learners' knowledge, etc.

According to the nature of subjects – there is a difference between climate at, for example, a physical education lesson and a mathematics lesson

According to the teaching environment – climate in the classical classroom, climate in the laboratory, during a school trip or excursion, and so on.

According to the type of communication with learners – climate of the classroom during direct communication with the teacher (it can be motivating demotivating – depending, first of all, on the teacher), during the use of multimedia technology (videoconferences, chatting, etc.).

Before the conclusion it is necessary to note that because mainly the didactic aspects of the school's culture were discussed above, it is necessary to provide also some wider aspects contributing to the improvement of the school's culture. They include the following.

Personal reform, striving to achieve a state in which the school is not just an institution providing new knowledge, skills and habits to learners, but the one in which learners enter various communication relations with teachers and classmates. Last but not least, personal change also means a more consistent communication with parents.

Didactic reform is the one which most occupies the teachers, psychologists, as well as professionals from other sciences. Its essence lies in dealing with the questions of educational content, concentrating especially on the harmonisation of the requirements of society with the possibilities of the school. The scope of the paper does not allow a more detailed analysis of this, so to say, eternal problem, but it is a fact that in the future education will have to pay more attention to the future than to the present or to the past. This requires the adaptation of educational objectives, especially harmonisation of the content and objectives with the methods and forms of educational work, since education is frequently reproached because of its slow, even lagging behind didactic reform.

Communication reform has already been partially indicated in personal reform. It means the openness of the school outwards – the openness to parents, to a wider community, to other institutions, enterprises or businesses, etc. In the past, for a school to be successful it was enough to fulfil the prescribed curricula, nowadays, in addition to this the school has to be open to cooperation with a wider public, to be able to flexibly respond to social requirements.

Reform of the diagnostics of teaching requires, among other things, also the growth of new pedagogical-psychological and didactic knowledge about teaching. Current pedagogy, unlike the past one, tends to see the learners more significantly as subjects in education. While in the past the individual approach to a learner was understood mostly as the “arrangement of conditions for the work of learners”, nowadays we emphasise, for example, the specificity of learning styles with individual learners and finding corresponding methods of teachers work to match them.

Aesthetic reform is required by changing life all around us. The school, with its content, methods and forms of work, must lead learners to their being able to perceive and create aesthetic values, in addition to their absorption of scientific information. The aesthetic of the school, of interpersonal relations and life in general, is a standing task of the changing school.

Extra-curricular reform is oriented on the development of a pupil also outside the process of formal education. It uses various activities outside the classroom; e.g.: trips, sport competitions etc. Pupils are in the centre of extra-curricular activities, not only curricular ones. Such incentives are provided by alternative pedagogy, which uses so-called hidden curriculum. It indirectly influences the pupils (formal relations between pupils and teachers, between teachers and teachers, classroom and school aesthetics, interest in development of the school, etc.), and plays a significant and important role in their lives. This is the weak point in Slovakia. The pupils are not taught to be proud of their school; one can hardly hear them say the sentence: “I am proud of my school because of...”

Structural reform is about the school as such; its climate, operational methods, organization and management; it also includes the school reform, which can only be implemented on the national level – state and its people level – if only the people are interested in the development of school in general.

In addition to what has been already said, it is necessary to point out the fact that the school culture is created by the teachers themselves. Therefore, it is necessary to pay the attention to the following areas:

Personal competencies, in addition to other things, express also the realistic self-perception, a particular self-reflection, and so help teachers to improve their teaching methods. Whereas in the past, the communication was mainly understood as the relationship between pupil and teacher, nowadays, it is being understood in a far broader sense regarding the additional personal competencies of teachers. The teacher must interact with parents and other social entities. In other fields, cooperation and mutual interaction is a natural part of working processes. It should become a natural part of teacher's work as well. The innovative approaches based on the team work require the interaction of teachers and their colleagues with the school management.

Pedagogical competencies are associated with the profession of a teacher rather automatically. With teachers, these are often taken as granted. These competencies are not listed by a chance; they are crucial for the schools in future. One of the key pedagogical competencies is the skill to create the appropriate pedagogical conditions for educational activities of pupils. For many readers, such sentence will sound pretty obvious. But is it?! Is the focus of education always on the optimal educational climate? Is the pedagogical interaction always self-evident? Questions like these could go on and on.

Psychological competencies were described in the opening part of this contribution. It is obvious that teachers must also be skilful psychologists in order to understand pupils and manage their educational activities efficiently. In addition to basic psychological aspects, teachers should be able to implement various interventions to support or inhibit manifestations and activities of pupils. Psychological competencies allow teachers not only to work with pupils; these also allow them to work with their parents. These competencies need to be employed and appreciated mainly by teachers working with pupils in older school age.

School organizational competencies went through a significant development in comparison with the past era. The conditions have been changed significantly. The school has become an autonomous institution. In this new situation, teachers overtake a certain deal of responsibility for the operation of the school. On one hand, this new responsibility is represented by significant pedagogical freedom (it should be manifested in the search and implementation of new methods and forms), and, on the other hand, in the significant responsibility for the final results of educational outcomes of the school. Organizational competencies also include other activities, such as cooperation with other schools, institutions and regional businesses. These are the competencies that were rather overlooked in the past; or, these were only required in top management.

Didactic competencies have been in the focus for several years in a row, now. These competencies are significantly changing the perspective on and requirements of education, which is being transformed from the classic authoritative one to creative and humanistic teaching style. The actual educational practice has proven that teachers do not include motivation naturally into their teaching styles; positive motivation based on a thorough diagnosing of pupils is often substituted by so-called “in medias res” didactics with almost no motivational activities. The key didactic competencies include mastering the newest educational forms and methods. The current didactic theory offers a great number of methods pursuing efficiency in education. In this regard, it is only correct to stress the role of progressive teaching methods in the actual educational process.

Along with others, the above listed aspects significantly influence and create the quality school. The quality school is embodied in a number of relations and activities influencing the quality education. Above all, this aspect deserves to be in focus.

## 2 Research results

At the end of the paper we will put the views of pupils and teachers on how they sense the culture and climate of the school. We did not divide these areas into culture and climate, we perceive them complexly from the point of view of the survey. We conducted the survey at 8 elementary schools - 198 pupils of the 9th year and 62 teachers of elementary schools teaching in the 9th year. In order to find out the views with pupils and teachers, we used a structured interview with the record. The interviews were then analyzed and processed in a statistical evaluation.

### 2.1 Pupil's views

Table 1: How do you characterize the culture and climate at you school?

Variable	Frequency	Percent
excellent	21	10,61
very good	32	16,16
good	128	34,65
bad	11	5,55
I do not know	6	3,03

Table 2: Who has the greatest influence of culture and climate in the classroom?

Variable	Frequency	Percent
students	67	33,84
teachers	125	63,15
I can not judge	6	3,03

Table 3: The culture and climate of the class depend on:

Variable	Frequency	Percent
group of pupils	64	32,32
the teacher's work	114	57,58
pupil's learning	20	10,1

Table 4: How could we improve climate in the classroom?

Variable	Frequency	Percent
pupils must improve	46	23,23
teachers need to devote more attention to pupils	147	74,24
I can not judge	5	2,53

Table 5: How often do you talk with teachers about culture and climate in you classroom? How do you feel about school?

Variable	Frequency	Percent
not very often	110	55,56
occasionally - when something happens (bad or good things in the class)	16	8,08
we are not talking about it	3	1,53
most often we talk about learning	69	34,85

Table 6: What would you like to get your class to improve?

Variable	Frequency	Percent
higger interest of teachers' about students	99	50
teachers have an understanding of our problems	72	36,37
teachers help us more during learning	15	7,57
teachers not to think that we are bad	12	6,06

### 2.2 Teachers' Views

Table 7: Do you think that culture and climate of school is paying attention:

Variable	Frequency	Percent
grent attention	41	66,13

appropriate attention	18	29,03
I can not judge	3	4,84

Table 8: Why do you think that this area dos not receive proper attention in schools?

Variable	Frequency	Percent
the pupils' learning outcomes are a priority, others are forgotten	32	51,56
the culture and the climate of the school is understood as somthing obvious	15	24,19
esnecially young teachers are not ready for educational work	11	17,74
I can not judge	4	6,46

Table 9: What would you suggest to imprave culture and climate at schools?

Variable	Frequency	Percent
more careful diagnosis of pupils by teachers this allows a good choice of methods	15	24,19
to spend more time with pupils during educational process	15	24,19
to spend more time with pupils cyen in non-learning time	10	16,13
closer cooperation between teachers	22	35,48

Table 10: To what extent is culture and classes climate influenced by family education?

Variable	Frequency	Percent
Much	51	82,26
a little	11	17,74

Table 11: What reduces the quality of culture and climate at school?

Variable	Frequency	Percent
lack of creative activity od pupils in the process of education	21	33,87
teachers are not interester in pupils	24	38,71
ignoring pupils' negative speech	17	27,42

Table 12: It is often noted that teachers would need better psychological preparation for working with pupils. Do you agree with this?

Variable	Frequency	Percent
I strongly agree	19	30,64
I agree	17	27,42
I think that's enough	24	38,71
I can not judge	2	3,23

Due to the significant reporting value of pupils and teachers' responses, we do not analyze the answers further. We add the words A. Ducan (2014): „Schools that foster positive school climates can help to engage all students in learning by preventing problem behaviors and intervening effectively to support struggling and at-risk students.“

## 3. Conclusion

The contribution shows the school culture in a multidimensional perspective. School must be not only a place of new knowledge but also a safe haven; a place for cognitive and emotional development.

Issuing from the reasons provided, it is necessary to pay the attention to school culture and school climate. Current school

practice is strictly knowledge-oriented, which shifts pupils and their joys and worries to the very margins of teacher's interest. There is no focus on the pupil and their motivation and self-motivation; no focus on their need to be praised and rewarded for their efforts. Pupils and their dreams and desires are totally out of focus of the educational process. The school culture is crucial for pupils and their activities. It is a mistake to ignore this fact.

Based on the above stated, the conclusion is as follows: It is important to study the school culture in order to be able to answer questions such as What are pupils like? What should pupils be like? What are their visions about school? What kind of school would suit them the best? What can teachers do to improve the school climate? What shall be done to improve pupils' learning performance?

The contribution aspires to inspire and encourage everybody working or preparing to work in education to study and research perspectives and opinions of pupils on their school in terms of a lively and developing institution.

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## SELF-CARE OF WOMEN WITH DUAL ROLE OVERLOAD

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**Abstract:** The main aim of the research was to examine the level of negative consequences of workload (burnout and perceived stress) of women working in helping professions due to the extent of overload within the family. The second aim of the study was to clarify the self-care of women suffering from dual role overload. 112 women (M=38.4 years, SD = 10.43) who worked full-time and took care of at least one child (min. age of the youngest child was in the range of 3-15 years) participated in the research. All participants completed two instruments measuring burnout syndrome (MBI-HSS), perceived stress (PSS-10), family overload and performed activities of self-care (VSS). In general, women experience a medium level of emotional exhaustion, higher than average level of perceived stress and higher than average level of family strain. There were negative significant relationships of a slight to moderate level found between the three areas of self-care (psychological, work and health) on the one side and work (emotional exhaustion, perceived stress) and family overload on the other. Women with a higher level of dual role overload (n= 44; 39.3%) significantly differed from women with a lower one (n=68, 60.7%). This was particularly the case in the performance of psychological, work and health self-care. In the area of self-care in terms of physical activities, there were no differences identified. The findings suggest that self-care can play an important role in reducing the level of sensation of dual role overload on women working in helping professions.

**Keywords:** women, helping professions, emotional exhaustion, perceived stress, dual role overload.

### 1 Dual role overload of women

Women enact many formal and informal roles in the society, but family and work are the two most important domains in many women's daily life. The conflict of these two spheres often causes excessive work and family burdens that can negatively impact women's overall quality of life. In addition, continuous societal changes can reinforce these conflicts (Fedáková, Stangl, Veira, 2008; Fedáková, 2009).

The topic of overload and finding a balance between work and family has become a very current research area (e.g. Györfy, Dweik, Girasek, 2016; Glynn, Maclean, Forte, Cohen, 2009). Older research has already confirmed the significant negative relationship between the stressors of work and family and the subjective well-being of employed women, (e.g. Makowska, 1995). More recent studies (e.g. Erlandsson, Eklund, 2003; Raskin, 2006) have highlighted the adverse impact the combination of work and family responsibilities can have on women. Portela et al. (2013) have also confirmed the negative impact of the interaction between home strain and workload. In this study, the authors mainly monitored physiological overload indicators and blood pressure in particular.

The psychosocial characteristics of work and the diversity of women's roles have been examined in several studies (e.g. Krantz, Ostergren, 2000; Krantz, Ostergren, 2001). These have aimed to identify the important determinants of women's health and found that exposure to dual overload is a particular risk factor. This causes women to perceive the level of multi-role requirements as being above a certain limit, creating a potential risk of developing imbalances, which in turn can cause the worsening of overall health (Krantz, Berntsson, Lundberg, 2005). In comparison to men, women have a greater number of health problems which are connected to overload (Krantz, Ostergren, 2001). According to Nordenmark (2002), engaging in multiple roles is a greater source of stress for women than for men. Therefore, it is women living with dual role overload that can be considered a risky group in terms of maintaining mental health and subjective well-being, what can be more intensive regarding women working in helping professions, similar to what Györfy et al. (2016) think of.

The higher risk of burnout and the incidence of mental health problems among women working in helping professions has

been demonstrated in several studies, e.g. in the case of palliative care nurses (Kuerer, Eberlein, Pollock, et al., 2007). Ahmad (2010) found that a doctor's family/work conflict has a mediation impact on the relationship between overload and emotional exhaustion. One of the explanations is based on the effect that social and cultural expectations have (Dillaway, Paré, 2008). These expectations can lead women to believe that their primary role is to be "babysitters" of children, family members, clients, patients, or family and work relationships in general. The effort of women to meet these high expectations can not only lead to an overload at work and in the family, but also to the development of burnout (Killian, 2008; Györfy et al., 2016). In addition to the profession that women do, it belongs to the sphere of helping professions in which the imperative of caring for others is multiplied, but the question of self-care, as well as the prevention of the negative consequences of the helping, is often neglected (Mesárošová et al., 2017).

The helping professions themselves are considered risky in terms of the emergence and development of burnout syndrome (Griner, 2013; Pagnin et al. 2016). One of the reasons is the essence of helping work which is a significant personal commitment and has a low rate of return on personal investment (Honzák, 2009). Excessive workloads are another cause of increasing stress. If this stress exceeds the individual's ability to cope with it, it becomes distress. When this becomes a long-term condition, chronic psychosocial stress can develop and this is a generally accepted reason for the development of burnout (Maslach, Leiter, 2017).

Labour market gender representation statistics have shown that segments of helping professions in Slovakia are significantly feminized (Danielová, Lauko, 2015; Škoviera, 2015). This multi-role status is represented in women in the current research sample by the actual care of others at work as well as care of the family. This creates a space for experiencing dual overload (Krantz et al. 2005; Honea et al.; 2008).

#### 1.1 Self-care in relation to role overload

One way of compensating or preventing the negative consequences of helping work and simultaneous family overload, is self-care (Honea et al., 2008; Skovholt, Trotter-Mathison, 2016). The essence of self-care is the conscious engagement of the individual in activities that enable him/her to achieve, maintain or restore the state of physical and mental well-being (Lovaš, 2014; Lovašová, 2016). According to Moore et al. (2011), the most important task of self-care is reducing stress. Other research among helping workers has shown that performing activities in different areas of self-care (physical, psychological, occupational, health...) not only leads to the reduction of stress but also emotional exhaustion (the first level in the burnout process) (Cohen-Katz et al., 2005; Alkema et al., 2008; Griner, 2013) and compassion fatigue (Kearney et al., 2009; Köverová, 2018b). Richards et al. (2010) has presented empirical evidence regarding the relationship between burnout and self-care and the positive effect of these self-care activities on the subjective well-being of those working in the helping professions. These activities are those activities related to physical, psychological, professional and spiritual areas. Likewise, Barnett et al. (2007) has explained that self-care prevents, disrupts, and minimizes the symptoms related to burnout, as well as the other negative consequences of helping. The self-care activities which can help professionals reduce burnout include the ability to set priorities, searching for social support, time management, ability to reassess the situation, self-monitoring, reducing excessive burden e.g. relaxation or participation in stress reduction activities (Baruch, 2004).

In accordance with the theoretical background, the objectives of the presented research were formulated. The main aim was to investigate the level of work overload (measured by emotional exhaustion and perceived stress, Köverová, 2018a) and family

overload among women working in the helping professions. At the same time, the link between work overload and overload of family responsibilities were investigated. Furthermore, the study tried to clarify the level and structure of self-care of women in the context of dual overload.

## 2 Method

### 2.1 Research sample

Quota sampling was used to select respondents for the research. The selection criteria were as follows: women who work full-time in helping professions and take care of at least one child (min. age of the youngest child was in the range of 3-15 years). From 163 respondents, 112 met the criteria. Finally, the research sample consisted of 112 women, aged between 28-57 years old ( $M=37.4$  years,  $SD = 10.43$ ). All respondents worked directly with their clients and their work experience varied from 1 to 37 years ( $M = 9.47$ ;  $SD = 7.67$ ). The following helping professions were represented in the sample: 59 health professionals, 37 social workers, 16 psychologists. The respondents were addressed both in person and electronically.

### 2.2 Measures

The Maslach Burnout Inventory-Human Services Survey (MBI-HSS; Maslach et al., 1996). The instrument consists of 22 items which measure the level of burnout syndrome through three subscales: emotional exhaustion, depersonalisation and personal accomplishment. For the purposes of this research, only the emotional exhaustion subscale was used. The emotional exhaustion subscale measures feelings of being emotionally overextended and exhausted by one's work. It consists of 9 items, e.g. "I feel emotionally drained from my work." Respondents indicate the frequency of experiencing work-related feelings using a 7-point scale (1 = never; 7 = every day). The internal consistency estimates (Cronbach's alpha) for emotional exhaustion was 0.90 (Maslach et al., 1996). In the current research, the Cronbach's alpha estimates were 0.878 for emotional exhaustion. The English version was created by back-translation and the validation study of the Slovak version of this scale is in review (Ráczová, Köverová, in review process).

The Perceived Stress Scale (PSS; Cohen et al., 1983). The validated Slovak version of this 10-item measure was used to assess the level of perceived stress among helping professionals (Ráczová, Hricová, Lovašová, 2018). Respondents are asked to indicate the frequency of their feelings and thoughts during the last month on a 5-point scale (1 = never; 5 = very often); e.g. "In the last month, how often have you felt nervous and "stressed"?". A higher score indicates a higher level of perceived stress. The Cronbach's alpha estimates of the instrument were acceptable (Cohen et al., 1983). In this research, the reliability (Cronbach's alpha) of the perceived stress scale was 0.85.

The scale of Family overload (inspired by Iľštonová, 2017) consists of four items ("I can't find the strength and energy at home to do everything I expect from myself." „I have to do things in the home that I really don't have the time and energy to

do." "I feel like I do things quickly and maybe less carefully at home to get things done." "I feel that housework and family care are so exhausting that I no longer have the energy to devote to myself. "). The answers are rated on a 5-point scale (1 = totally disagree, 5 = totally agree). Higher scores indicate higher levels of overload in the family. The Cronbach's alpha estimates was 0.87.

The Performed Self-care Questionnaire (VSS, Lichner, Halachová, Lovaš, 2018) was used to measure the frequency of engaging in self-care activities, i.e. activities in the area of self-care that an individual performs intentionally and of his/her own accord. The present research was based on the concept of self-care as a comprehensive implementation of these activities (Moore, 2011). The Performed Self-care questionnaire consists of 31 items which focus on the following four areas of self-care: psychological (factor F1, e.g. "I suppress a bad mood."), work (factor F2, e.g.: „I use professional education to cope with my workload."), health (activities performed in the event of health problems, factor F3, e.g. "I avoid situations with risk of disease.") and physical well-being (factor F4, e.g. "I do exercise because of keeping fit"). The items in the questionnaire are answered on a 5-point scale (1 = never; 5 = always). A higher score indicates a higher level of self-care activities in each of the four factors. The questionnaire and factors have good internal consistency (Cronbach's alpha .76 - .93; Lichner et al., 2018). In the current research, the Cronbach's alpha estimates were 0.88 for psychological self-care, 0.79 for work self-care, 0.68 for health self-care and 0.78 for physical self-care.

### 2.3 Statistical analyses

Descriptive analyses, differential statistics (Mann-Whitney U test) and correlations (Spearman correlation coefficient) were used in the study. The data were analysed using the IBM SPSS 21.

## 3 Results

### 3.1 Descriptive analyses

The main goal of the research was to find out the level of work overload – both in the form of emotional exhaustion and perceived stress - as well as the level of family overload in a selected group of women working in the helping professions. The results of the descriptive analysis are presented in Table 1. These indicate that in general, women experience a medium level of emotional exhaustion ( $M = 3.56$ ;  $SD = 1.12$ ), higher than average level of perceived stress ( $M = 2.81$ ;  $SD = 0.47$ ) and higher level of family strain ( $M = 2.93$ ;  $SD = 0.95$ ). It can be said, albeit with caution, that women experience strain both at work and at home.

Regarding the level of self-care, the comparison of the four mean scale scores indicate that the most used self-care activities among women were the psychological self-care activities whereas the least used were the physical ones. From the other ways of self-care, it can be seen that well-being at work and health self-care were performed more often (more than average).

Table 1: Means, standard deviations and internal consistency ( $\alpha$ ) of measured variables ( $n = 112$ ).

Measure subscales	Mean	SD	Min	Max	Scale range	$\alpha$
Perceived stress	2.81	0.47	2.21	3.54	1-5	0.851
Emotional exhaustion	3.56	1.12	1.33	5.00	1-7	0.878
Family overload	2.93	0.95	1.13	4.70	1-5	0.873
Self-care – psychological	4.11	0.42	1.06	5.00	1-5	0.881
Self-care - work	3.35	0.77	1.00	5.00	1-5	0.792
Self-care – health	3.82	0.63	1.43	5.00	1-5	0.681
Self-care - physical	3.01	0.86	1.00	5.00	1-5	0.784

### 3.2 Correlation analyses

The second aim of the present research was to find out whether there were relationships between the measured variables: emotional exhaustion, perceived stress, overload by family responsibilities and self-care areas. Based on the correlation analyses (Spearman correlation coefficients, Table 2), it can be concluded that there are significant moderate positive interrelations between emotional exhaustion and perceived stress ( $r = 0.542$ ,  $p < 0.01$ ), emotional exhaustion and family overload ( $r = 0.345$ ,  $p < 0.05$ ) and between perceived stress and family overload ( $r = 0.369$ ,  $p < 0.01$ ).

In terms of the relationships between overload at work and family and performed self-care activities, the following

relationships have been found: emotional exhaustion (as one of the indicators of work overload) correlated significantly and negatively with each of the areas of self-care (psychological –  $r = -0.374$ ,  $p < 0.05$ ; work –  $r = -0.281$ ,  $p < 0.05$ , health –  $r = -0.513$ ,  $p < 0.05$  and physical –  $r = -0.333$ ,  $p < 0.05$ ). On the other hand, perceived stress (the second indicator of work overload) correlated negatively with psychological ( $r = -0.551$ ,  $p < 0.05$ ), work ( $r = -0.423$ ,  $p < 0.01$ ) and health self-care ( $r = -0.442$ ,  $p < 0.05$ ). However, the relationship with physical self-care ( $r = -0.195$ ) has not been confirmed. Finally, negative correlations between family overload and performed activities of self-care in all areas – psychological ( $r = -0.293$ ,  $p < 0.05$ ), work ( $r = -0.316$ ,  $p < 0.01$ ), health ( $r = -0.322$ ,  $p < 0.05$ ) and physical ( $r = -0.223$ ) were identified.

Table 2: Results of correlation analyses (\* $p \leq 0.05$ ; \*\* $p < 0.01$ )

Measure subscales	Perceived stress	Emotional exhaustion	Family overload	Self-care psychological	Self-care work	Self-care health	Self-care – physical
Perceived stress	-	0.542*	0.369**	-0.551*	-0.423**	-0.442*	-0.195
Emotional exhaustion	0.542*	-	0.345*	-0.374*	-0.281*	-0.513*	-0.333*
Family overload	0.369**	0.345*	-	-0.293*	-0.316**	-0.322*	-0.223

### 3.3 Results of group comparison

The final and most important goal of the research was to clarify the level and structure of self-care in women with dual overload. In the current research, dual role overload has been defined as the women who had a score above the mean in the following variables: emotional exhaustion or perceived stress (or both) and at the same time showed an above mean score for family overload. 44 women (39.3%) out of the 112 women met these criteria. The comparison group consisted of 68 women (60.7%), who, in contrast, showed an average level of overload at work (specifically in emotional exhaustion and perceived stress) and in the family. It was decided not to work with extreme groups because of excessive data loss. Nevertheless, the data distribution was non-normal, which led to the decision to use non-parametric statistical procedures (Mann-Whitney U test).

The results of the analyses are presented in Table 3. The mean scores are presented rather than the mean rank.

Women with a higher level of dual role overload significantly differed from women with a lower one. This was particularly in the performance of psychological self-care, self-care at work and self-care related to health. In the area of self-care in the context of physical activities, there were no differences identified. It can be said that women who experience higher overload both at work and in their families performed psychological self-care activities less frequently (e.g. activities related to interpersonal relationships, “black thoughts” suppression). They also were less likely to frequently perform self-care activities at work (e.g. creating a good atmosphere at work, making good relationships with colleagues) as well as health sustaining activities (activities performed in the event of health problems) compared to the group of women experiencing lower dual role overload.

Table 3: Results of group comparison (group with higher level of dual role overload  $N=44$ , group with lower level of dual role overload  $N=68$ , range of scale 1-5)

Measured variables	Groups according to the level of dual role overload	M	SD	Mann-Whitney U test * $p \leq 0.05$
Self-care - psychological	higher level	2.53	0.76	0.023*
	lower level	3.62	0.56	
Self-care - work	higher level	1.74	0.88	0.014*
	lower level	2.52	0.71	
Self-care - health	higher level	2.03	0.56	0.004*
	lower level	2.97	0.41	
Self-care – physical	higher level	1.82	0.44	0.234
	lower level	2.11	0.51	

### 4 Discussion and conclusion

Recently, there has been a significant increase in the workload and negative consequences of work, especially in the social and health care sectors (Györfi et al., 2016; Tabaková et al. 2011). The situation of women working in these areas, as well as in others, is specific in terms of experiencing overload. Against this background of increasing overload in women, triggers can be found: high demands at work and family, role conflict, high expectations, women's own needs, dissatisfaction with quality of the role fulfilment and others (Fedáková et al., 2008; Pearson, 2008). The main mission of helping professions is to care for others. However, it is often forgotten that one of the basic conditions for an individual to be able to help others is the need

to take care of his/her own mental and physical health (Wise, Hersh, Gibson, 2012; Hricová, 2018). In this context, the main aims of the research were also determined.

The initial focus of the research was on exploring workload (specifically in the form of emotional exhaustion and perceived stress) and the family overload of women working in helping professions as well as showing the links between these variables. The results of the descriptive analysis show that women experience a medium level of emotional exhaustion and a higher level of stress. At the same time, women perceive a higher level of family overload which is in line with the findings of Pavalko, Woodbury (2000).

It has also been shown that the women in the current study generally prefer psychological self-care before well-being at work or health self-care. The least preferred self-care area is physical self-care although it still has an above-average score. The preference for interpersonal care, personal growth activities and emotional control (the psychological sphere of self-care) has also been shown by Hricová (2018). These findings also correspond with the fact that women are more likely to pursue their self-development goals (Nurmi, 1992).

In terms of the relationships between the examined variables, the results of the correlation analyses have confirmed that the higher the level of family overload, the higher the level of perceived stress and emotional exhaustion at work (or it can be interpreted both ways). Likewise, in research on women working in the health services, Ahmad (2010) found that the feeling of role overload is related to greater emotional exhaustion as well as conflict between work and family.

It is also of interest that the results show relationships between the components of self-care and the overload signals at work and family. There were negative significant relationships of a slight to moderate level found between the three areas of self-care (psychological, work and health) on the one side and work (emotional exhaustion, perceived stress) and family overload on the other. Regarding to the correlation character of the research, we can talk about two interpretative lines. Firstly, as psychological, work and health self-care increase, emotional exhaustion and family overload decline. On the contrary, with the growing sense of overload at work and family, the need for self-care in these areas increases.

Mesárošová (2018a) found similar results in her research on social workers. She found that with increasing psychological and work self-care, the negative work-related consequences were reduced. The significance of psychological care for themselves in relation to fatigue relief has also been confirmed by Köverová (2018b).

Regarding physical self-care, there was only a moderate negative relationship with emotional exhaustion in the current study. One of the possible explanations is also related to the nature of the work. The work positions of women addressed are very physically demanding (custody and treatment of clients/patients, rehabilitation, etc.), and combined with many family responsibilities that are not less physically demanding, women are unlikely to need and feel the relief of other physical activities related to self-care.

However, the main aim of the study was to compare the level and structure of self-care in women experiencing heavy dual role overload to women who do not feel the overload to such a high degree. The starting point was the belief that in order to maintain mental and physical health and prevent stress-related diseases, the synergies between work- and personal-load need to be taken into account (Krantz et al., 2005). It was found that about 39% of the total number of women that were surveyed have suffered from both work-related and family over-limit claims. Women who have experienced work-related overload (particularly higher levels of emotional exhaustion and perceived stress) take care of themselves significantly less than the comparison group of women with lower dual-load. This was the case in three out of the four areas of self-care (psychological, occupational and health).

The negative relationship between mental workload and self-care activities has also been shown by Mesárošová (2018b). The preventive effects of self-care activities on burnout (emotional exhaustion as the most important component of burnout) and excessive stress have also been confirmed in several international studies (e.g. Alkema et al., 2008; Griner, 2013; Jones, 2005). From the point of view of application of knowledge for practice, we believe that raising competences in self-care (e.g. disseminating information and skills in ways of self-care, promoting self-regulation and self-efficacy in this area ...) is precisely what helps to reduce the consequences of the dual

role overload of work and family. The results suggest that different types of self-care have an impact on the amount and form of overload. In practice, this could lead to more targeted and effective prevention of burnout for example.

In terms of further research, it is important to pay more attention to examining the conditions in the area of work and family that cause the overload and conflict between women's roles. A deeper understanding of work and family life requires a number of perspectives related to working environment, work-related stress and work requirements, working hours, job satisfaction, family support, overall quality of life and mental health.

Moreover, a longitudinal exploration would help to understand the changing nature of job roles over time better and see how the stages of the family life cycle (e.g. childbirth and childcare) affect work and family interests. One of the limitations of the presented study is the fact that the group was composed only of women. This limits the possibilities for comparison. Another limitation is the self-assessing nature of the methodologies used, which may have distorted the results to some extent. The selection of respondents was intentionally focused on helping work although extending to other professions would increase the degree of external validity. Internal validity could be supported in the future by using other methodologies and linking quantitative and qualitative methods in the research. Further research includes comparing the overload rate for men and women and the inclusion of other types of professions. It is also of interest to consider verifying the benefits or supporting factors in the event of overload.

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#### Primary Paper Section: A

#### Secondary Paper Section: AN

## A BOOK'S PICTURE AS A VISUAL STIMULUS FOR INTERPRETATION IN THE FRAMEWORK OF DEVELOPING CREATIVE AND CRITICAL THINKING

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**Abstract:** The paper deals with the problem of visual literacy of university students - the future teachers of Fine arts in relation to their critical thinking systematically developing during their pregradual preparation within the disciplines focused on theory and history of fine arts at the Department of Fine arts and Faculty of Education at Constantine the Philosopher University in Nitra. The paper looks into students' qualifications of given area via questionnaire focusing on interpretation of book's picture as a visual stimulus to identify formal content and semiotic meaning. The author explores the problem in relation to project goals supported by Slovak Research and Development Agency, according to Act No. APVV-15 - 0368 in context of present requirements of teacher training program in the area of critical thinking and creativity.

**Keywords:** visual stimulus, fine arts education, interpretation, critical thinking

### 1 Introduction

Adriana Récka the author of this paper thematically and contentually follows up the article published in the previous issue of the journal Ad Alta (Récka, 2018). The paper in 2018 announced the analysis and interpretation of our research results which were not dealt with in the article at that time. The research was carried out during the winter semester of academic year 2018/2019 concentrating on competencies of our students - future teachers of Fine arts, in area of visual literacy in relation to presumed skills gathered during their pregradual preparation in bachelor's and master's level of study, orientated on their knowledge and skills gathered within theoretical disciplines focused on theory and history of fine arts. Our aim was to find out whether students are ready and competent to apply their knowledge, wisdom and skills obtained during their studies in relation to identification analogy (icon), factual coherence (index) and convention (symbol) according to Pierce's theory based on triadic semiotics known as an *icon* (Likeness, etc.) - *index* (Sign) - *symbol* (General sign, In Bergman, Paavola, 2014) in the form of interpretation of non artistic visual impulses - photos presenting : 1. one apple, 2. two apples, 3. a closed book, 4. an open book, 5. an empty plastic box, 6. plastic box containing a small object, 7. compilation of photos containing photos 1- 6. Implementation of non artistic visual impulses within our research was intentional. Our aim was to secure perception, reception and interpretation of universal "picture", clear of any visual, artistic or historical experiences of students thus test the effectiveness of our tuition performed within disciplines focused on theory and history of fine arts. Except the third and the fourth item - picture of closed and open book, we presented in our paper partial results of our research in quantitative and qualitative level in relation to chosen items of our questionnaire and evaluation of hypotheses. This paper primarily deals with the items carrying visual stimulus in the form of a closed and open book and apart from the evaluation of our hypotheses, we try to interpret the results of our findings in broader context concerning issues in developing creative and critical thinking.

#### 1.1 Theoretical background

Theory in relation to researched issue was mentioned in our previous paper (Récka, 2018) referring to famous authors in the worldwide context dealing with visual literacy from different aspects (Bristol and Drake, 1994, Sinatra, 1986, Stokes, 2002, Zanin -Yost et Donaldson, 2005, etc.) We also mentioned the author paying attention to this topic in Slovak environment (Šupšáková, 2015). We also described interpretative approaches of works of art applying comparative and semiotic analysis,

which we consider as relevant in the process of developing visual literacy, with the focus on critical thinking in pregradual preparation of future teachers of Fine arts (Zemanek, Nebrig, 2012, Van Tieghem, 1931, Wellek, 1969, Jauss, 1982, Wölfflin, 1915, Panofsky, 2013). We also stated, that the structure of study programme for future teachers of Fine arts in Bachelor's and Master's level of study in the context of practical and theoretical disciplines at the workplace of the author of this article, creates adequate conditions for development of visual literacy in future teachers of Fine arts within the range of their pregradual preparation. We also mentioned, that enforcement of basic thought operations (such as analysis, synthesis, comparison, abstraction, concretization, generalization, induction, deduction and analogy), representing the essence of critical thinking, being defined from the point of view of general psychology (Daniel and coll., 2003), students have the opportunity to perceive in the widest spectrum and in synthetic form within the disciplines focused on theory and history of fine arts guaranteed by the author of this article. Theories and approaches of aforementioned authors within art education we consider as relevant theoretical starting points for differentiation between formal, contentual and semantic level of visual culture and understanding of these differences from students' point of view altogether with realization of these approaches within education, we consider as an adequate tool for development of critical thinking and creativity of students. Referring to the theory of semiotician Charles Sanders Peirce we perceive a work of art as a specific complex of signs and their meanings in terms of a triadic relation *icon* (Likeness, etc.) - based on analogy, outer similarity, or objective conformity, *index* (Sign) - based on factual (causal or physical) coherence and a *symbol* (General sign) - based on an agreement, tradition or convention (In Bergman, Paavola, 2014).

The above mentioned approaches in Fine arts education we consider as relevant theoretical resources for differentiation among formal, contentual and semantical level in visual culture and understanding of these differences from the students' point of view altogether with implementation of these approaches within the education, we perceive as adequate tool for critical thinking and development of students' creativity.

### 2 A Book's picture as a Visual Stimulus for Interpretation in the Framework of Developing Creative and Critical Thinking

#### 2.1 Research objectives

The aim of our research was to find out what are the competencies of our students - future teachers of Fine arts in area of visual literacy in relation to presumed skills gathered during their pregradual preparation in bachelor's and master's level of study, orientated on their knowledge and skills gathered within theoretical disciplines focused on theory and history of fine arts. Our aim was to find out whether students are ready and competent to apply their knowledge, wisdom and skills obtained during their studies in relation to identification analogy (icon), factual coherence (index) and convention (symbol) according to Pierce's theory of signs, in the form of interpretation of non artistic visual impulses - photos presenting :

1. One apple
2. Two apples
3. A closed book
4. An open book
5. An empty plastic box
6. Plastic box containing a small object
7. Compilation of photos containing photos 1- 6

As mentioned before, this paper analyses and interprets partial results of our research in relation to chosen items of anonymous questionnaire as a tool or rather a method of data gathering. In relation to chosen items number 3 and 4 – a closed and an open

book our aim was, except for researching above mentioned competencies determined by pregradual preparation in bachelor's and master's level of study, evaluate acquired data according to the context and review the results of cognitive and emotional psychological processes of our respondents gained in a non educational environment in a long-term perspective.

## 2.2 Research hypotheses

We assumed that:

1. According to the pictures showing a closed book and an open book more respondents will point out in connection with the material pictures not only common associations regarding the book as a tool for reading, textbook, and source of knowledge, but also a wide spectrum of qualitative personal links than those who will only restrict themselves to a confined spectrum of associations.
2. Master's degree students - future teachers of Fine arts in connection with the book (either closed or open) will associate iconographical and iconological connections of this object as an attribute to religious and sacred images or Holy Saints and will outnumber Bachelor's degree students.
3. Among all of the respondents there will be more of those who in connection with the book will associate their childhood and a book as a source of storytelling than those, not associating the context as such.

## 2.3 Research plan and research file

Our research sample consisted of 143 respondents altogether, 98 studying full time - Fine Arts Education in academic year of 2018/2019. Particularly: Bachelor's degree - 38 students in the first year, Bachelor's degree - 16 students in the second year, Bachelor's degree - 16 students in the third year, Master's degree - 8 students in the first year, Master's degree - 20 students in the second year and 45 attenders of further education within University of the Third Age, CPU in Nitra studying: History of Fine Arts and Creative Art, under the patronage of Department of Creative Arts and Art Education at the Faculty of Education, Constantine the Philosopher University in Nitra. The questionnaire was filled in by attenders studying at University of the Third Age in above mentioned program in a two year study - second and third year of the first grade (winter semester of the first year covering general subjects is taught at other departments) and in all three years of study of the second grade. The main purpose of integrating the students of Third Age University into our research was to obtain opinions from the group of respondents much older (45 plus), therefore we can assume that they have more visual skills than the respondents studying full time, specifically studying Teaching of Fine Arts (19-25). On the contrary in comparison with full time students of master's degree, students of the University of the Third Age, based on the nature and concept of interest-based learning within this form of further education, did not take the subject specialized in analysis and interpretation of fine arts aimed at theoretical and practical aspects of perception, reception and interpretation of art works and visual culture.

## 2.4 Research methods

The main method of data gathering was an anonymous questionnaire consisting of preliminary basic questions and 7 articles. By asking the basic questions we were trying to ascertain the affiliation of respondents according to their applicable study or educational programme, year of study, previous education i.e. secondary or university education and sex.

The first six articles included visual inputs - photographs and three open questions:

1. What is the picture describing (representing)?
2. What associations (images, connections) come to your mind with the object shown in the picture?

## 3. What does the object in the picture symbolize (semantically)?

Article No.7 was containing all of the above mentioned pictures as a complex of visual inputs. This article contained only one assignment in the text: If you look at pictures 1 - 6 altogether, what associations (images, stories) do you reflect on in connection with these pictures?

The questionnaire deliberately omits any formulations, definitions of above mentioned authors or our theoretical conclusions which our students came across during their studies. We were trying to monitor interest and ability of our students to apply acquired knowledge and skills in practice.

In our previous paper (Récka, 2018) we published a complete set of photographs of visual inputs that were part of our questionnaire: picture No.1 - one apple, picture No.2 - two apples, picture No.3 - a closed book, picture No.4 - an open book, picture No.5 - an empty plastic box, picture No.6 - plastic box containing a small object. In the paper published in 2018, we analyzed in detail the results associated with the interpretation of picture No.1 - one apple, picture No.2 - two apples, picture No.5 - an empty plastic box, picture No.6 - plastic box containing a small object. Here we publish only those images that are subject to analysis and interpretation of research results in this article: picture No.3 - a closed book, picture No.4 - an open book from our questionnaire (see picture No. 1 a 2).



Pict. 1



Pict. 2

(Photo: Adriana Récka, 2018)

The research was carried out during the winter semester of academic year 2018/2019. Method of data processing was quantitative and qualitative analyses of answers from the questionnaire reflected in verbal interpretation as well as verification and evaluation of hypothesis.

According to the nature of our questionnaire, including articles, open questions and our ambition to make reference to our respondents' formulations, each filled in questionnaire was marked according to the following key: numeric index of the year of study (1, 2, or 3), abbreviation of study programme (Bc - Bachelor degree, MA - Master degree, U3A - University of the Third Age, 1. Level, U3Ad - University of the third age, 2nd level), serial number (1 - number of respondents in certain group). Our respondents are marked as 1Bc1 - 38, 2Bc1 -16, 3Bc1 - 16, 1MA1 - 8, 2MA1 -20, 2U3A1 - 10, 3U3A1 - 11, 1U3Ad1 - 7, 2U3Ad1 - 9, 3U3Ad1 - 8.

### 3 Research results

As mentioned above, partial research results are presented in both quantitative and qualitative terms in relation to the selected items of the questionnaire used and the evaluation of the hypotheses we have formulated. All relevant information regarding number of respondents in particular year and form of education are presented in our tables. University of the third age students (altogether 45) were put into the same group, as their affiliation to a particular year of study did not play an important role in regard to our preferred indices. For clarity of preferences in individual groups of associations and symbols, numerical data are given together with the percentage of results in relation to the total number of respondents (see table no. 1 and 2).

Table 1: Frequently used terms associated with the book

Frequently used terms associated with the book	1. ye-ar Bc. 38	2. ye-ar Bc. 16	3. ye-ar Bc. 16	1. ye-ar MA 8	2. ye-ar MA 20	U 3 A 45	Alto-ge-ther 143
reading	19	9	13	3	10	31	85/ 59%
story	14	7	9	4	9	6	49/ 34%
study/learning	8	6	1	2	12	14	43/ 30%
scholarship /education/ schooling	10	2	4	3	5	10	34/ 24%
time (for ourselves, free time, time passing by)	9	3	6	0	6	7	31/ 22%
wisdom	5	5	3	2	7	8	30/ 21%
blue (color of the book cover)	7	6	1	0	0	12	26/ 18%
font, text	3	4	1	6	7	5	26/ 18%
knowledge	5	2	5	1	4	8	25/ 17,5%
book cover	9	2	5	2	1	5	24/ 17%
rest/relaxation	0	0	5	0	7	10	22/ 15%
notebook, diary, journal	2	2	2	0	4	8	18/ 13%
text	1	4	1	3	5	4	18/ 13%
library	7	2	3	0	3	2	17/ 12%
plot	5	5	1	0	1	4	16/ 11%
man	10	0	2	0	1	2	15/ 10,5%
calmness	2	1	0	1	1	8	13/9%
literature, belles-lettres	3	1	1	0	3	4	12/ 8,5%
secrecy	1	1	2	2	2	4	12/ 8,5%
paper	1	3	0	1	5	1	11/8%
words	6	1	1	1	2	0	11/8%
curiosity	1	1	0	1	1	6	10/7%
tension	2	2	1	0	1	3	9/6%
school	2	1	1	0	4	1	9/6%
cognition	0	0	0	0	4	5	9/6%
smell of an old/new book	2	2	2	1	2	0	9/6%
ease	0	0	0	0	2	7	9/6%
war	1	2	2	2	1	1	9/6%
font	2	0	0	2	3	1	8/ 5,6%
fun	0	0	2	0	1	5	8/ 5,6%
saying „Don't judge the book by its cover“	7	0	1	0	0	0	8/ 5,6%
pleasure	1	2	0	1	0	4	8/ 5,6%
sorrow	2	2	0	1	0	2	7/5%
desire for knowledge	2	1	0	1	0	3	7/5%
thickness of the book	2	0	0	0	0	4	6/4%
fairy tale	1	0	0	1	3	0	5/ 3,5%
illustration	0	4	0	0	0	1	5/ 3,5%
exam	1	0	0	0	2	2	5/ 3,5%

silence	2	0	0	0	0	3	5/ 3,5%
childhood	1	0	0	1	1	1	4/3%
adventure	2	0	1	0	0	1	4/3%
boredom	1	0	0	0	2	1	4/3%
cloud/clouds	2	2	0	0	0	0	4/3%
bomb/ bombardment	2	1	0	0	0	0	3/2%
death	0	2	1	0	0	0	3/2%
gift	1	0	0	0	0	1	2/ 1,4%
helper	0	0	0	0	0	2	2/ 1,4%
findings	1	0	0	1	0	0	2/ 1,4%
friend	0	1	0	0	0	1	2/ 1,4%
rain	1	1	0	0	0	0	2/ 1,4%
depressive graphics	1	0	0	1	0	0	2/ 1,4%
stress	0	0	0	0	1	0	1/ 0,7%
smell of coffee	0	0	0	0	0	1	1/ 0,7%
page rustling	0	0	0	1	0	0	1/ 0,7%
wood	0	0	0	1	0	0	1/ 0,7%
March	1	0	0	0	0	0	1/ 0,7%
textbook	0	0	0	0	0	1	1/ 0,7%
advisor	0	0	0	0	0	1	1/ 0,7%
Christmas	0	0	0	0	0	1	1/ 0,7%
letterpress	0	0	0	0	0	1	1/ 0,7%
invention	0	1	0	0	0	0	1/ 0,7%
gloominess	0	1	0	0	0	0	1/ 0,7%

Source: Own arrangements

The first hypothesis explored respondents' competencies in the area of critical (evaluative) thinking focused on identification of common, general (standard, universal, objective) as well as personal (subjective, individual) associations with the given visual stimulus - open and closed book. Slovak version of the book *Catch-22* by Joseph Heller, published by Slovart, 2015, Bratislava, book cover designed by Jozef Dobrík was used as visual stimulus. Content of this satirical novel set during World War II, the author of the book cover depicted adequately. Considering that our aim was to use the book as such without any contextual connotations, the book cover informing about the author and the title was removed before photographing. Visual of hardcover is identical with the book cover, omitting the reference about the author and the title, and represents a wide range of associations and denotations. Despite the fact that *Catch-22* is one of the most successful books of the present, stated publication was neither recognized nor named among any respondents.

Our first hypothesis was not confirmed by the research, on the contrary, the results have brought a few interesting findings. Although the respondents stated a wide spectrum of qualitative subjective associations which can be classified partly as terms related to cognitive process and partly as terms related to emotional or rather affective component of our perception and experience, frequency of some terms - associations in relation to the total number of respondents was extremely low. The most frequently occurring terms associated with the book were: *reading, story, study/learning, scholarship/education/schooling*. It is important to mention that not even the last group of these associations did not reach the 25% percent of respondents' share of the total number of respondents. All the other associations regarding the total number of respondents reached even much lower level. Terms related to cognitive component were: *wisdom, blue color (color of the book cover), knowledge, book cover, notebook/diary/journal, library, plot, man, literature/fiction, paper, school, cognition, war, bomb/bombardment, phrase : "Don't judge the book by its cover", fairy tale, exam, childhood, present, helper, findings, friend, rain, wood, March, textbook, adviser, Christmas,*

*letterpress, invention*. The most surprising was the quantitative result of associations such as: *library, school, textbook, childhood and fairy tale*. Out of 143 respondents the term *library* associated with the book only 17 students (12%), *school* 9 (6%), *fairy tale* 5 (3, 5%), *childhood* 4 (3%) and the *textbook* only 1 student (0,7%). We were also surprised by the fact, that the only association with the textbook was in the group of University of the third age students altogether with the other terms related to education such as - *study/learning, scholarship/education/schooling, cognition, reading, knowledge and exam*, compared to respondents of younger generation currently studying. Senior students saw the book particularly as a practical helper, advisor, source of useful information, they commented on its thickness and potential content. In several cases the respondents identified the book's picture as a *notebook, diary, journal* (18 respondents altogether). We can say, that University of the third age students associated the book's picture more or less with general connections, whereas the students at Bachelor's degree of study prioritized analytical approach to the given visual stimulus and tried to identify/decipher and interpret visual perception of the book from the formal, contentual and semiotic point of view. These respondents, whose number compared to the whole was quite low, mentioned the *blue color of the book cover*, operated with terms such as: *illustration, war, man, bomb/bombardment, free fall, clouds* and correspondingly associated the negative feelings such as: *sorrow, gloominess, depression even death*. On the contrary, University of the third age students evaluated the book cover as something pleasant and calming, inducing peaceful atmosphere and ease. Bachelor's and Master's degree students also looked for the meanings connected with an open and closed book in relation to personality typologies. Closed book was interpreted as a symbol of *introversion and unsociability of a man*, whereas in an open book they "recognized" *openness to new impulses, open mind, trust, relaxedness, abolition of prejudices, possibility to learn something new, find out more, open possibilities, uncovered secrets and development*.

Also the saying "*Don't judge the book by its cover*" in connection with the closed book and connotations to human qualities, associated only 8 students out of 143. Seven of them were the students in the first year and one was the student in the third year of Bachelor's degree. Personalization or rather transmission of meaning between closed and open book into personality sphere is totally absent within the University of the third age students. Another surprising finding for us was that the cognitive associations with the book, for which we expected more frequent occurrence, appeared only sporadically. Terms such as *wood, letterpress, invention, March* were mentioned only once (!) by the sole respondent. Only two respondents associated the book with the *gift*.

We also state the terms associated by our respondents related to subjective experience - emotional elements of our psyche: *time (for ourselves, free time, time passing by), rest/relaxation, calmness, secret, curiosity, contentment, fun, happiness, sorrow, desire for knowledge, silence, smell of an old/new book, smell of coffee, page rustling, adventure, boredom, stress*. We have to stress yet again, the predominance of seniors connecting the book with *rest, relaxation, calmness, contentment, silence*, but also with *curiosity, fun and desire for knowledge*. Low number of respondents associating the book with emotional aspect or sensory perception took us by surprise. Only 9 respondents associated *tension and contentment* (7 seniors associating *contentment*), feeling of *joy* 8 respondents (4 seniors), *sorrow* 7 respondents. Associations such as: *silence, boredom, stress, smell of coffee, page rustling* was mentioned only in 5 cases.

Interesting was also the fact, that explicit numbers regarding the pages of an open book 158 -159 were mentioned only by one respondent while they were quite obvious and easy to read. Respondent coded 2Bc3 - male, Bachelor's degree student in the second year of study - Teaching of Fine Arts and Aesthetic education, graduate of non artistic secondary school, mentioned a wide spectrum of associations and meanings in connection

with given stimuli (apart from the book, also with an apple/apples and a plastic box). In relation to apple/apples he associated various experiences, childhood memories and family relations. Qualitative correlations in relation to color and size of presented fruit he symbolized as: *the first sin, fertility, gift and Christmas*. Out of 143 respondents he was among the six, who connected the picture of a non labeled plastic box with a package of chocolate and hazelnut pralines produced by a famous Italian chocolatier. He was also one of 11 respondents, who with the presented plastic box clearly named much discussed negative phenomenon of plastic waste. According to his own words we are "*smothered by it, overuse it, it is stupid how we destroy our planet*". An empty plastic box he associated with us being *empty-headed/brainless, enclosed space*", and stated symbols: *the emptiness of the soul, closeness, uselessness, transparency*. Closed book and its cover he associated with war, describing: "*bombs falling through the white clouds, no more white clouds on the ground, death, paradox of war lying in a soft bed*" (note: photography of closed and open book was actually taken on a bed with white bedding). As a symbol he stated: "*mind, wisdom, closed - secrecy, people falling as bombs out of the sky - hard fall, blue color - cold (war)*". Open book excluding page numbers he also associated with "*dreaming, being draw into the plot, I cannot stop reading, pleasure, creating new thoughts, wide-spread fantasy*". As a symbol he stated: *open book is like an open mind, being in the middle of the plot - story of life, relaxation*". In the last entry of our questionnaire his reaction to the complete set of visual stimuli did not meet our expectations as he did not associate the fairy tale about the Snow White and the Seven Dwarfs, but he wrote an original story reflecting phenomenon of natural and artificial materials with elements of causal inference. Complexity of his answers prompted us to explore and evaluate answers within item correlations of our questionnaire, also with other chosen respondents from this group (altogether 11), critically reflecting negative environmental context regarding the plastic box. We wondered whether their critical approach in relation to environmental problem will have equivalent formulation towards the other items. Unfortunately quality and complexity of 2Bc3 reflections in sense of critical thinking and creativity we did not observe in other respondents.

In the group of students attending the first year of Master's degree, only one respondent stated the environmental problem. 1MA4 - female, graduate of Secondary art school, field of study: Teaching of Fine arts in combination with Teaching Technology. In relation with an apple she associated terms such as: *autumn, pie, crunchy, having lunch in the canteen and the garden*, in relation to the apples she stated: *relationship, sunset, small and big, racial diversity, still life*. Apple itself represented to her *home*, two apples *random pair*. In relation to the plastic box except *environmental issue* she associated: *the container for package free shop, box for trinkets, emptiness, desire or fulfillment*. As a symbol she stated: *isolation from outer environment*. In relation to a closed book she associated: *the fall, mystery, puzzle, curiosity, desire to open and read*. As a symbol she stated *escape from reality*. In relation to an open book she associated: *sleepless nights, reading at school, childhood, story, smell and rustling of pages*. Typical of this respondent was that her statements in relation to associations were exactly adjusted to our assignments - give at least 5 associations. Although she completed the task stating 5 associations, but nothing more nothing less. Also in connection with the display of all pictures, in her answers predominates cognitive aspect stressing identification and a brief remark of progress and change in each picture: *one becomes two, multiplicity, growth, organic, society, with no creativity*.

In senior group - University of the third age students, the negative effect of plastic waste on our planet was mentioned by respondent coded 3U3V11 - female, graduate of University of agriculture. At the same time she also appreciated practical usage of transparent box and its convenient size. In connection with apple/apples she mentioned relations to variety, color, size, taste and she stated the symbol of forbidden fruit given to Eve in Eden. Picture of a closed book she described as a *notebook*,

associating with: *importance to write down tasks, useful for recording recipes and various entries, used as a diary*, for her *the blue color is calming*. The picture of a closed book she sees as a symbol of: *useful helper*. Open book she associated with: *the source of knowledge, novel for pleasure, printed text is nicer than digital text, book as a Bible* (she was the only one out of 43 respondents of U3A) *source of entertainment*. Open book she sees as a symbol of *concentrated thoughts*. In the last entry of our questionnaire she assessed the plastic dose, its size and usage from the practical point of view. Our second hypotheses expected that Master's degree students - future teachers of Fine arts in connection with the book (either closed or open) will associate iconographical and iconological connections of this object as an attribute to religious and sacred images (i.e. *The Bible, The Book of Books, Holy Scripture, The Annunciation, Saint Anne Teaching Virgin Mary* etc.) or rather Holy Saints (*Evangelists, Saint Paul* etc.) and will outnumber Bachelor's degree students.

#### Our second hypotheses was not confirmed by the research.

And not only was it not confirmed, but has also brought a few unexpected findings. Sacral context of the book seen as the Bible, out of 143 respondents mentioned only 4, 1 of them at Master's degree. Other terms focusing on symbols and significance of the book only replicate the notions mentioned in relation to associations: *scholarship/education/schooling, wisdom, knowledge, cognition rest/relaxation, study/learning, education, secrecy* (closed book), *curiosity, findings, The Bible* (closed book), *fun, blue/cold color/cold war, smell of the book/paper, open mind* (open book), *national book month* (open book). Stated symbols in connection with the book and its religious context were appropriate however the numeric data were very surprising. The most common symbol of the book mentioned in different variations as *scholarship/education/schooling* reached only number of 34 (24%) out of 143. *Wisdom* as a symbol of the book stated 33 respondents (23% out of 143). *National book month* was remembered only in 1 case in University of the third age students. 6 out of 143 respondents did not mention the symbol related to the book's picture at all (see the table no. 2).

Table 2: Frequented terms – symbol/meaning in connection with the book

Frequent terms – symbol /meaning in connection with the book	1. ye-ar Bc. 38	2. ye-ar Bc. 16	3. ye-ar Bc. 16	1. ye-ar MA 8	2. ye-ar MA 20	U 3 A 45	Alto-ge-ther 143
scholarship/ education/ schooling	9	2	1	1	4	17	34/ 24%
wisdom	2	8	3	3	8	9	33/ 23%
knowledge	2	2	6	0	3	5	18/ 13%
cognition	2	0	3	0	3	3	11/8%
rest/relaxation	1	3	3	1	2	1	11/8%
study/learning /education	2	2	1	0	2	4	11/8%
secrecy	1	2	1	0	2	2	8/ 5,6%
curiosity	0	3	0	0	0	2	5/ 3,5%
findings	1	0	1	0	0	2	4/3%
the Bible	0	2	0	0	1	1	4/3%
fun	0	2	0	0	0	1	3/2%
blue/cold color/cold war	0	2	0	0	0	1	3/2%
smell of the book/paper	0	1	0	0	0	1	2/ 1,4%
open mind	1	1	0	0	0	0	2/ 1,4%
national book month	0	0	0	0	0	1	1/ 0,7%
did not state anything	0	1	1	0	0	4	6/4%

Source: Own arrangements

Our third hypotheses expected that among all of the respondents there will be more of those, who in connection with the book will associate their childhood and a book as a source of storytelling than those not associating the context as such. We assumed that the age category of our respondents (98 out of 143) ranges between 19 to 24 and psychological contents such as perceptions, images, memories, knowledge, thoughts and emotions connected with the childhood and fairy tales will be still alive. University of the third age students were expected to have more or less regular contact with the book in relation to their grandchildren - reading fairy tales.

Our third hypotheses did not support our research. Our research file recorded a very low number of preferences associated with the period of *childhood* and *fairy tales*. Only 5 respondents associated the book with the fairy tale and only 4 with the childhood. We do not classify this result in any way - in the sense of *good* or *bad*. We realize that the results of our research have influenced many circumstances - both objective and subjective determinants. The open questions in the individual items of our questionnaire naturally generated a situation where our respondents could decide what to mention and what they would not mention. Is it possible that in the case of a direct formulation: *do you link the picture of the book to the memory of your childhood and fairy tales?* there would be many consistent answers. We emphasize again that our goal was to indirectly detect the use of competences to associate analogies with visual inputs and link them with symbols. Since we will have part of our research sample available in the next academic year, we will create a questionnaire with targeted and direct questions in this regard. We strongly believe that the results will bring further interesting findings.

#### 4 Conclusion

Our paper dealt with analyses and interpretation of partial results of our research exploring students competencies - future teachers of Fine arts in area of visual literacy in relation to presumed skills gathered during their pregradual preparation in bachelor's and master's level of study, orientated on their knowledge and skills gathered within theoretical disciplines focused on theory and history of fine arts. Chosen items of anonymous questionnaire as a method and our research tool, took into consideration the fact, that students come from different types of secondary schools, master different skills and knowledge, as well as life experience. Except for full-time students - future teachers of Fine arts, University of the third age students studying: History of Fine arts and Creative art, were also part of our research group. Their statements in relation to the researched issue proved for us to be a relevant comparative material. The results of our research show, that regarding competencies monitored in relation to reaction on a visual stimulus in the picture form of a closed and open book, affiliation to a particular year of study did not play an important role. Age of our respondents, in context of competence reflecting formal, contentual and semantic level of visual impulse based on our assignment accordingly, also proved as a determinant without any greater significance. We found out that our respondents as a whole group operate with a wide spectrum of terms in area of interpretation of aforesaid three aspects of visual phenomenon, but range or rather number of associations and assigned terms regarding respondents as individuals was extremely low. Results of our research are a great impulse for us to create future educational activities even in junior years and implement forms of education focusing on development of interpretational skills in relation to formal contentual and semiotic aspect of visual culture.

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## APPLICATION OF MODERN INFORMATION TECHNOLOGY IN INNOVATION OF BUSINESS LOGISTICS PROCESSES

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The paper was elaborated within VEGA 1/0436/17 Conceptual Frameworks of IT Governance and their impact on the competitiveness of companies in the Slovak Republic – proportion 80 % and the Project of Young Teachers, Researchers and Full-time PhD. Students at University of Economics in Bratislava, No. I-19-104-00 New dimension of logistics in the Fourth Industrial Revolution in Slovak enterprises – proportion 20 %.

**Abstract:** Business logistics in 21<sup>st</sup> century has been transforming its form, because it could be characterised by higher flexibility, innovations, accuracy, reliability, orientation on customer and application of worldwide logistic technologies and systems. Modern trends and logistic direction are mutually devoted just very little attention. The main aim of the paper is to identify the impact of selected information technologies on selected logistics processes. As a result of digitization, logistics forms the basis for the implementation of new modern technologies, the transition to advanced production systems and the differentiation of product offerings. This is also confirmed by the results of a survey conducted in 85 Slovak enterprises and a statistical evaluation of the survey.

**Keywords:** information technologies, logistic processes, business logistics, Warehouse Management System, Radio Frequency Identification, Pick-by-Systems

### 1 Introduction

In current turbulent times, logistics is impacted by globalisation and dynamic growth of new technologies. Every business reacts to these changes swiftly and flexibly and accommodates to needs of the market. Modern era brings also changes and new direction of logistics itself. If business wants to survive in competitive fight, it must include new means, methods, techniques, approaches and technologies of business logistics into its genesis. Nowadays, we can observe various approaches towards trends, depending on views of many authors and businesses.

Beginnings of warehouse evidence via computer reach back to 80<sup>th</sup> years, when they used to record volume of stored materials. Currently systems of warehouse management offer many options on how to manage, control, optimise stockroom and distribution operations. Processes which occur in warehouses are of large importance for the circulation of goods throughout the supply chain. Warehousing itself refers to taking care, transportation, loading, unloading, packing and processing of goods between the production and consumption for commodity and other various functions. According to authors Bartholdi and Hackman, the warehouse process of order picking takes 70% of time and 55% of costs which makes it a significant process in a warehouse. The order picking process can be one-dimensional, two-dimensional and three-dimensional (Bartholdi, 2014).

Warehouse is very important for every company, especially for production and retail sector, but also for the whole supply chain. Term warehouse is often mentioned in a negative context, as the cause of high costs and waste of time, without adding value to the product. Such understanding of warehouse and warehousing process is limited and does not observe the key tasks of warehouse management, such as: reducing the warehouse cost and holding inventory, increasing efficiency, increasing accuracy, increasing productivity while achieving greater value for customers and higher levels of service quality (Richards, 2017). To analyse and measure the effectiveness, according to Richards, it is necessary to approach the processes from where the deficiencies can be indicated. Basic warehouse processes are the following: receiving, put-away, internal replenishment, order picking, accumulating and sorting, packing, cross-docking, dispatch and shipping. Receipt and storage are considered inbound processes, while others are considered outbound processes. Beside these processes, there are also value-added

services which are not obligatory but depend on the warehouse type and various provided services. In various warehouses, goods which usually enter as units of a larger scale, go through reorganization submitted to repackaging that results with units of a smaller scale. Afterwards, they are broken down into smaller quantities throughout order picking, packing and finally distribution. In this kind of warehouses, operations which are done daily are tied with human performance and greatly depend on it. The smaller the handling unit, the greater the handling cost. Smaller units require more labour and much more processing to be delivered. Precisely, pallet manipulation at a warehouse directly influences the time used for picking.

### 2 Literature Review

The core of WMS is in warehouse map, which includes detail parameters of storage space on shelves and free space while it follows the same rules and criterions e.g. in space utilisation and others. WMS also includes data of stored goods, their dimensions, stock rotation, packaging, dispatching. Every logistics operation is noted and hence it is known where logistics unit is located, what the parameters are and what its date of expiry is (Brezovský, 2014). Warehouse management involves the control and optimisation of the complex warehouse and distribution system. It might be said that warehousing and inventory management represent support to the production process and strive to complete coordination in relations with all functions, such as marketing, finance, human resources etc. Therefore, any disruption in coordination can cause serious problems throughout the whole business process.

According to Bartholdi and Hackman (2014), collecting orders in the warehouse wastes the largest share of time of all warehouse activities, approximately 70%. Therefore, it is very important to minimize the pickers' collection time and picking route. Affecting the mentioned total collection time by order decreases, and the number of successfully collected orders per hour increases. When collecting orders, it also appears that the largest share of work is done by warehouse workers. In order to meet large orders of many customers, the warehouses have several shifts performing tasks of collecting orders. From an economic point of view collecting orders makes up to 55% of operating costs in the warehouse. Therefore, it is important to reduce the order picking cost by optimizing time and picking route because it greatly reduces the overall storage costs.

Warehousing process includes receiving, putting away, storage, order-picking and dispatching of raw materials/products (Ming et al. 2013). Order-picking is one of the most important activities in the warehouse. This warehouse activity includes retrieving raw materials and/or products from the warehouse at the request of the customer, or presents a process of gathering raw materials or products which are prepared according to some customer orders (Reif et al. 2010). Order-picking, as labour-intensive warehousing operation, involves checking the availability of raw materials and/or products, assembling documents, defining the schedule for preparing orders and transportation. This operation could be very capital-intensive in situations when warehouse is automated (De Koster et al. 2007).

According to Rakesh and Adil (2015), the warehouse layout decision is important as it affects several aspects of a warehouse, including various costs and storage capacity. Step toward warehouse optimization is by use of their algorithm that determines lane depth, number of storage levels, lateral depth and longitudinal width of a three-dimensional order picking warehouse. It also helps in knowing the quantum of change in the cost due to change in different parameters, which are difficult to predict due to the interaction of multiple effects and trade-offs. When there is a need for achieving operational efficiency and cost savings, warehouse management and warehouse operations are appropriate areas, in terms of achieving savings

which will not jeopardize the quality of products and services. Author Lu conducted research for an algorithm for dynamic order-picking in warehouses, and according to it, the dynamic order-picking strategies that allow changes of pick-lists during a picked cycle are of importance (Lu et al. 2016).

Warehouse operations are critical for each supply chain. According to some authors, the efficiency and effectiveness of the supply chain network depends on warehousing operations and its performances (Rouwenhorst et al. 2000). Different methods of order-picking, equipment or information technology could be used for improving order-picking process. It is well known that implementation of Warehouse Management System (WMS) means integration in day-to-day planning and controlling processes. This software system presents a great support to warehousing process. Before WMS companies were using Inventory Control System. But WMS has greater results in terms of functionality and optimisation routines (Moellera, 2011).

We cannot forget about the difference between Warehouse Management System (WMS) and stock control. Under stock control we understand goods, their volumes, arrival at the warehouse, dispatching etc. Warehouse Management System manages works at the warehouse and hence differs from stock control. Warehouse management is carried out based on set of algorithms, which work with entrance data and set of rules, while system based on delivery not and orders receives determines where the items received will be stored, or from where it will be dispatched. Also it takes into account principles of FIFO (First In, First Out), LIFO (Last In, First Out), FEFO (First Expired First Out). Warehouse Management System generates expenses, manages movements of warehouse keepers in the warehouse, manages work of warehouse keepers and compares their performances with time data optimised for given operation.

Warehouse Management System works with storage positions, one-level and multi-level packaging which enables to monitor individual storage movements. In application of system management there are combined also other technologies assisting to decrease error rates and save time. There we include for example RFID, Pick by Voice, Pick by Light, conveyors and others. Radio Frequency Identification (RFID) has been identified as a crucial technology for the modern 21<sup>st</sup> century knowledge-based economy. Some businesses have realised benefits of RFID adoption through improvements in operational efficiency, additional cost savings, and opportunities for higher revenues. RFID research in warehousing operations has been less prominent than in other application domains (Ming et al. 2013). The sensor-based method uses a RFID tag (Jeon et al. 2010), a laser pointer, a wireless sensors (Shen et al. 2015) and a laser sensor (He et al. 2010; Lecking et al. 2006) for pallet detection and location. RFID is composed of a couple reader / tag. The reader sends a radio wave, the tag in turn sends an identification frame. Once the chip is powered, labels and tags communicate following the TTF protocol (Tag Talk First) or ITF (Interrogator Talk First). In TTF fashion, the tag transmits first information contained in the chip to the interrogator. The data / Event Handler consists of two parts, the Request Handler and the Data processing. The request Handler handles events (RFID reader or user request) and transfers the message to the Data processing unit that is responsible for processing. "The main tasks of this unit are: 1) determine the request type; 2) extract data in the envelope; 3) verify data formats and consistency and 4) record data in the shared database. After that, the notification service is automatically called to inform intended users." (Gnimpieba et al. 2015)

„Software systems are used to support the warehousing processes. Starting as Inventory Control Systems, today's WMS contain much more functionality and optimisation routines. Order picking as the process of retrieving products from storage in response to a specific customer request is considered as a core function within a WMS. " (Moellera, 2011) "Experiences from practice show that about a half of the total operating expenses of

a warehouse is spent by order picking. " (Tompkins et al. 2013) or presents a process of gathering raw materials or products which are prepared according to some customer orders (Reif et al. 2010).

### 3 Methodology and data

The main aim of the paper is to identify the impact of selected information technologies on selected logistics processes. According to Commission Regulation EU no. 651/2014 distinguishes micro enterprises, small enterprises, medium-sized enterprises and large enterprises. The object of the research, which was conducted by questionnaire survey were small, medium-sized and large enterprises operating in the Slovak Republic.

Table 1: Definition of enterprises into micro, small, medium-sized and large enterprises

Enterprises	Staff headcount	Turnover	Balance sheet total
Micro enterprises	< 10	≤ € 2 million	≤ € 2 million
Small enterprises	< 50	≤ € 10 million	≤ € 10 million
Medium-sized enterprises	< 250	≤ € 50 million	≤ € 43 million
Large enterprises	> 250	> € 50 million	> € 43 million

Source: EUR-Lex. Commission Regulation (EU) No 651/2014. [online]. 2014. [viewed 2018-11-10]. Available from: <<http://eur-lex.europa.eu/legal-content/SK/TXT/?uri=CELEX:32014R0651>>

The survey was attended by 85 Slovak enterprises. Of the participating enterprises, 34.12% were from the automotive industry, 22.35% from the engineering industry, 16.47% from the electrotechnical industry, 10.59% from the food industry, 5.88% from the construction industry, 4.71% from the textile industry, 3.53% from the chemical industry and 2.35% from the wood processing industry.

In order to achieve the main objective of the paper, we have used several scientific methods. From the standard classical scientific methods we used: the method of literary research, the method of analysis and synthesis, the method of induction and deduction, the method of comparison, the method of scientific abstraction. From specific special methods, we applied a combination of inquiry methods, classification method, mathematical-statistical methods to quantify and quantify survey results. When asked respondents to determine the level of consent to claim, the Likert scale was used on a scale of 0 to 6 (where 0 - I disagree to 6 - I agree).

From the statistical tests, Pearson's Chi-square ( $\chi^2$ ) goodness of fit test was used. This test is included to tests of goodness-of-fit, which provide which allow to test null hypothesis  $H_0$ , on previously selected level of importance  $\alpha$  that random selection was performed as division of given type, or unknown parameters against alternative hypothesis  $H_1$ , that does not come from this division (Ostertagová, 2012).

On the basis of the main objective of paper was determined and tested following hypothesis:

$H_0$ : There is no statistically significant dependence on the significance level of  $\alpha = 0,05$  between the improvement of logistics processes and usage of Warehouse Management System (WMS).

$H_1$ : There is a statistically significant dependence on the significance level of  $\alpha = 0,05$  between the improvement of logistics processes and usage of Warehouse Management System (WMS).

Calculated testing characteristics (Chi-square = 12.229) was compared with 95 percentile  $\chi^2$  - division with  $(r - 1) \cdot (s - 1) = (3 - 1) \cdot (3 - 1) = 4$  degree of freedom  $\chi^2_{0,95}(4) = 9,487729$ .

Based on the hypothesis testing, we conclude that there is a statistically significant dependence between the improvement of

logistics processes and usage of Warehouse Management System (WMS) on the significance level  $\alpha = 0.05$ , thus accepting the  $H_1$  hypothesis and rejecting the  $H_0$  hypothesis.

#### 4 Results and discussion

Based on the survey carried out in enterprises in Slovakia, we found that enterprises would like to improve the information flow in selected logistics processes with the greatest percentage of 23.4%. Today, when environmental protection is still mentioned, predictions for the future tell us to think ecologically - "green". For this reason, it is essential that we manage the environment sensibly and prevent the negative effects that affect it to a great extent at the company level. In this respect, 19.6% of respondents identified recycling in the survey. Warehouse management would like to improve 17.2% of respondents and transport would like to improve 15.3% of enterprises. Among other logistic processes that Slovak enterprises want to improve, with a share of 13.1% material flow and handling with 11.4%. Table 2 summarizes the mean, median, mode, variance and standard deviation. Within the range of 0 to 6, enterprises most often identified value of 4 in warehouse management, transport and recycling. Mode with value of 5 has the information flow. The lowest values of mode have material flow and handling. Median with value of 4 have the information flow, warehouse management and recycling. The value of 3 has median in transport, handling and material flow. Table 2 shows that values are the most concentrated by information flow. The standard deviation has a value of 2.03. Values are the least concentrated by handling. The standard deviation has a value of 1.5. The maximum value of mean 3.63 has information flow from logistics processes. The minimum value of mean 2.15 has handling from logistic processes.

Table 2: Descriptive statistics of logistics processes

	Mean	Median	Mode	Variance	Standard deviation
Information flow	3,63	4	5	4,14	2,03
Warehouse management	3,02	4	4	2,9	1,7
Transport	2,39	3	4	3,37	1,84
Handling	2,15	3	2	2,24	1,5
Material flow	2,57	3	3	2,35	1,53
Recycling	2,95	4	4	3,55	1,88

Source: *own processing*

In the survey, we found that with the greatest percentage share of 41%, information systems affect procurement logistics. Production logistics is influenced by information systems with percentage share of 32%. Distribution logistics was reviewed by respondents to 27%. On the basis of table 3, we can see that procurement logistics under the influence of information systems have the maximum value of mean 4.07. The minimum value of mean 3.59 has distribution logistics. The most frequently of enterprises inclined to value 5 with middle value of importance in procurement logistics. Production logistics and distribution logistics have value of modus 4. Median of responses with value of 5 on a scale from 0 to 6 was achieved by procurement logistics and production logistics. Distribution logistics has median 4. Table 3 shows that values are the most concentrated by procurement logistics under the influence of information systems. The standard deviation has a value of 1.79. Values are the least concentrated by distribution logistics, standard deviation is 1.57.

Table 3: Descriptive statistics of business logistics entities under the influence of information systems

	Mean	Median	Mode	Variance	Standard deviation
Procurement logistics	4,07	5	5	3,21	1,79
Production logistics	4,05	5	4	2,59	1,61
Distribution logistics	3,59	4	4	2,47	1,57

Source: *own processing*

From the results of the survey, we would like to attention that in the area of selected modern information technologies applied in the logistics of Slovak enterprises, the greatest percentage 27%

is Warehouse Management System. Radio Frequency Identification is used by 11% of respondents. The least enterprises usage Pick-by-Systems in logistics, with a percentage share of just 3%. Enterprises will be compel to accept new technologies under the influence of Industry 4.0, as well as Real Time Location System, Cloud Computing, the Internet of Things, as the upcoming digitalization enhances automation and connects industrial production to create a smart enterprise. In this way, the enterprise will be able to work as efficiently as possible and without human intervention or with minimal intervention. Based on table 4, respondents most often identified value of 6. This value is concerning Warehouse Management System. Pick-by-Systems has value of mode 0. Radio Frequency Identification has mode 1. Based on respondents' answers is calculated mean, which maximum value is 3.47 in Warehouse Management System. The minimal value of mean 0.78 has Pick-by-Systems. Median of responses with a value of 4 have Warehouse Management System. The value of 1 has median at Radio Frequency Identification. Values are the most concentrated by Warehouse Management System, standard deviation has value 2.28. Values are the least concentrated by Pick-by-Systems, standard deviation has value of 1.59.

Table 4: Descriptive statistics of modern information technology in logistics

	Mean	Median	Mode	Variance	Standard deviation
WMS	3,47	4	6	5,18	2,28
Pick-by-Systems	0,78	0	0	2,52	1,59
RFID	1,79	1	1	4,32	2,08

Source: *own processing*

The survey suggests that the introduction of new technologies into the logistics of the enterprise is faced with barriers. Respondents are influenced by input costs at the greatest percentage of 37%. We justify the high percentage of this possibility that not every enterprise has sufficient funds to introduce new modern information technologies. Of course, it is important to draw attention to the fact that innovation in the shape of continuous improvement of logistics in the form of the introduction of new technologies is a significant source of competitive advantage in the market. Selected modern information technologies cannot be implemented in every enterprise because businesses vary in size, focus, financial and spatial capabilities. For this reason, 22% of respondents identified the possibility of implementation. Operating costs said 17% of surveyed enterprises. One of the barriers to introducing changes in the enterprise is always employees who are afraid about something new. This possibility is said 24% of respondents. In Table 5, we can see that the maximum value of mean 3.32 is at the input costs of modern technology. The minimum value of mean 2.15 has operating costs of modern technology. The most frequently of enterprises inclined to value 5 with middle value of importance in input costs. Mode with a value of 4 are operating costs, possibility of implementation of modern technologies in logistics and negative attitude of employees. Median with value of 5 have input costs and the possibility of implementation of modern technology. Table 5 shows that values are the most concentrated by input costs. The standard deviation has a value of 1.52. Values are the least concentrated by operating costs. The standard deviation has a value of 1.31.

Table 5: Descriptive statistics of barriers to the introduction of modern information technology in logistics

	Mean	Median	Mode	Variance	Standard deviation
Input costs	3,32	5	5	2,31	1,52
Operating costs	2,15	3	4	1,71	1,31
Possibility of implementation	3,28	5	4	2,21	1,49
Negative attitude of employees	2,57	4	4	1,88	1,37

Source: *own processing*

## 5 Conclusion

In the coming period will be a major challenge in logistics, technological changes under the influence of Industry 4.0 in the form of data analysis, Industrial Internet of Things and digitization. These include selected modern information technologies that have been analysed in the paper. Warehouse Management System, Pick-by-Systems, Radio Frequency Identification increase productivity, accuracy, and security in logistics of enterprise. The Fourth Industrial Revolution is causing a change in business models and increasing the share of new smart devices. Digitization and transferring big data will lead to better decisions, resulting in increased operational efficiency, cost reduction and risk reduction. Hundreds of thousands and even millions of devices communicate with each other and send data through different communication channels to information systems. The Fourth Industrial Revolution was built by the continuous expansion of the internet and it is estimated that by 2020, 50 billion to various objects connected to the internet (Evans, 2011). Processing big data and linking with digitization will have great potential for storage, transport and other logistics elements. This will have major consequences for enterprises because multiple delivery options are created for the customers and streamline warehouse operations. For this reason, enterprises will need to reflect on a change in business logistics and will have to adapt modern information technology to a greater extent.

The results of the survey show that enterprises in Slovakia would like to improve the information flow in selected logistics processes with the greatest percentage of 23.4%. We also found that information systems affect procurement logistics with the greatest share of 41%. In the area of selected modern technologies applied in logistics of Slovak enterprises it has the greatest percentage of 27% - Warehouse Management System, which digitizes stock records and picking goods. The survey suggests that the introduction of new technologies into the logistics of the enterprise is faced with barriers. Respondents are most influenced by input costs, with a percentage of 37%. As a result of digitization, logistics forms the basis for the implementation of new modern technologies, the transition to advanced production systems and the differentiation of product offerings. This is confirmed by the test hypothesis that says that on the significance level of  $\alpha = 0,05$  there is statistically important dependence between the improvement of logistics processes and usage of Warehouse Management System (WMS).

Regardless of industrial sectors, we encourage enterprises to accept ongoing digitization. The exception is not the area of logistics, which plays a key role in the enterprise. The innovative environment will continue to be subject to the changes brought about by the phenomenon of digitization. Certainly fundamental, revolutionary and in-depth changes are waiting for us and each enterprise will have to accept and implement new, modern information technologies that will be related to the effective change of business under the influence of Industry 4.0.

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## Primary Paper Section: A

## Secondary Paper Section: AE

## ENJOYMENT OF PHYSICAL ACTIVITY AND PERCEPTION OF SUCCESS IN SPORTS HIGH SCHOOL STUDENTS

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**Abstract:** Enjoyment as a regulator of intrinsic motivation represents an effective tool in fostering desired and positive attitudes towards physical activity. The main purpose of the study was to explore the relationship between enjoyment of physical activity and perceived success in students of sports high school students. The study was cross-sectional and we collected data from a random research sample of 111 participants (55 boys and 56 girls) aged 11-14 years. Two self-report questionnaires were used. To identify the enjoyment of physical activity, we used the Slovak version of the Physical Activity Enjoyment Scale (PACES). Perception of success was measured by the Slovak version of the *Perception of Success Questionnaire (POSQ)*. We revealed a weak but significant correlation between the age of the participants and their level of enjoyment of physical activity. We also identified higher perception of success in the team sports athletes.

**Keywords:** Enjoyment of physical activity, perception of success, individual sports athletes, team sports athletes.

### 1 Introduction

Enjoyment of physical activity is one of the important intrinsic motivation regulators especially from the perspective of the self-determination theory proposed by Deci and Ryan. Intrinsic motivation and enjoyment of physical activity were perceived as synonyms for a long time. Later on, the term enjoyment of physical activity was defined as a positive affective reaction to a specific sporting experience reflecting particular emotions as fun, affection or joy (Ryska, 2003). Experiencing an enjoyment of physical activity or sport is viewed as an irreplaceable condition when engaging in any type of physical activity or professional sport. If the person does not experience enjoyment of physical activity, the interest in the particular activity will probably decline (Slepička, Hošek and Hátlová, 2011). Younes-Alhourani (2015) defines enjoyment of physical activity as an internal emotional factor closely connected to motivation and observed while performing a physical activity. Enjoyment is often perceived as a broader term that includes internal and external factors. Both can to a certain degree affect the level of enjoyment in people. We can assume that by increasing enjoyment of physical activity among children we could reduce the attractiveness of sedentary activities, among which the most frequent are watching television, playing video games, excessive internet use or excessive online chatting. In the period of adolescence the relationship between enjoyment of physical activity and one's own success perception has been identified. A higher level of enjoyment is positively associated with self-esteem that naturally helps increase perception of success (Younes-Alhourani, 2015). Perception of success is going to be discussed from the perspective of achievement motivation. Motivation in general carries a strong metacognitive potential, claims Baňasová (2018), and it is important to explore what kind of motives can be found behind our activities. As for the achievement motivation, its sources are closely related to a developmental aspect, to situational influences and social roles. From the developmental perspective, achievement motivation relates to the process of social learning, when an individual can learn something just by watching other people behave in a certain way. In the theory of social learning Bandura defined that not only external factors have an impact on behavior and learning. He emphasized the importance of intrinsic factors after displaying certain behavior where we can include self-confidence or satisfaction and some more. For children at young age it is important to have a training of independence, autonomy and the family environment which has a potential to stimulate achievement motivation and help children become autonomous individuals (Slepička et al. 2011). Achievement motivation can be viewed as a direction in which the individuals perceive their ability to succeed in the context of goal attainment. There are two basic orientations within achievement motivation: ego orientation and task orientation (Hagger, Chatzisarantis, 2005).

Task orientation defines success in terms of an effort to succeed, which is associated with hard work. Ego orientation defines success in terms of winning and outperforming others (McCarthy, Jones, Clark-Carter, 2007). Deci and Ryan (2000) carried out 128 studies and they revealed positive effect of verbal praise and appreciation on intrinsic motivation. Hagger and Chatzisarantis (2005) propose that extrinsic motivation reaches higher level in athletes who were not exposed to pressure to beat others, but they were told to do their best. Various studies revealed that optimal focus and sport concentration in terms of performance rather than winning have a positive effect on intrinsic motivation. Ryan and Deci (2000) claim that positive feedback increases intrinsic motivation and vice versa negative feedback reduces intrinsic motivation. Gao, Podlog and Huang (2012) state that empirical studies revealed a positive impact of intrinsic motivation on enjoyment of physical activity. Another important finding from the studies indicates that if sport participants or athletes experience failure they typically report lower intrinsic motivation when comparing them with those who experience a win and success (Hagger, Chatzisarantis, 2005). In his research, Brunel (1999) came to the finding that high and positive task orientation and high negative ego orientation are positively associated with effort, enjoyment and interest. Also DeLong (DeLong, 2006) admits that individuals who perceive a low level of success and do not find themselves successful, tend to be less active in their lives and do not experience enjoyment of physical activity. Individuals who are ego oriented are less intrinsically motivated and do not report enjoyment of physical activity as a key motivator (Ruiz-Juan, Gómez-López, Pappous, Cárceles, & Allende, 2010). A lot of studies demonstrate that among boys and girls between the age of 11 and 16, perception of success and intrinsic motivation are the most significant motivators for physical activities participation (Labbrozzi, Robazza, Bertollo, Bucci, and Bortoli, 2013). The study revealed that girls usually report a lower level of enjoyment of physical activity, which is attributed to weaker perception of success based on previous negative experiences.

### 2 Methods

The research sample consisted of students from the Sports High School in Trenčín (a specialized institution for young athletes providing education for pupils, can be either eight-year high school or four-year high school). The total number of students was 111 (56 girls and 55 boys). All participants were from the age of 11 to the age of 14. Two measurement tools were administered. The first variable enjoyment of physical activity was measured by the self-report questionnaire PACES, originally developed by Kendziersky and DeCarlo (Kendzierski & DeCarlo, 1991). The first version consisted of 18 statements (bipolar) and the participants replied on a 7 point continuum. We used the Slovak version of the PACES (Sollár, Romanová, 2015), which consists of 16 statements ("When I am physically active ..."). The participants replied using a 5-point Likert scale. A total score is computing by calculating the average of all 16 items (Motl, Dishman, Saunders, Dowda, Felton, and Pate, 2001). The results of a study conducted by Moore, Yin, Hanes, Duda, Gutin, and Barbeau (2009) support for the validity of the PACES and indicate a good internal consistency and item-total correlations.

The second variable perception of success was measured by the Perception of Success Questionnaire (POSQ). This measurement tool consists of two subscales, each containing six items assessing task and ego orientation (mastery and competitive goal orientation). The questionnaire demonstrates the stable factor structure and acceptable internal consistency for adolescent population (Treasure and Roberts, 1994). We used the Slovak version of the POSQ – Children's Version (Roberts, Treasure and Balague, 1998). All items begin with the stem "When playing sport, I feel most successful when:" and each item is assessed on a 5-point scale.

### 3 Results

- a) Relationship between enjoyment of physical activity, age and perception of success

Table 1 Relationship between enjoyment of physical activity, age and perception of success

<i>r</i>	<i>Age</i>	<i>Perception of success</i>	<i>Enjoyment</i>
<i>Enjoyment of physical activity</i>	-0.23*	0.15	-
<i>M</i>	12.27	47.34	47.41
<i>SD</i>	1.89	7.86	4.43

Note: *r* - Pearson's correlation coefficient; \*  $p < .05$ .

As seen in the Table 1 we can conclude that there is a significant relationship between enjoyment of physical activity and age. The strength of the relationship is small. The sports school students from the research sample (from 11 to 14 years old) differ in the level of enjoyment of physical activity with higher enjoyment in younger students.

- b) Differences in enjoyment of physical activity and perception of success between team and individual sports

Table 2 Differences in enjoyment of physical activity and perception of success between team and individual sports athletes

		<i>Enjoyment of physical activity</i>	<i>Perception of success</i>
<i>Team sports</i>	<i>M1</i>	47.25	51.09
<i>(n1=52)</i>	<i>SD1</i>	4.73	7.56
<i>Individual sports</i>	<i>M2</i>	47.55	44.03
<i>(n2=59)</i>	<i>SD2</i>	4.18	6.58
	<i>t</i>	-0.36	5.25
	<i>df</i>	109	109
	<i>p</i>	.710	.001
	<i>d</i>	0.06	0.99

Note: *M* = Mean; *SD* = Standard deviation; *t* = Student's test; *df* = Degrees of freedom; *p* = *p* value; *d* = Cohen's *d*

As it can be seen in the Table 2, there is no significant difference in enjoyment of physical activity between individual and team sports athletes ( $t_{(109)} = -0.36$ ,  $p = .710$ ). A significant difference between the team sports athletes and the individual sports athletes regarding perception of success ( $t_{(109)} = 5.25$ ,  $p = .001$ ) was identified. The team sports athletes report higher perception of success than individual sports athletes. The value of Cohen's *d* represents a large effect, which means that these two groups of athletes significantly differ in their perception of success.

### 4 Discussion

Enjoyment of physical activity is one of the regulators and is defined as a positive affective reaction to a sporting experience reflecting emotions such as joy, affection and fun (Ryska, 2003). According to Slepíčka et al. (2011), if people do not experience enjoyment of physical activity, their interest to continue in the activity gradually declines.

#### *Enjoyment of physical activity and age*

The study results show there are some differences in enjoyment of physical activity in relation to age. In their study, Sollár and Romanová (2015) did not find any differences in enjoyment of physical activity in relation to the studied periods – adolescence and emerging adulthood. Ryan and Deci (2000) describe intrinsic motivation as a natural tendency towards assimilation, perfect mastery, spontaneous interest and exploration. These

elements are essential for the cognitive and social development, and are a main source of enjoyment and vitality in life. Based on the results, we can state there are some differences in enjoyment of physical activity in relation to age in our sample. One of the possible explanations is that enjoyment of performed activity is present in us throughout our lives. The intensity may vary, there are periods when we experience less enjoyment of physical activity but on contrary there are periods when this state is really intense. Due to the fact that in our sample the relationship between age and enjoyment of physical activity is rather small we can assume that enjoyment of physical activity might be affected not just by age but definitely there are some other important variables that influence experiencing this type enjoyment, such as social factors or environments, where the physical activity takes place (Crake, Hibbins and Cuskelly, 2010). Another possible explanation of this result is that the age range of our sample was fairly narrow and that is why we could not detect stronger relationship between these two variables.

#### *Relationship between enjoyment of physical activity and perception of success*

We assumed a positive relationship between enjoyment of physical activity and perception of success in students of the sports high school. However, the assumption was not confirmed; the results show there is not a positive relationship between enjoyment of physical activity and perception of success in student of sports school. A different conclusion was reported in the study of McCarthy, Jones, and Clark-Carter (2007) where they suggest that perception of one's success is the main predictor of enjoyment of physical activity. DeLong (2006) supports the statement that the individuals who perceive their success on a very low level are less active and do not experience enjoyment of physical activity. Gómez-Lopéz, Granero-Gallegos, Abalde, and Rodríguez-Suárez (2013) state that task orientation is positively related to intrinsic motivation (enjoyment of physical activity). Younes-Alhourani (2015) states that a relationship between enjoyment of physical activity and perception of success was confirmed in adolescents – the higher enjoyment of physical activity they had, the more confident and aware of their abilities and skills they felt, which increased perceptions of their success. Ryan and Deci (2000) report that in perception of one's success a positive feedback increases intrinsic motivation and a negative feedback decreases intrinsic motivation. Slepíčka et al. (2011) state several psychological and social benefits of enjoyment of physical activity. Enjoyment of physical activity positively affects self-confidence, self-evaluation, and self-esteem. Moreover the pride that stems from successful performance can boost the mood of athletes. Another benefit of enjoyment of physical activity is experiencing positive emotions related to the goal attainment. Social benefits of enjoyment include receiving more social support, social recognition and appreciation. Based on the results that differ from our expectations, physical activity is an inevitable part of athletes' everyday functioning thus experiencing enjoyment does not have to necessarily affect their level of success perception.

#### *Differences in enjoyment of physical activity and perception of success between team and individual sports athletes*

In the context of enjoyment of physical activity, we also wanted to find out if there was a difference in enjoyment of physical activity between individual and team sports. The study results show there are no differences in enjoyment of physical activity between individual and team sports athletes. A possible explanation is that many children from the Sports High School aged from 11 to 14 years, do more than just one sport. In our study, intrinsic motivation and subsequently enjoyment of physical activity are present in most athletes regardless the type of sport – team or individual.

We studied perception of success from the perspective of the theory of achievement motivation. Achievement motivation can be described as a direction in which the individuals perceive their ability to succeed in the context of goal attainment. There are two basic orientations within achievement motivation: ego orientation and task orientation (Hagger, Chatzisarantis, 2005).

Both orientations reflect how individuals perceive their competences, define their success and failure, how they are engaged and participate in activities, and how they react when attaining goals (Brunel, 1999). Based on this, we wanted to find out if there were differences in perception of success between individual and team sports athletes. We found a significant difference in favour of team sports athletes. A possible explanation of higher perceptions of success in team sports is that players can rely also on their teammates, so the result does not depend solely on them but on a whole team. Furthermore, they may perceive success more intensively because of overall team achievements and not only because of their performance in a match.

Top athletes should have both, ego orientation and task orientation. The individuals oriented on tasks do particularly individual sports (Gregor, 2013). We can speculate that in every team sport there is also a person who is sometimes more an individual player than team player. Such individual players may prefer experiencing success particularly for their own satisfaction to experiencing success and fame of the whole team. On the other hand, in team players perception of success is more noticeable and intensive also on the basis of acknowledgement by significant others. It is obvious that emotions associated with success (joy, happiness, delight) can be observed in all members of the team. Emotions are contagious, which may be another explanation of our finding. Emotions spread from one player to another within the team and perception of success becomes stronger and more intense. Therefore, perception of success can be really stronger in team sports athletes than in individual sports athletes.

## 5 Conclusion

In the presented study we explored the relationships between enjoyment of physical activity and age and perception of success. While no significant relationship was identified between enjoyment of physical activity and perception of success, a weak but significant relationship was revealed between age and enjoyment of physical activity indicating a higher level of enjoyment in younger students. Additionally, individual sports athletes and team sports athletes were compared in enjoyment of physical activity and perception of success. The results of the study indicate that team sports athletes scored higher in perception of success than individual sports athletes. We can assume that team sports athletes are more task-oriented and subsequently they share the common goals. This can possibly enhance the feelings of pride, satisfaction and naturally it increases the perception of success. The findings suggest that it would be useful for the future research to consider at least a larger sample size, including the extended age range for better clarification and more precise generalizability of the results.

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## Primary Paper Section: A

## Secondary Paper Section: AN

# ANALYSIS OF THE CONSUMPTION ON THE GOODS AND SERVICES MARKET IN THE CYBERNETIC MODEL OF THE 15 OLDER EU MEMBER STATES

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**Abstract:** The paper analyses the consumption on the goods and services market in the cybernetic model of the EU-15 (the older member states of the European Union). The theoretical basis is given by the consumption function in the short-term, the macroeconomic multiplier of the two-sector economy and the cybernetic model with the goods and services market. All the above-mentioned theory is applied to the real conditions of the 15 selected countries, which are Austria, Belgium, Denmark, Finland, France, Germany, Greece, Ireland, Italy, Luxembourg, Netherlands, Portugal, Spain, Sweden, and United Kingdom. A case study is shown on the example of Austria, whose consumption parameters are most similar to the median.

**Keywords:** Consumption Function; Macroeconomic Multiplier; Cybernetic Model.

## 1 Introduction

The real economy is a complex and comprehensive system with many exogenous inputs, exogenous outputs, and internal links. It needs to be simplified.

The macroeconomic model is the simplification on a macroscopic level. It has a limited count of inputs, outputs, and links. Autonomous components of consumption, investment, government purchases, and net exports are considered as the inputs to this model. Product is considered as the output of this model.

The macroeconomic model of the two-sector economy is an even greater simplification. In this case, the inputs are autonomous consumption and a mix of other non-consumption autonomous inputs. The output is the gross domestic product (GDP).

## 2 Data and Methods

### 2.1 Consumption in the Short-Term

This paper will be based on a production function that is very well researched in the literature (Keynes 1936, Keynes 1937, Friedman 1957). The Keynesian theory defines consumption function as a consumption and product relationship as shown in Formula (1).

$$C = C_0 + mpc \times Y \quad (1)$$

Where C is the total consumption  
C<sub>0</sub> autonomous consumption  
mpc×Y induced consumption  
mpc marginal propensity to consume  
Y product (GDP)

### 2.2 Macroeconomic Multiplier of the Two-Sector Economy

Relationships in the system are interconnected. Increased autonomous consumption (C<sub>0</sub>) is part of the total consumption (C) that also increases. The total consumption (C) is part of the product (Y) that also increases. The product (Y) is part of the induced consumption (mpc×Y) that also increases. The induced consumption (mpc×Y) is part of the total consumption (C) that also increases. This closes the circle and repeats one impulse infinitely. This process is called the Keynesian multiplication process.

The final impact on output is determined by the strength of feedback or the value of the marginal propensity to consume (mpc). "The Keynesian multiplier process is the economist's paradigmatic positive feedback loop, in which an initial

departure from full-employment equilibrium cumulates instead of being corrected" (Howitt 2006).

The mathematical representation of the Keynesian multiplication process is shown in Formula (2).

$$\Delta Y = \Delta(C_0 + A_0) \times \frac{1}{1 - mpc} \quad (2)$$

Where Y is the product (GDP)

C<sub>0</sub> autonomous consumption

A<sub>0</sub> autonomous non-consumption inputs

mpc marginal propensity to consume

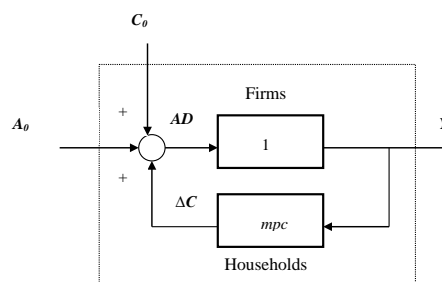
### 2.3 Cybernetic Model with the Goods and Services Market

The cybernetic model with the goods and services market has the following parameters:

- Inputs
  - Autonomous consumption (C<sub>0</sub>)
  - Autonomous non-consumption inputs (A<sub>0</sub>)
- Internal feedback
  - Marginal propensity to consume (mpc)
- Output
  - Product (Y)

The graphical explanation of the above is shown in Fig. 1.

Fig. 1. Cybernetic Model of a Static Economy with the Goods and Services Market.



Source: Máče, Rousek 2013

## 3 Results and Discussion

### 3.1 Consumption in the Older EU Member States

The consumption function is determined by two variable parameters: autonomous consumption (C<sub>0</sub>) and marginal propensity to consume (mpc). In view of the state of these two variables, several possible forms of consumption function can theoretically be defined. Autonomous consumption can be positive or negative.

Marginal propensity to consume may fall between - ∞ and 0; from 0 to 1; or from 1 to ∞. By combining the above, there are six possible forms of the consumption function. Only three of these are actually achieved on the data of older EU Member States.

The consumption and product data used for modelling are shown in Table 1.

Tab. 1. Consumption and Product Data of the 15 Older EU Member States (in billion PPS)

	Product	Consumption
Austria, 2007	269	135
Austria, 2017	336	168
Belgium, 2007	323	159
Belgium, 2017	396	198
Denmark, 2007	175	81
Denmark, 2017	216	98
Finland, 2007	164	76
Finland, 2017	180	93
France, 2007	1 799	941
France, 2017	2 092	1 088
Germany, 2007	2 471	1 327
Germany, 2017	3 046	1 563
Greece, 2007	267	169
Greece, 2017	216	144
Ireland, 2007	170	76
Ireland, 2017	265	83
Italy, 2007	1 637	961
Italy, 2017	1 736	1 051
Luxembourg, 2007	33	10
Luxembourg, 2017	45	13
Netherlands, 2007	587	267
Netherlands, 2017	654	285
Portugal, 2007	223	141
Portugal, 2017	237	150
Spain, 2007	1 215	682
Spain, 2017	1 287	730
Sweden, 2007	306	131
Sweden, 2017	368	157
United Kingdom, 2007	1 784	1 102
United Kingdom, 2017	2 078	1 309

Source: Eurostat 2019

Three real forms of consumption function in case, of older EU Member States:

1. Typical consumption function with positive  $C_0$  and  $mpc$  between 0 and 1
  - Austria
  - Denmark
  - France
  - Germany
  - Greece
  - Ireland
  - Luxembourg
  - Netherlands
  - Sweden
2. Untypical consumption function with negative  $C_0$  and  $mpc$  between 0 and 1
  - Belgium
  - Italy
  - Portugal
  - Spain
  - United Kingdom
3. Exceptional consumption function with negative  $C_0$  and  $mpc$  greater than 1
  - Finland

Austria was chosen as a representative of the 15 countries analyzed because it is approximately in the middle of values.

Marginal propensity to consume of the countries analyzed is in the range of 0.075 (Ireland) to 1.091 (Finland). Most countries are located near the median of 0.492 (Austria).

Autonomous consumption of the countries analyzed is in the range of -516 (Italy) to 314 (Germany). The largest group of

countries has slightly positive values (such as Austria with a value of 3).

Consumption function parameters of Austria are  $mpc = 0.492$  and  $C_0 = 3$ . The complete consumption function is given in equation (3).

$$C = 3 + 0.492 \times Y \quad (3)$$

Where C is the total consumption  
 3 autonomous consumption  
 $0.492 \times Y$  induced consumption  
 0.492 marginal propensity to consume  
 Y product

### 3.2 Macroeconomic Multipliers in the Older EU Member States

The Keynesian multiplier is based on the marginal propensity to consume. The Keynesian multiplier of the countries analyzed is in the range of 1.081 (Ireland) to 10.242 (Italy). Most countries are located near the median of 1.968 (Austria). The example of Austria shows the calculation method (4) and the multiplier value (5).

$$\Delta Y = \Delta(3 + A_0) \times \frac{1}{1 - 0.492} \quad (4)$$

$$\Delta Y = \Delta(3 + A_0) \times 1.968 \quad (5)$$

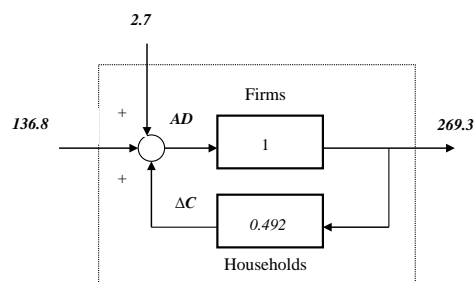
Where Y is the product (GDP)  
 3 autonomous consumption  
 $A_0$  autonomous non-consumption inputs  
 0.492 marginal propensity to consume  
 1.968 Keynesian multiplier

### 3.3 Cybernetic Model of the Older EU Member States

The general cybernetic model Austria is based on values of autonomous consumption  $C_0 = 2.7$  and marginal propensity to consume  $mpc = 0.492$ . This means that the change in any autonomous inputs (autonomous investments, autonomous government spending, net exports) will be projected 1.968 times in the economic output.

Figure 2 shows an actual cybernetic model of Austria with the goods and services market. There are also included the values from 2007 in the figure: autonomous non-consumption inputs  $A_0 = 136.8$  and product  $Y = 269.3$ .

Fig. 2. Cybernetic Model of Austria in 2007 with the Goods and Services Market.



Source: Author

### 3.4 Complex Dataset of the Older EU Member States

Older EU Member States can be described from the point of view of consumption, the Keynesian multiplier and cyber model by the parameters in Table 2.

Individual values were obtained as follows:

- Y – real data
- C – real data

- C0 + A0 as the total input of the cybernetic model
- C0 as one parameter of the consumption function
- A0 as the difference between the cybernetic model and consumption function data

Tab. 2. Cybernetic Model Data of the 15 Older EU Member States (in billion PPS)

	Product Y	Total Consumption C	Total Autonomous Inputs C0+A0	Autonomous Consumption C0	Non-consumption Autonomous Inputs A0
Austria, 2007	269	135	137	3	134
Austria, 2017	336	168	171		168
Belgium, 2007	323	159	150	-14	164
Belgium, 2017	396	198	184		198
Denmark, 2007	175	81	100	6	95
Denmark, 2017	216	98	123		117
Finland, 2007	164	76	N/A	-103	N/A
Finland, 2017	180	93	N/A		N/A
France, 2007	1 799	941	896	38	858
France, 2017	2 092	1 088	1043		1004
Germany, 2007	2 471	1 327	1459	314	1144
Germany, 2017	3 046	1 563	1798		1483
Greece, 2007	267	169	137	39	98
Greece, 2017	216	144	111		72
Ireland, 2007	170	76	157	63	94
Ireland, 2017	265	83	245		182
Italy, 2007	1 637	961	160	-516	676
Italy, 2017	1 736	1 051	170		686
Luxembourg, 2007	33	10	26	3	23
Luxembourg, 2017	45	13	36		32
Netherlands, 2007	587	267	428	108	320
Netherlands, 2017	654	285	478		369
Portugal, 2007	223	141	79	-4	83
Portugal, 2017	237	150	84		88
Spain, 2007	1 215	682	403	-130	533
Spain, 2017	1 287	730	427		557
Sweden, 2007	306	131	178	4	175
Sweden, 2017	368	157	214		211
United Kingdom, 2007	1 784	1 102	530	-151	681
United Kingdom, 2017	2 078	1 309	618		769

Source: Author

#### 4 Conclusion

The consumption function in the short-term, the Keynesian multiplier of the two-sector economy, and the cybernetic model with the goods and services market have been used to draw conclusions of this paper. Concrete results are based on the consumption data in the 15 older EU Member States.

There are three occurring forms of consumption function: typical with positive C0 and mpc between 0 and 1, untypical with negative C0 and mpc between 0 and 1, and exceptional with negative C0 and mpc greater than 1.

Most of the older EU Member States are similar to Austria with marginal propensity to consume mpc about 0.5 and multiplier values about 2. However, there are exceptions in both ways. For example, Ireland has a low mpc and a low multiplier. On the other hand, countries like Italy and Finland have a high mpc and a high multiplier.

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#### Primary Paper Section: A

#### Secondary Paper Section: AH

## ART THERAPY AS A TOOL OF PERSONAL DEVELOPMENT IN UNIVERSITY EDUCATION – FRIDA KAHLO IN THE STUDENTS' WRITTEN AND VISUAL REFLECTIONS

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**Abstract:** The art works of the famous artist Frida Kahlo could be a base for creation of reflections made by university students – the future teachers. This way our work with art had the principles of art therapy, because the students could express themselves, their inner world with its important difficult or painful messages. Beside it, the future teachers of fine art education can develop creativity and critical thinking. The students reflections were more or less intimate and personal, and we analyzed them by qualitative content analysis.

**Keywords:** Fine arts, Education, Future teacher, Creativity, Critical thinking, Reflection.

### 1 Introduction

At the Constantine the Philosopher University in Nitra, we prepare the future teachers of fine arts education for the second degree of primary schools, for high schools and for the fine arts sections of art schools. An important part of our education is also work with the personalities of the students in area of their personal development. This time, emphasis is on critical thinking and creativity. To deal with fine arts itself, learning about lives of the artists and interpretative practical work with the art works, are perfect ways, how to develop creative and critical thinking, important in human's life, the more in preparing of the future teachers, which will have a big impact on their future pupils and students. Through practical/visual interpretation of art works, our students learn how to critically think about them and how to express their opinions. Usually, after familiarization with the specific artist, at first they have to say and write what they like or don't like about the artist. Then they make the visual and written reflections and listen to the opinions of their classmates about the art works.

### 2 Theory

The principles of art therapy are already included more or less in our current educational system, for example in the lessons of fine arts education in the schools. Although art therapy has its own difficulties, there are also many benefits of it.

Šicková (2008) defines art therapy as planned influencing of attitudes and behavior through art and through techniques derived from art, with aim of treatment or alleviation of disease, and an integration or enrichment of personality. The aim of art therapy is to rebuild disrupted natural disposition of person - creativity, spontaneity, ability to communicate with oneself, with others, with the environment, understanding of life in its context and meaningful living. There are individual and social objectives of art therapy, individual and group work with people, relaxation and therapeutic groups/aims of group, receptive and productive art therapy (perception and creation).

We implemented some of the art therapy principles into our lessons. An important part of a group creative work is discussion and the feedback. However, no one should be forcing to speak about own work. Finally, in group work, it is appropriate to reflect the experienced moments, also negative feelings, but mainly to share and reinforce the positive feelings. The common creation helps the members of the group to inspire each other, to develop communication and relationships within the group. It is believed that the experience of the group creation can be carried over into everyday life. In the beginning of the meeting, the group would agree about some rules. The rules should evoke an

atmosphere of trust, for example "Let every person speak. Everyone has the right to be heard. Each work will be accepted".

Our teaching of art therapy consists from two parts: passive – perceiving and active – creation part. We teach these two sides of art therapy at the didactic disciplines „Alternative Fine Arts Education“ and „Basis of Art Therapy and Artephiletics“ and both subjects are part of the study programme „Teaching of Fine Arts in Combination“.

### 3 Research

#### Aim of the study

To discover, how our students react on the Frida Kahlo's art work, and how we can use this way for personal development of the students in area critical thinking and creativity.

#### Hypotheses

According to the principles of qualitative research, we don't have any hypotheses.

#### Research plan

In February 2018, we get 13 written and 17 visual reflections from the 17 students, 2 male and 15 female.

#### Methods

The methods of data collection were the written reflections from the students. Processing method was a qualitative content analysis of the written students' reflections.

#### Material

During the lesson, we looked at the Frida Kahlo's photos and artworks in a book about her. Some of the students even saw a movie about her life and told us what they think about a movie and what form her life they remembered from the movie. After the introductions, the creative part of the lesson started. All students said and wrote their opinions about Frida Kahlo's artworks and then created their own paintings, inspired by her (the examples of the art works are the pictures 1 – 3). According to our experiences, the students consider this task as quite difficult. They can easily say if they like or don't like something, but they had trouble to express why, but we insisted on the task. Even after more time for thinking, some of the students were unable to substantiate their attitude. The next task was also quite difficult. We asked the students to create the artistic reflections of her art by water colours, but we asked them to react not only at the visual form of her art works, but to find something common between themselves and the artist. According to the art therapy rules, we pointed out the need for borders of intimacy, which the students should make themselves. Then, they started to create their paintings, but at first, they wrote down their spoken opinions and explanations.

### 4 Research results

In the students' written reflections, we can see a whole scale of the opinions – from „I like it very much“, through „it is not interesting for me“, to „I don't like it“. We consider this wide of evaluation as the proof of their authenticity and we are sure they did not respond how they thought they should.

Student's written reflections of the Frida Kahlo's artworks:

*I'm confused from the work of Frida Kahlo and I have mixed feelings. I admire her for her courage in creation, and for the expression, which she was able to give into her work.*

*The same time I like and I do not like Frida Kahlo's creation. I like some of her paintings, but I think some are disgusting, for example the pictures of the born fetus (baby), or the corset. I liked the picture where she was twice, showing a disparity, but my impressions were very pleasant.*

*I like her work mainly because of the colors.*

*I appreciate F. Kahlo's creation because I like her courage in area of content and artistic expression.*

*I have a neutral attitude towards F. Kahlo's work. Despite the fact that some of her work are more pleasing than others, I do not consider her brave works repulsive or disgusting or inappropriate, because I simply accept the fact that it is her personal way of expressing her thoughts and feelings. Her work attracted me by expressing her attitude towards herself, her suffering, her life, through her works.*

*I don't like a creation of Frida K., because her paintings seemed very stereotypical and monotonous and not very special.*

*I like a creation of Frida K. I like also the paintings that others consider as disgusting and ugly, because they show also the dark side of life. But life is not just about those nice things, it is also about unpleasant things and experiences and we need to be able to deal with them.*

*I do not like it because of the too sharp colors and the style of painting itself. On the contrary, it is very sympathetic how she cope with her life and fate. I mean mainly self-portraits which are authentic and they are the expression of searching for her own identity.*

*I like it mainly because of the self-portraits, which I still see as an expression of self-interest, even though I know it is not so. I like also the colors and the use of animal and plant motives. I also perceive the pictures with a more negative value as nice and lovely.*

*I have mixed feelings about it. Some paintings attracted me with colors and I like mainly portraits and the pictures of animals. On the contrary, paintings showing their infertility are very disgusting to me.*

*I consider her as an interesting artist. I was most attracted to her self-portraits; especially that she did not appear too distorted, but realistically, as she really looked and perceived herself. I also like the colors and folk motives.*

*Generally I don't like the creation of Frida Kahlo, because the colors of her paintings are too aggressive for me.*

*In the view of the incidents in her life, I can say her paintings are often authentic. Nevertheless, I regard it as frightening, not regrettable. It is self-evident that the artist has coped with the incidents, and therefore I think they seem horribly. Nobody considers negative situations in "bright" shades. To me, these works are repulsive - like a nightmare.*

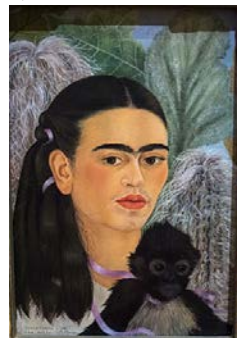
In the students' painting reflections of the Frida Kahlo's art works we can see multiple levels of connection between the student and the artist. Some of the students reacted only at the form of the artworks (typical colors, repeating of the topics), without deeper identification with the artist. Others reacted with a slight connection with the artist, finding something interesting in the author's personality. A few students found a deep connection between their lives and artist's artworks.

The pictures of students' visual reflections (pictures 4 – 20, author of all photos: Janka Satková) are organized from reactions at form to reactions at content and from shallow to personal level of intimacy and authenticity.



1.

2.



3.

Pictures 1, 2, 3. Frida Kahlo's art works.

1. Memory, the Heart, 1937.

2. The Broken Column, 1944.

3. Fulang-Chang and I, 1937.

Online: [https://en.wikipedia.org/wiki/Frida\\_Kahlo](https://en.wikipedia.org/wiki/Frida_Kahlo)



4.



5.

Pictures 4, 5. The students' visual reflections at the Frida Kahlo's art works:

The Eyebrows. Stereotype in Creation.

The reflections (pictures 4 and 5) react only at the form of the Frida Kahlo's art works, without a visible connection between the students and the artist, what is visible also at the written comments on the other sides of the papers: „Eyebrows – repeating“, „Blue self-portraits - stereotype in creation“.

These words show that the boys don't like the Frida Kahlo's art works, or, at least, they are not interested in them. There is no deeper connection, maybe because the authors are the boys, or maybe they use to focus at form.



6.



7.

Pictures 6, 7. The students' visual reflections at the Frida Kahlo's art works: Color Flood. Hunting of Colors.

The reflections (pictures 6 and 7) do not show the connections between the students and the artist, because they react only at the colors of the artist's artworks, but they have quite attentive artistic expression and they show by the harmonic compositions that these female authors like the Frida Kahlo's art works.



8. 9.

Pictures 8, 9. The students' visual reflections at the Frida Kahlo's art works: Mixed feelings. Untitled.

The reflections (pictures 8 and 9) have no visible connections with the personalities of the students, but have one common part: they both show vivid colors typical for Frida Kahlo's works, but with a sign of familiarization of the dark side of her life and works. According to the written and verbal explanations from the female students, the symbols of difficult life and „disgusting works“ are the „ugly crossings between colors“ in the first picture, and the black drops and lines in the second picture.



10.



11.

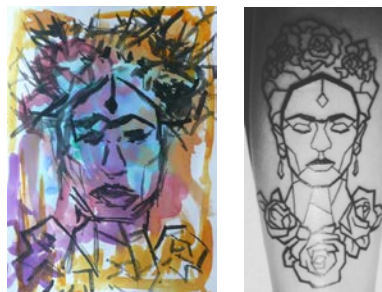
Pictures 10, 11. The students' visual reflections at the Frida Kahlo's art works: Harmony. Pleasant and Unpleasant.

Both paintings (pictures 10 and 11) were made by female students with concern. They show artistic complexity and have a connection with the students' personality. The first picture shows flowers in a meadow, because „Frida often showed nature in her pictures and I like to be in nature...“

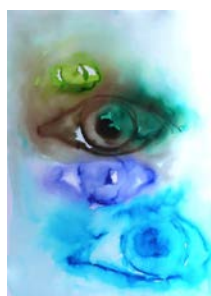
The second picture expresses a students' worldview, based on duality of everything: „An image reflects my neutral or even mixed impression from the author's work. The more colorful, supposedly more merry part (on the left) is leaning towards linking the works of Frida Kahlo with nature and with vivid colors in the most of her self portraits. The right, darker part of the image shows the more uncomfortable part of her work, expressing her emotional attitudes that caused her accident. I wanted to express the imaginative duality of her work. Just as a coin has two sides, as well as good and bad exists, as well as

white and black contrasts, also Frida Kahlo's work can be both „pleasant“ and „unpleasant“.

We can see the student creatively included the title of the picture into her explanation. The most long text of all in the class reflects her interest in the artworks, but also indicates the students' responsible attitude to her school tasks, moreover she finished her picture during a break.



12. 13.



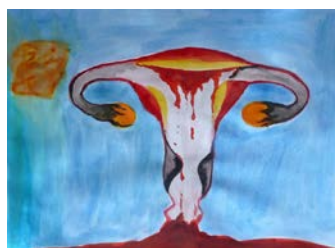
14.

Pictures 12, 13, 14. The students' visual reflections at the Frida Kahlo's art works: Colorful Frida. Photo of a tattoo. Down: Identity.

Both paintings (pictures 12 and 14) have the written comments. The first student has a tattoo of the Frida Kahlo's face (picture 13) and she feels a connection between her and the artist: „I like her creation and I tried to express it by the topic of a self portrait and by her typical colors. A self portrait is an image of my tattoo, which I perceive as a connection between Frida and me“. We can guess, that the female student perceives her life or life itself as difficult. The second picture (picture 14) is „reaction to searching for own identity, and reaction to inclusion into the society“, as the female student wrote, so it seems she deals with a problem of socialization this time.



15.



16.



17.

Pictures 15, 16, 17. The students' visual reflections at the Frida Kahlos' art works: I dont want to talk about it. Womb.  
Down: War.

These three reflections (pictures 15 – 17) have the strong connections with the female students. The first two students express a problem so intimate, that they hid it as a secret in the written comments: „I don't want to talk about it“, „A womb – no comment“. The first picture is even abstract, hiding the concrete message into the abstract shapes.

The third student wrote her explanation: „The war. My own fear expressed with style of F. K.“ The messages of the students are very short or without explanation. We guess the content of the pictures is so difficult that they were able to express it almost only by their pictures, and this reaction is typical for art therapy.



18.



19.



20.

Pictures 18, 19, 20. The students' visual reflections at the Frida Kahlos' art works: Untitled. Untitled.  
Down: Blood is not Water.

The first picture is without title or explanation, but with the comment: „I keep my thoughts for myself“. Taking into account the arrows from all sides and blood, we can guess the problem is a broken heart.

The second picture, with pointed digestive system inside the woman's body, has an explanation: „I think it is obvious what problem I have. I don't want to talk about it.“

The third picture has the explanation expressed deep inner world of the female student: „On a picture is a portrait of a woman with a menstruation. For men and for society at all, the topic is taboo. They all act as it does not exist, but it is an important part of woman's fertility“. It seems the last picture is not so intimate, because the student writes about a global social problem, but at the same time we can assume it is her personal problem, too. These three pictures have the principles of art therapy – the expressing the inner world with its important difficult or painful messages.

## 6 Discussion

From our position of a teacher of fine arts education we considered all pictures as meaningful and valuable, regardless of the level of depth and authenticity, but as the teacher of art therapy we appreciated more all students which reacted at Frida Kahlo's artworks with more personal images and texts, expressed their fear, sorrow, anger and troubles.

These types of the challenges are inspirational not only for the students but also for the teachers. After some problems with understanding, all students were able to create their reactions at the Frida Kahlo's artworks, then we were surprised by the depth and authenticity of our female students' works.

We suppose that some of them expressed such intimate topics, because they felt safe in the group then. We appreciate the pictures, which were so personal, that the female students did „not want to talk about it“, as they wrote on the back of the paper. Sure, this way art therapeutic process started, and we consider the obtained skills as very appropriate for the future teachers of fine arts. Now they can express their feelings by artistic creation and increase their emotional intelligence, also they can critically evaluate the art works and express their opinions.

## 7 Conclusion

At our department is the practical - visual interpretation of art work used also during the theoretical lessons (Réčka, 2018), mainly with the aim to develop creativity and critical thinking. Although we don't think such art therapeutic approach is suitable for education at elementary school, only with the older students, we hope this experience will wake up their interest in art therapy. At first we only wanted to increase creativity and critical thinking, but in the end, our students found new ways of artistic expression and higher level of self-knowledge.

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## Primary Paper Section: A

## Secondary Paper Section: AM

## CULTURAL AND LITERARY CONCRETIZATIONS OF LANGUAGE SPECIFICS FROM THE NATIONAL MINORITY ASPECT

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This study has been produced as a part of the VEGA project No. 1/0034/17 "Transculturalism and Bilingualism in Slovak and Hungarian Literature".

**Abstract:** The main objective of this contribution is to introduce the characteristic features and language specifics which are present in the cultural and literary work (1989-2018) of Alexander Kormoš, a Slovak poet living in contemporary Hungary. Based on creative bilingualism of individual texts, it highlights the individual creative language of the author, his diverse concretizations in terms of the centre and the symbolic periphery. It also uses an overall interpretive approach of its collections as well as the aspect of some exchange of cultural code or the impact of "codification". As a special feature of the contribution can be identified the search for the original essence of the lyrical subject on the basis of "used and applied" languages with the help of multilingualism, viewed from the aspect of mutual contact of the Slovak and Hungarian language in poetry (language and its concretization).

**Keywords:** culture, literature, language, minority, interpretation

### Introduction

Language is a system of symbols: linguistics is a scientific study of the language, especially in terms of structure, development and function. Language as a tool of communication is a natural phenomenon of our civilized society. It is a link between the individual and society, since language acquisition: "...is one of the most important factors in forming personality and shaping one's view of the world, as language is one of the most crucial forms of human communication, a medium between the individual and the outside world" (Puskás, 2014, p. 54). However, on the basis of its specificities and peculiarities it varies and is differentiated e.g. the local use of language is specified geographically. This statement is also valid in international environment.

The author and his creative language concretizations are therefore particularly important in such a specific chronotope. The poet is a kind of link between mutual, as well as cultural relations in the background of understanding Central European nations and the national minorities (Zelenka, 2013). The author can make a contribution with his work (also) as a member of a national minority. A multitude of cultures is created in the background of universality based on spiritual principle. Therefore, there is a hidden persistence in cultures under the condition of universal development. Language, as a specific factor in a certain sense is "...a mirror of the social and cultural life of the nationality in its organic relationship with the life of the national majority" (Kormoš, 1990b, p. 44).

### 1 The aspects of diversity of Slovak language in a minority environment

One of the external prerequisites of the language is the social status. According to this, the Slovak language represents a dynamic category in development horizon. In addition, it is important to apply the inter-language criteria. For this reason "...based on the characteristic ethnocultural, communicative, pragmatic, regiolectal and similar factors, it is possible to talk about the Slovak language as a pluricentric language" (Dudok, 2008, p. 45), especially in terms of pragmatic and cultural dimensions, which allows the mentioned internal differentiation.

The boundaries of Slovak language determine different aspects (genetic, typological, territorial, etc.), which represent rather a plastic boundary. This is changing with the development of the communication environment – synchronically and diachronically in the regions of Hungary inhabited also by Slovak population.

Despite the fact that the Slovak language spoken abroad has a diaspora character, in Hungary it used to have an enclave character. The enclave language resulted as a development of the European geopolitical situation from the 18<sup>th</sup> to the 20<sup>th</sup> century. Following the era of Theresian and Jozefian reforms and the fall of the Ottoman Empire, strong Slovak islands emerged in Southern Pannonia (the Lowland: what is today part of Hungary, Romania, Serbia). Enclave refers to a group of people who are separated from their nation and are capable of biological and cultural reproduction in ethnically different environment. It is a compact ethnic settlement in the environment of a different ethnical group that completely encompasses them. They originated historically as a result of human migration. A good example for enclave of the Slovak ethnicity in non-native environment are the Slovak people living in Lowland, thus also in Hungary. Traditional elements of culture are more likely to be preserved in enclave than in diaspora. In Hungary "...a dominant diasporic community has replaced the enclave of the Slovak language, which was almost replaced by the Hungarian; recently an interest in revitalization of the Slovak language has increased, especially favoured by the educated layer of the society; supported by the increasing number of Slovak nursery schools, bilingual education in primary schools, secondary grammar schools and university education, as well as the mass media enhancing the importance of the Slovak language" (Dudok, 2011, p. 40). Generally, education is considered today as a tool of the competitive ability. In our field it symbolically continuous in contacts of nations, nationalities (and its texts) in the process of translation – but possibilities, trends and approaches to the acquisition of the educational level are very important, too (Szokol, Horvathova, Dobay, 2016). It reflects in real life and in school education, too, especially in student's books (Toth, 2015). In this relation the translation between two languages is an important view-point from/to the poetic concretizations (Andričik, 2013; Mura, Torok, 2012). However, we also record language specifics of poetic expressions in the work of some of the Slovak authors in Hungary (Alexander Kormoš, Imrich Fuhl, Gabriel Hattinger, etc.). The linguistic contacts and several cultural processes in Hungary enabled the preservation of the Slovak language, against which new forms of the language replaced it in Slovakia. On the other hand, also those elements of the exosphere had been incorporated into the literary devices (e.g. poems), which appeared in communication practice of the homeland after disappearance of physical borders of the countries. Because of this aspect, the current borders (external, internal) of the language have a heterogeneous character. In connection with the existence of the Slovak language beyond the borders of the homeland, the model of receptive multilingualism is applied, which contributes to mutual convergence and intercultural understanding of those with similar and different language variants (Pekarovičová, 2013).

### 2 Bilingualism and pluricentrism from the perspective of the minority

Some Slovak authors in Hungary are constantly looking for a broad-spectrum creative spirit at the background of bilingualism. They are trying to emphasize the existence of their nationality from both aspects. Symbolically it can be said that they are based on the theory of pluricentric character of the modern Slovak language of Miroslav Dudok. Besides the territory of present-day Slovakia it has been developing for almost three centuries in Slovak enclaves outside the homeland, also in Hungary, where it has the status of a minority language. This pluricentricity was reflected at all levels of the language, especially in lexical aspects. This is also valid for the literary work of Slovak national authors living in Hungary (Dudok, 2008).

Alexander Kormoš, a well-known Slovak poet in Hungary explains his literary work as the following: "...Why do I write in Hungarian as well? The Hungarians should also have an access

to first-hand information how Slovak intellectuals in Hungary feel" (Kormoš, 2010, p. 7). It is important to note that "...the key question of nationality is the cultivation of the native language" (Hrivnák, 1987, p. 8). It is important to specify that "...the literary work of Kormoš belongs to a kind of literature, which by its civic appeal – I mean especially a clear presentation of ethnic Slovak identity, Slovak roots, but also an effort to become a bridge between the Slovak and Hungarian culture – would provide a motivating artistic message to the reader" (Resutík, 2005, p. 10).

In addition to constant search for security in the world, the most important phenomenon of the literary work of Alexander Kormoš is bilingualism and multiculturalism. Since his literary debut (1973) he has been constantly striving for symmetrical bilingualism. In his literary work, the minority aspect of his human and poetic reference is put into a wider historical and social context. Kormoš "...is undoubtedly the most versatile Slovak poet in Hungary" (Fuhl, 2011, p. 29).

The Slovak language on the level of idiomatic basis (use of interpersonal idioms) in public interaction of Slovaks living in Hungary is a variant and a unique form of the standard Slovak, which figures as a literary language of intellectuals, other members of the community in the context of stylistically inappropriate or appropriate – to express what is expressed by Slovaks living in Slovakia and other places in the same or similar situations and contexts (with slight local variations). This is fully reflected in the poems of Alexander Kormoš, especially considering the thematic and lexical aspects of the language.

### 3 Alexander Kormoš as a representative of linguistic and cultural specifics

An important element of the pluricentrism of the Slovak language is its text tradition. The poetic language of Alexander Kormoš is characterized by language transparency in the context of rural symbolism. The author also gets into interlingual situation, while trying to understand both (or more) language codes. The conceptualization of "his" Slovak language in the minority environment as a pluricentric language directs towards the core and away from the core of the language users (lyric subjects and readers).

Alexander Kormoš introduced himself on a wider spectrum in the book of poetry called *Chodníky* (Engl. *Sidewalks*, 1984). It includes 24 poems of the author and 22 translated poems of Hungarian poets. He feels the activity of translation as "...an inseparable activity from his own work" (Divičanová, 1984. In: Rybová, 1984, p. 7, in Slovak: "na strážu stoja stromy / u hraníc skutočnosti"). It is important to emphasize some of the motifs connected to bilingualism and multiculturalism in selected translations of Hungarian authors (Endre Ady, Ferenc Baranyai, Mihály Filadelfi, Gábor Garai, Gyula Illyés, Ervin Sass, József Sárándi, Árpád Tóth, László Tóth, Gyula Urbán, László Újházy). According to his interpretation Gyula Illyés speaks about the former relation between Hungary and Slovakia as a piece of a chain against red coloured borders – the symbol of Ostrihom/Esztergom; Ferenc Baranyai uses biblical motifs to express the consolidation of these relations (Adam, Abel, Eve, Christ, Cain), while the present is described as a big "misery". The topic of mutual coexistence in the village of Csévharaszt in Pest County returns in simple rhyming poems, chastushki (Ferenc Baranyai), while "the trees are guarding / at the boundaries of reality" (Sass, 1984. In Rybová, 1984, p. 120). Ervin Sass has been a dominant representative of Békéscsaba for many years. It is a kind of Babylon (Ervin Sass), from where it is necessary to escape (similarly to ancestors of Mihály Filadelfi, who had to leave the town of Tatranská Lomnica, while symbolically exchanging "valaška" – valaška is a long thin light axe used in past centuries by shepherds in the Carpathian mountains. Mihály Filadelfi is criticizing the assimilation process of Slovaks living in Hungary; he is an advocate of peaceful co-existence. He also highlights the fearlessness of Ondrej Likier Áchim, a Slovak politician of the Austro-Hungarian Monarchy in the 19<sup>th</sup> century, who fought for better

life of the poor. Gyula Urbán remembers the famous Slovenian-Serbian musician Tichomír Vujičić, who died tragically in a plane crash near Damascus. He was also a symbol of multiculturalism and understanding.

After 1989 Alexander Kormoš also published anthologies: *Je to?* (Engl. *Is It?*, 1996), *Medzi nebou a zemou* (Engl. *Between the Sky and Earth*, 1996), *Pocita Andymu Warholovi* (Engl. *Tribute to Andy Warhol*, 1997). The author is using the motif of exclusion from homeland and living with lost roots. It is important to gain freedom in life of a nationality from Tatra Mountains to Danube and Morava to Uh (the symbol of a slowly appearing cultural rainbow).

### 4 Cultural contacts and influences in the background of language concretization

The author's collection of folk songs from Santov "F Santovském Pilíši" (Engl. *Folk Songs from Santov*) was published in edition of Dunaj (1990) to commemorate the 275<sup>th</sup> anniversary of establishment of the village. The introductory part mentions the origin of Slovaks in Santov. The development and social stratification of the village is also mentioned. Apart from his own work, the author draws conclusion about the Slovak community by analysing grave sings in the local cemetery. He points to specifics of the local language (transition from Biblical Czech to Slovak language used in Santov). He emphasizes the connexion of those living in Mlynky and Santov; lists the characteristic features of their dialect with introducing concrete examples. He characterizes the folk song not only from the perspectives of Bartók and Kodály, but Suchoň as well. Here we can see the roots of transculturalism. Practical chapter of the work is the part that deals with the pronunciation of Slovak inhabitants from Santov, and linguistic expression of their folk songs. The folk songs form a tradition of Slovaks from Santov, reflecting their historical past and language. The texts can be read in phonetic transcription. The following songs (mentioned pars pro toto) also reflect transculturalism: *Nefúkaj vetričeg z Dunaja; Prez Javornički, Vi stromički, okolo Rajčanky, Od zámky g Dunaju; Pri Olomúci; Vi Germaňi, d'e s'e, čo s'e; Červené vino, čífske koláče; Ket som išel pres Košice; Ot Trenčína mlín mele; F Kaňe galilejskej; F tem inglickém zámku; Já som Gašper z Indije*. The basic direction of his poetry is the definition and postulation of ideals in broader sense of poetic meaning. Our knowledge is related not only to the literary, but also to the linguistic consciousness – behind the theory of Ferdinand de Saussure –, and thus: "*The degree of human knowledge of the objective world is reflected in the individual sub-systems of language, the most obvious being our knowledge of the world is presented in lexis and grammar. Lexis is the most dynamic layer of language ...*" (Tóth, 2017, pp. 108-109). It is therefore important to examine individual and specific poetry testimonials – in view of our partial field of linguistic research – in particular from these aspects.

The first poetry collection of the author after the year of 1989 is *Ohnivá kytica* (Engl. *Fire Bouquet*, 1991), expressing the same viewpoint. It contains original work of the author, both Slovak and Hungarian. Kormoš puts particular emphasis on love motifs in this collection. Bilingualism can be detected again "...further dimension of the author's polyphonic engagement, with orchestral instrumentation of his poetry, calling for synergy of all instruments, looking for their maximum effect" (Kníchal, 1991. In Kormoš, 1991b, p. 123). In relation of the individual and the society (poet-birthplace), the elements of regional principle can be identified in verses. In wider context, a parallel with nature can be identified, where social memories are made more colourful with the motifs of Pilíš surroundings. It is symbolic that the title of poetry collection "*Verše z Viharašku*" (Engl. *Poems from Land of Storms*) had changed to *Verše z Búrlivého kúta* (Poems from Stormy Corner). From the perspective of multiculturalism the symbol "waves of friendship" between the Slovaks and Hungarians is a kind of way out of darkness to light. A national author is one, who is capable for multidimensional existence in space. One possible destination is Pilíš in May, the other are the fairy-tale like Tatras,

which symbolize the already forgotten land of ancestors. Multiculturalism is also determined by the allusion of Štúrovo-Szob border.

Another bilingual poetry collection by Alexander Kormoš was published in 1985 with a title "Okřídľovanie kosou" (Engl. Spinning Scythe). In this collection of poems the author also highlighted the emblematic motif of a miraculous bird that is a symbol of survival – survival of individual, nation, nationality and humanity. Even the edition Dunaj itself demonstrates multiculturalism, not to mention the thematic stratification of the poetry collection. The lyrical subject relies on a bond and asks people for help. He is an oxymoronic prisoner of freedom, as well as a conscience of his own nationality. A symbol of "fresh spring" appears again, which gives hope for the future. The poet must remain in a strong central position on both sides of the river Danube. He is a personified witness of the past and present of his homeland; the lyrical subject is his faithful child. The present is described critically, as harmony between people, nations and nationalities gradually dissipates. Hard fate is like a rock in Pilíš. The customs and traditions are confronted from Tatras to Danube in direction to Lowland. The poet is helped by the multicultural environment, time and indestructible love. Times are hard, a man thirsty, words silent. The poet as an eternal hunter, gardener and wanderer has to preserve the language and emphasize the state of the language in his verses. The poet has to remain vigilant against the omnipresent world-wide disease and protect harmoniousness. Language is a unique and unrepeatable miracle that encompasses the whole world. Of course, he is aware of the phenomenon of dying words in a new millennium; he blames the attributes of present for changes in the language.

In 1997, an interesting collection of aphorisms by Alexander Kormoš was published under the title Aforizmy a iné stručnosť (Engl. Aphorisms and other Shortcomings). It contains short sentences in both Slovak and Hungarian languages; most often it is a Slovak variant and a Hungarian invariant. These occasionally reflect cynicism. In opposition to atheism (socialism) stands the belief (democracy). In these development phases, the individual as a social being has to find his personality. The importance of native language is emphasized, as well as the fear of denationalization and cultural genocide of one's own national minority as the biggest uncivilized act of the modern civilization. From the perspective of multiculturalism, a common homeland is created with the same interests, going ahead with development of the civilization. The centre point of this world is the human being, but the basic vector is the omnipotent God.

An interesting publication by Alexander Kormoš considering the genre of the book is Rozdúchať stlmený plameň (Engl. Blow the Dimmed Flame, 2003). It contains 80 sonnets both in Slovak and Hungarian language. Particularly interesting is the sonnet crown, which includes translations from Hungarian literature into Slovak. (3 sonnets; László Nagy, György Faludy), translations from Slovak literature into Hungarian (7 sonnets; Vojtech Kondrôt, Marián Kováčik, Viliam Turčány, Štefan Strážay) and translation of a sonnet from a Lowland Slovak author into Hungarian (Pavol Samuel). The system of symbols forms a unified coherent system in the background of declared symmetrical bilingualism. The reflexive reader is offered a possibility to be confronted with the artistic talent, because sonnet is a special form of poetry that requires talent from the author to formulate his ideas with high intensity. Testimonies by the poet create a tension between words and reality. The "flame of the language" is a symbol of poetic utterance in opposition to silence. It emphasizes the importance of homeland in the era of terrible present.

Until the present, the last independent collection of poems by Alexander Kormoš was published under the title Večne živý prameň (Engl. The Eternal Source, 2016). The author thematically returns to Pilíš and its surrounding; he is a faithful child of his homeland with "singing" (personified) Slovak language. The lyrical subject has a fear that his nationality might soon disappear from the map of Europe. He emphasizes mutual

understanding, a kind of "Kormoš polyphony" of cooperation and co-existence. Important is the inhesion that is symbolized by Pilíš mountains as an eternal homeland of Slovaks in that region. It is necessary to talk and avoid silence, shout or sing beautiful Slovak songs. The lyrical subject is afraid of them, as they are lost in the new millennium. He is deeply embedded in words. Apart from the native language, the crying soul is protected by the typical guitar sound of Kormoš that overcomes sadness, fear and misery. The aim is to see the silver lining – own words of the nation. The author often idealizes his thoughts: Is really language the queen of queens? This publication also includes the author's cycle of translations from literature of other nations with an emblematic title "Mostom dúhy" (Engl. Bridge Over the Rainbow). This part of the work contains translations of poems into Slovak (pars pro toto) not only by Endre Ady, Attila József, György Faludy, but also the poems by Gábor Hattinger-Klebaško, Imrich Fuhl, Josip Gujaš-Džuretin, Gennadij Golovat, Vilmos Moldován and others. This fact also points to multiculturalism and polyphony of testimony of friends, poets and personalities. Regarding the Slovak-Hungarian cultural context it is interesting to mention the poems of Vojtech Kondrôt about Ady, his translations of poems by László Nagy and comparison to translations by Alexander Kormoš or Emil Boleslav Lukáč, the poem of Mihály Filadelfi – Tatranská Lomnica, and mainly the poems of Zoltán Polner about Gyula Juhász and his work in Skalica.

## 5 Conclusion

The modern Slovak language is constantly evolving and is characterized by motion in different interaction. As an anthropocentric entity, the language is present in almost every moment of our existence. However, the development of language is not limited. It is used in the mentioned enclaves and diasporas. It is not isolated, but remains in contact with other languages (in discussed context it is the Hungarian language). Therefore, the clear development concept of Slovak language as a state language seems to be limited. For this reason, the pluricentric understanding of the language is justified. The pluricentric concept of the Slovak language involves the language used in literature as well. There is no need for many linguistic sings (primarily we think about the poetic, specific language of the Slovak poetry in Hungary, which serves a typical example) to constitute the variety of the language, and we do not even interpret it as a meta-language. To create a special group and language identity, the social and symbolic function of the language is essential. We have emphasized it with our basic approach to concrete (poetic) text.

If we apply these findings creatively, we can conclude that Alexander Kormoš has been an integral part of the cultural milieu of the Slovak minority literature in Hungary for 45 years. His poetry "...is characterized by constant analysis of the relationship between power and truth, and most of his poems are filled with melancholy" (Anonymous, 2008, p. 3). The era and regimes are changing, but the words of the poet are constant. The poetic language of Alexander Kormoš is relentless, but fights for a better world. By the analysis and interpretation of his poems and work, we can come to a conclusion that also in a minority environment the aspects of pluricentrism of the Slovak language can be identified in contact with the Hungarian language. It is a special phenomenon, a kind of symbol of mutual co-existence of two nations or nationalities. This created a bridge of understanding and cooperation also in Central Europe. It demonstrated how diversity of language/languages is applied on multicultural basis.

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**Primary Paper Section: A**

**Secondary Paper Section: AJ**

## FACILITIES PROVIDING EARLY CHILDHOOD EDUCATION AND CHILDCARE UP TO THREE YEARS OF AGE FROM THE POINT OF VIEW OF ERUDITE EMPLOYEES

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**Abstract:** This scientific study presents the concept of qualitative research of early childhood education and care (ECEC) in facilities providing childcare up to three years of age. It focuses on caring of the youngest generation of children in the area of children's nursery centres, childcare facilities, where this care in its educational component, is rather unintentional, involuntary. At the time of the information boom, parents often have problems with choosing parenting strategies without any pedagogical advice or educational programs for children. The current adult society places great demands on active and significant life in society, but the issues of early childhood education and care are not addressed with adequate attention and seriousness.

**Keywords:** focus group, qualitative methodology, facilities providing ECEC up to the age of three, caregivers.

### 1 Institutionalized childcare at an early age of the child in Slovakia

The ECEC in Slovakia is becoming increasingly important, as it is in the case in other countries of the European Union. Currently, there are some international conditions and specificities that characterize ECEC. These conditions are detailed in a document published by the European Commission in Brussels (2011) entitled 'Announcement of the Commission: Early childhood education and care is an optimal start for all our children in the world of the future. The quality of early childhood education and care is dependent on many of the factors discussed in the above mentioned document. Factors that improve the quality of early childhood education improve the curriculum, staff, and overall management of early childhood education and care. The aim of early childhood education is primarily to educate, care, and encourage a versatile development of an individual. Childcare facilities up to three years of age must comply with the legal conditions applicable to the Slovak Republic specified in Act No. 448/2018 Coll. on social services, which is referred to as the so-called "Act of the day nursery care centres". According to this law, it is concluded that the main requirement for ECEC is the expertise of the caregivers themselves. A caregiver in a childcare facility up to three years of age who does not achieve the required education cannot work in a facility of this type. Before adopting the current legislation, the requirement of such education was not desirable and the position of a caregiver in early childhood education and care facilities could have been performed by an individual without the required education. Fields of study that are suitable for the practice of ECEC caregivers in Slovakia are defined as: "educating-caregiver practice, teacher education for primary schools and nursing, or medical assistant." The condition of employee education, as well as other conditions, in the form of strict criteria from the current "day nursery act", apply to the facilities of state nurseries, as well as to other childcare facilities up to the age of three, private day nursery centres, private centres with kindergarten, etc. They are registered in the central register of social services of the respective self-governing region. Exceptions, are private day nursery centres, private children's centers, civic associations and other private establishments, that take care of children up to the age of three, and are not registered in the register of social service providers at the higher territorial unit of the region in question. Regulation in accordance with the currently valid legislation thus created two groups of facilities, namely, those that meet the legal conditions and those that do not officially meet them. The "legal guarantee" may or may not be decisive for the parent when choosing a particular facility for his/her child.

### 1.1 Educational strategies, methods, principles and process of raising children of an early age

The basis of success is a suitably chosen strategy as a certain intended and applied approach (not an algorithm) to achieve intentions and goals. The strategy framing the process, prevents from diverting from the intention and goal, affects the content of the proceedings and gives it a specific form. I. e., that each strategy chosen produces different results. The strategy incorporates several methods that complement each other, linking them to the same purpose of use. A method is the way in which goals and results can be achieved. An individual, through his deliberate action, causes that the goals take on a particular form, and the results are better demonstrated. The methods are chosen with regard to the subjects (the children being educated) because they are to be adapted to the level of development that the subjects have. The caregiver thus chooses the appropriate strategies and affects the whole educational process in the long term. The strategy of an open educational process (with relevant methods such as persuasion, etc.) is aimed at educating an active and responsible citizen. Educational strategies correspond to adult societies and their culture, which means that they are also chosen with regard to the nature of life favored by the adult society (children are brought up to the image of an adult society). Educational principles determine educational behavior, acting; they are its basic norm. Educational principles systematize the educating of the child and establish the caregiver's educational conduct, thereby make this behavior intentional and less random. The caregiver is aware that he / she carries out his / her educational conduct consciously, intentionally, purposefully, and on the basis of educational principles. Achievement of objectives is a systematic, methodical - conceptually thought-out and continuous action, taking place according to the chosen strategy, method and principles, that exclude randomness, unpreparedness, deviation from the set objective and so on. The educational principle is the steady action of the caregiver. Educational principles influence the formation, course and outcomes of education. Educational situations are provided with educational principles, but they do not have to be present, in everyday situations. Then it is necessary for the caregiver to "draw" e.g., clarify what has happened, with reference to educational links and consequences. This is important because life, and action in it, is formed through speech, which is to be accompanied by the caregiver's actions. Educational principles become evident (understood) to a child when educating is related to speech. Speech is justification of proceedings. It thus makes it possible to put ideas into action. People create things by action and words, so communication in education is essential. It is also essential to not forget the forms of education which are the external arrangement of space and time, in which the content of education is organized. Part of the educational process are the conditions that influence the educating. The factors of education are all that enters the educational process, and the children and the caregiver are subjects of education. Educational acting is not a phenomenon on its own, it is often embedded in a wider framework of adult social behavior, which is a fact, and it is desirable that the caregiver should be able to differentiate the boundaries of this process and fully focus his/her attention on it. Educational performing in the facility for the youngest population is a continuous educational activity, i.e., it is such acting, which is in its entirety controlled. Educational strategies, methods and principles are the factors of controlled and systematic education. The educating of the youngest generation is a responsible activity that requires the integrity of the caregiver. The caregiver should include knowledge of, in particular, the pedagogical sciences (in close relation to other sciences), in order to be able to plan, to carry out, evaluate the educational process with respect to the child / children being educated and achieve the intended educational outcomes. The basic ideas that determine and frame the caregiver's educational conduct are summarized below:

A child is accepted in its diversity. The child has many ways to communicate with the caregiver in the educational environment. Conventional language (typical for the adult population) is only one possible way. The caregiver should take care to create an accepting and accommodating educational environment, in which the child has the ability to choose and change the way they communicate with the him/her. Crying, shouting, laughing, silence, and so on., are the speeches by which the child communicates with the caregiver. The caregiver is supposed to obtain a way of communication from the child that will be beneficial for both. The recommended conjunction of a common speech code is play in which the child has the opportunity to alternate ways of communicating. As part of the educational process, there is direct speech in communication with the child. Inclusion of unknown concepts within the communication with the child is based on the belief that the child learns by becoming more familiar with the subjects, together with their conceptual designation. Terms that are not directly linked to objects in the child's environment can be misrepresented by the child. The diversity of the child is a manifestation of its uniqueness, even though its actions in the educational group bear common features (which also depends on the setting of educational conditions). It must always be borne in mind that every child is unique in pedagogical terms. The caregiver avoids denying the uniqueness of the children brought up by him in the educational group; on the contrary, he/she changes and regulates his/her educational behaviour, in terms of respect for the diversity of each child. Pedagogical significance is unambiguous; The purpose of educating a child is to let it be aware of itself and its potential, so that the child can realize what it can (already) do. Self-awareness of the child is a prerequisite for accepting oneself as a competent human being.

It is accepted that a child needs a safe educational environment filled with the appropriate interior and subjects / objects, to support the process of education to act actively. Pedagogical significance is contained in the idea that children need to be given the appropriate space, which is an educational challenge for them, but also a space in which they will feel safe and fearless. A safe educational environment is a space in which a child receives benefits from educating. The educational process should take place in the corresponding spaces where the external factors are in accordance with the set educational conditions. One of the pedagogical principles is the principle of systematically protecting a child from harm, danger or any threat and to spend all material and human resources on it, as well as to pay attention to its health. At the same time, this principle is a humane commitment to the youngest (defenseless) generation.

It is accepted that educational communication is paramount. Educational communication is an essential educational tool, so it must be conducted intentionally, prudently and responsibly. The caregiver speaks through it with the child, and it responds to the call with its speech and action. The child's communication is usually straightforward, which means that the caregiver can derive the child's needs from it and determine the content of the communication, i.e., what the child wants to communicate to the him/her. The whole educational action unfolds from the nature, form, and content of the communication. The educational consequences affect it, and therefore it should be conducted in favor of the child's educating goals. Ideas, messages, references, requirements, guidelines, instructions, approvals, etc., anchored in words (sentences), affect the thinking and action of individuals. The meaning of the proceedings lies in the words by which people describe and execute the action. The caregiver should take care of what words and phrases he/she chooses (and how he/she puts them into sentences), because they influence educational events. Steady communication makes it possible for the child to clarify what the caregiver requires from the child. Communicating in the process of educating the youngest generation, should be clear, concise, concrete and understandable. Such communication prevents confusion and allows the educated child to focus its actions on what is and may be, and on what is not and must not, and therefore, what is specifically required from the child's action. The pedagogical principle in communication means talking to a child, listening to a child and speaking with the child in such a way, that the

caregiver is aware of the meaning, value of the words and their impact on the behavior (actions) of the educated child, with regard to the educational situation.

It is accepted that educating is an intangible act, which means accepting the fact that the caregiver treats intangible educational tools, while acting in an intangible process of education. The content and intent of education must therefore be communicated appropriately and clearly. Educational activities and actions must be accompanied by clarifying communication. Some educational activities can be materialized (that is, to do something with the use of material resources), but the process of education is a strong idea (it is not possible to fully apply law to it) - the processes of education are based on the so-called "strong thoughts", concretizing the actions of the caregiver and the educated and their believing in those strong thoughts. All the more so, the process of educating requires a caregiver's full awareness of the intentions, goals, processes and consequences of education. The procedure is influenced by the rules governing the child's self-control, thus promoting its development. The pedagogical principle of nursery (caregiver's) education reflects his/her personal belief in the meaningfulness of the educating process, which is deliberate action based on the awareness of strong educational ideas. It is accepted that the process of educating is a certain relationship between the caregiver and the educated child/children. This relationship is an interaction, mutual interaction, demonstrated in communication, action, play, care, in various educational activities, but also in eating, sleeping, staying outside, in greetings, and so on. To act synergistically means not to go against the educated, but to find harmony with them. It means going together, following the educational action and goal. The relationship between the caregiver and educated is to be based on trust. The relationship is also filled with educational means, with the use of which the caregiver intends to provoke concrete educational changes in the process of education. Human behavior has its consequences (which applies equally to educating), and it is therefore good if children at an early age realize this. The child learns by observation and imitation, so the caregiver's behavior should be thoughtful (not arbitrary), systematic (not random) and targeted (not aimless). Thus, a child can get an idea (experience) that the interaction of the caregiver and the child being raised is a human-enriching and mutually reshaping relationship. The relationship should also be based on the mutual respect of the caregiver towards the child and vice versa. Unilaterality has no place in such a process. To create such a relationship, such qualities as consistency, exemplarity, accountability and justice must be developed. Educational reality tends to be varied, educational situations can be both educationally challenging and simple, but they can never remain without the caregiver avoiding at least the four mentioned qualities. The clarity of the signals in the form of these qualities allow the child to create respect towards the caregiver and itself. The pedagogical principle of creating and maintaining a relationship between the caregiver and the child being educated, is based on the fact that the caregiver's action is responsible and encourages the child to enter into a (co-educational) relationship. It is accepted that educating requires the establishment of boundaries and rules, and their respect. An adult, a caregiver is a model for a child. The caregiver should be the model to observe the rules, by presenting the child that the actions of man, people are subject to the rules, that no one should act arbitrarily and act against the will of others. The borderlessness of the proceedings is in contradiction with the educator's thinking, because the boundaries and rules are one of the educational means of the process of education. The boundaries define the area of action, and this space can be filled by the child's / children's independent, active, conscious and creative action. The added value of such a child's action, in the space bounded by educational principles, is goal-oriented action. Children up to the age of three demand room for self-active action, and the caregiver applies the rules to make the child's educational practice useful. The rules are tied to the process of self-control, and this requires that they be clear, unambiguous, reasonable, and proportionate to the child's educational experience, because only then they can pursue a thoughtful arrangement of the daily order in educating. The child

learns self-control, while at the same time, adapting to the narrower and wider social environment. The nature of such a child's behavior is strongly supported by an adult, a caregiver, who acts in the way he/she requires from a child. Steady and repetitive educational behavior becomes part of the logic and reality of the educated. The pleasant and assuring experience of repeated educational success has a fostering effect on the child's self-control. Enhanced child control has a significant share in adapting to new situations. The pedagogical principle of educating a child / children by using rules on the basis of established boundaries, emerges from the idea that every act is based on intellectual plan and emotional regulation (personally managed behavior adapted to social and physical conditions). Education is aimed at purposefully supporting the processes of self-control of the child / children, as a prerequisite for their success in the society of children and adults.

It is accepted that the process of educating is based on the deduction of educational principles. Inferring educational principles from a child and an adult / a caregiver, is a dynamic process that presupposes mastery of the educational situation, from which the educational principles should come. Educational behavior transforms the educational reality, changes the behavior of the educated child, and causes such consequences. The consequences should be analyzed by the caregiver (e.g., to avoid wasting educational resources, time and effort and to find an appropriate educational principle) and analyzing the educational management, which will allow to draw an educational principle that is more appropriate for that child. The caregiver should not leave any unforeseen educational situation unnoticed, if he is convinced that the educational principles should be identified and adapted to the child being educated. The process of educating is a process with a long-term perspective, and educational principles set it up and make it predictable and planned. The educational process is a deliberate process, which means that educational action is a conscious action tied to the goal. However, the caregiver is not confined to a single educational activity in his or her educational process, but takes into account those activities whereby the child can be more fully developed. After considering the selected educational activities, the caregiver combines them into one educational activity, in which the child is engaged. An educational activity, with diverse but mutually overlapping activities, is inspiring not only for one child, but also for a number of educated children who connect e.g., by the same interest in activities. This consideration is supported by the caregiver, by identifying the needs of the child and assessing the pedagogical suitability of the activities for the particular child. Within one activity, it is suitable to involve children who are (from the perspective of the caregiver) close in terms of needs and opportunities for development. Children up to the age of three can do different activities themselves, but they can also do them with the support of a caregiver and another child / children. Autonomously acting children are children who firstly receive support, but later give up on support. A child acting autonomously is a child who enjoys the activities he / she is doing and who is interested in the activity. The pedagogical principle of educating children, based on educational principles, means a managed, coherent, systematic, structured, planned and especially, valuable process of education.

It is accepted that the process of educating has its (caregiver's defined and understood) educational purpose. The educational intention is what is pursued by education and is consistent with what is to be achieved (goal). The caregiver has a general conception of the process of educating, which is actually a conceptual purpose of education. The attitude, along with the emotional dimension, is the essence of the educational purpose. The caregiver focuses (the intention) on educating the child by developing the attitudes, wills, and higher emotions of the child. The caregiver has a direct and indirect influence on the development of human characteristics and the specificity of the child. The fact that the child is influenced in the process of education, in order to consciously acquire domination over his/her actions, helps him/her to begin to gradually control him/herself, in the sense of educational principles (adaptation), and then begin to master the contents of educational activities (or

even the educational situation), to control him/herself in following activities and situations. One of the long-term educational aims is to lead the process of education, so that the child succeeds in the situations in which it occurs. If a child goes through the process of gaining dominion over itself in its actions, it is also a process of becoming independent. When a child is able to do the activity itself, then the caregiver may consider it a success. The educational intention is of a long-term nature and framing the whole educational activity of the caregiver. It is beneficial for the caregiver to subordinate his / her educational activity to the intended educational purpose, as it will gradually direct it to individual steps that will not be random, but will create a certain sequenced system. Educational goals that are in line with the intention and vice versa, are related to the educational goal. Educating is a professional activity - a thoughtful, targeted, deliberate, systematic, continual action, taking place in accordance with certain strategies, that excludes randomness, unpreparedness, diversion from goals, intentions and inconsistency. The educating process should be planned, organized and evaluated (under its full control) by the caregiver.

## 1.2 Education and educational strategies of parents

Family education is a purposeful activity of a parent focused on the development of a child's personality. It is an interaction of the parent and the child, and the behavior of both subjects is influenced by each participant. Family education is as an interaction, as a two-way issue, of subjects involved in the implementation of education. Parental behavior is influenced by the behavior of the child and vice versa (Thomas, Chess, 1984 In: Fontana, 2010, p. 25). Education in the child's life is reflected in different ways. It creates conditions for its cultural, character, and emotional development. The child's parents have a prior position and a vital role in education. Their attitude towards it is a phenomenon that determines the style of education, choice, as well as the effectiveness of educational resources (Ziemska, 1980 In: Žuborová, 2010). Two main dimensions of parents' behavior are described by Maccoby, Martin (1983 In: Fontana, 2010). Dimension 1 - the opposite of care, demanding and controlling and not demanding and controlling. Dimension 2 - Responsive and un-responsive to child-oriented care.

Parent-oriented, that means un-responsive care and rejection. The combination of these dimensions is the result of four distinct behavior patterns. Authoritative, authoritarian, indulgent and neglectful style of education. The authoritative style of education is characteristic of parents justifying their decisions to their children. They require adequate behavior from their children, with regard to their age. Children work with their parents, strive for the best performance, their behavior is self-inflicting, and at the same time, peer-friendly. The authoritarian style of education is characterized by obedience and respect of the child towards the parent's authority. Parents enforce their power without prior communication. The child tends to isolate and be aggressive towards peers, and his/her behavior is non-spontaneous. A responsive and child-oriented style of education, when parents require little, is an indulgent style of education. The child is characterized by irresponsible behavior, inability to rely on him/herself, immaturity, inability to control his/her own impulses, tendency to aggressiveness, etc. The neglecting educational style is applied by parents not interested in their child - in his/her opinions, feelings. They avoid two-way communication. Children tend to use drugs, are typical for moodiness, cannot control their feelings and impulses (Fontana, 2010, p. 23-24). We consider education to be demanding, because good education is associated with the self-educating parent. In order to achieve a goal in education, it is necessary to modify the thinking, behavior and lifestyle of the parent (Rovňáková, 2001 In: Tománek, 2012, p. 100). Education in the family is only marginally studied by Slovak pedagogy. We agree with Ondrejko and consider it a paradox, because the family is a prior socializing agent and constitutes the basic cell of the world we live in (Ondrejko, 2008, p. 561). Educating children should be a prior task for their parents, because they are

responsible for their child. Paradoxically, the results of family research show that:

- Child upbringing/educating is an essential problem for parents - the 1991 family survey questionnaire conclusion (Tirpák, 2009, p. 100).
- Chronic lack of time is a phenomenon characterized by the results of research on family in Slovakia. The father spends an average of 9, and a mother 24 minutes a day for discussion with their child (Zelina, 1994 In: Šatánek, 2005).
- Employed parents do not have an overview of their child's activities in its free time. The education is negatively influenced by the "second shift" of the mother, after returning from work. Caring for the household absorbs her every free moment (Končal, 2008, p. 531).
- The Declaration of the Rights of the Child, adopted by UNESCO and the United Nations Convention on the Rights of the Child, adopted by the UN General Assembly on 20 November 1989, are being violated by a part of the parents. Parents deny children (in relation to them) their right to have their own opinion, exercise their own interests, choose school, finance, and the right to personal freedom - research carried out by Šatánek via the method of questionnaire 2004/2005 (Šatánek, 2005, pp. 105-109).
- The results of the research tasks VEGA 1/2044/03 pointed out the shortcomings of parents in the quality of their educational impact. They manifest themselves in disregard of the fundamental rights and needs of the child - results of partial research tasks of the scientific research project VEGA 1/2044/03 "Family environment as a factor of socialization and personalization of the child's personality" (Šatánek, 2005, p. 100).

Research findings of the research project VEGA 1/2044/03 "Family environment as a factor of socialization and personalization of the child's personality", showed that the basic conditions for successful socialization of the child in the family are: Appropriate manifestation and recognition of the child's love. Respecting his/her personality as an autonomous subject. Appropriate, stimulating and emotional environment, corresponding to the individual needs of the child. Quality interaction and communication of subjects in the family (Šatánek, 2005, p. 100).

A thorough analysis of the theoretical background of the authors dealing with the issue of education - Tománek (2012), Dolinská (2009), Pupala (2004), Průcha (2009), has identified several functions of education in the family:

- The Protective function. Education is the protection of the child from the world and, on the other hand, the protection of the world from desolation. Before the desolation of the social space, in which we live, as a result of the penetration of new phenomena rolling into the world together with every next generation (Pupala, 2004, p. 77).
- By the term Generation, we understand a group of people sharing a similar cultural experience, born in approximately the same time frame (Tománek, 2012, p. 141).
- Transformation / assimilation function. Education is a dynamic phenomenon, determined by the dynamics of human being. It is an integral part of the culture and, as a consequence, itself undergoes various changes. Because it is a phenomenon taking into account the needs of the present time and the prospective needs of contemporary society (Tománek, 2012, p. 98-99).
- Existential function. The aim of education is the ability of a person - a child - to act in education (Kaiser, Kaiserová, 1993 In: Dolinská, 2009, p. 144).
- The child's versatile development function. Education as a purposeful activity of a parent, focused on deliberate all-round development of a child's personality (Jůva, 1967 In: Tománek 2012, p. 96).
- Educational function. The family is the first social space in which the subject (child) finds his/herself. He / she learns

the mother tongue and learns communication and language skills, by interacting with other subjects (parents), who intentionally and unintentionally expose them. It is the realization of educational processes - the processes of learning intentionally and incidentally (Průcha, 2009, p. 65).

Real educational processes in family education determine or influence, in some way, the constructs that parents have in their education. Educational constructs are such theories, models, plans, scenarios and other theoretical creations, that actually influence educational processes (Průcha, 2009, p. 67) in the family.

## 2 Research problem and research objectives

At present, the child's education at an early age is not systematically addressed in Slovakia. Similarly, it is also abroad. There are few research studies on early childhood education. They are overshadowed by the research of preschool and elementary age children, but issues of toddler and infant education are rarely addressed. There are few state-run institutions in Slovakia to educate children of early age. It takes place in facilities until the third year of the child's age. Based on period-conditioned domestic and inspirational foreign programs, and in line with the socio-cultural conditions of the present world, early education proves necessary not only for the development of a child in rapidly changing conditions, but also for parents, who are rapidly returning to their profession, and even for weak parent orientation on the systematic support of the child's educational needs. Parents also have difficulty in choosing parenting strategies, at a time of rapid information boom, while the absence of pedagogical counseling, including educational programs for children. The current adult society places demands on active and significant life in society, but does not give adequate attention and seriousness to the issues of early childhood education. The main goal of the research is to conceptualize ECEC in facilities providing care up to the age of three. Our intention is to:

- 1) Identify the educational aspects of institutionalized care provided in childcare facilities up to the third year of the child's age.
- 2) To present and analyze the essence of subjective statements of caregivers and early childhood childcare professionals, in connection with the research problem identified.
- 3) Conceptualize the methodological-content form of early childhood education and care, by identifying educational issues and educational needs, considered by caregivers, parents, and early childhood education and care professionals.

Research presented here is of a social nature: it interferes with an area that is widely represented, but its lacking scientific attention. We use research as a fundamental tool for developing science. We apply a qualitative methodology that is desirable in the study of subjects and their human activities.

### 2.1 Research questions

- What are the specifics of educating early childhood children in the family and childcare facilities up to the third year of the child's age?
- What are the positives, the negatives of the current education in ECEC facilities, providing care until the third year of the child's age?
- What early childhood educating constructs can be identified, based on mental and social representations of parents, caregivers and other early childhood educators?

As a research tool, to address our research in view of the research problem, we have decided to apply a focus group.

## 2.2 Entering and conducting research

The target group of our research project were caregivers in ECEC facilities, providing care up to the third year of the child's age, and specialists in early childhood education, together with parents. Research terrain was represented by state-run childcare facilities, up to the third year of age of the child, and maternity centers in Bratislava. We managed to carry out research in 4 childcare facilities in Bratislava. At the end of the research project, we managed to implement a workshop (creative workshop) in one of the childcare facilities. We have presented some of our findings, where the research results also raised questions - space for participants to discuss. Participants were: experts of the Pedagogical Faculty of Comenius University, deputy of the Ministry of Labor and Social Affairs, employee of the Red Cross - organizes a course for educators up to the third year of the child's age, participants in the caregiver's course, a representative of pedagogical-psychological counseling and prevention, parents of children, the Director and Deputy Director, together with the educators of the ECEC facility in Bratislava. We have organized 4 discussion groups with child caregivers, 4 discussion groups with parents of children and one with experts dealing with various areas of early childhood educating and care. In the research project, we have gained a great deal of research data. After returning from the field, we have transcribed them from the audio recordings into text form. After studying the research material thoroughly, we opened the text using the open coding method, where we read it several times and proceeded by sentences or short sections, looking for similar phenomena. Again, we focused on the localization of phenomena in the text of the statements, which had a clear narrative character, and the analysis which was based on reducing, categorizing, clarifying, synthesizing and comparing, in order to obtain the most comprehensive vision of our research object.

## 3 Interpretation of research results and research findings

Institutional education for early childhood in Slovakia takes place in ECEC facilities, providing care up to the third year of the child's age. We solved the project of our research at the time when the so-called "act of the day nursery centres", of the Ministry of Labor and Social Affairs, was being solved and met with senior executives of the Department of Labor, Social Affairs and Family in Bratislava, to presented our project to them. We did not agree on the cooperation, but we met with them at the last discussion seminar. The research was conducted in nursery centers and state-run facilities in Bratislava. These are family-type facilities with permanent staff. Caring for the child is the responsibility of the caregiver, but we have identified that in the state facilities, the majority of employees have the qualification of a nurse (currently the study program is disabled). They have many years of experience and many have been in the facility for 30 years and they carry out their work at a high professional level. We also note that cooperation with parents is a priority for all facilities. The day of the child in the nursery has a set timetable and precise rules are set for all participants, which determine the direction of the facility.

### *Children's nurseries just before 1990*

In the past, nurseries, nowadays, they are ECEC facilities for children up to the third year of the child's age. Very many of them were abolished in the 1990s. The nursery workers were nurses, who had knowledge at the level of GCSE in paediatrics, and were prepared for work with children. At that time, the nurse was an expert who helped parents. The staff of the nursery (at that time) had support in methodological manuals and literature. Educational components were elaborated in detail, could have been viewed in the library, directly at the facility. The instructional nurseries were set up in each city district and were responsible for the quality of the facilities under their leadership. We note that they used to conduct quarterly trainings for nursery workers, where they showed them how to carry out the process of educating in the facility. Before taking up their jobs, nurses and nursemaids had to practice in instructional nurseries. The nursemaids did not pass the school-leaving examination, but a

training in the form of a courses. We identified that it was prescribed when and what educational component should be implemented in the process of education. The nurses consistently led the health and injury documentation of the child - (called) the filter, they prepared for each educational activity according to precisely defined criteria. The instructional nurse, speech therapist, and psychologist controlled the prescribed quality of all facilities. A pediatrician was also a support worker for the nursery.

We assume that good, proven elements in the educating process persist to the present day. But some of the caregivers said that above all, they do not currently have the support of methodologies, speech therapists, psychologists and paediatricians, who no longer cooperate with the facilities on daily basis. The subjects consider current state nurseries as high-level facilities. When comparing the past, they see it as an amateur approach. They consider it unsuitable for a child to have a precisely defined educational component at the exact time of day. It is desirable for the caregiver to have thoughtful and planned activities, even if the education is to be conducted throughout the whole day. Access should be individual and the caregiver should respond to the current physical and mental settings of the child (for example, he / she can be teething).

### *Organization of daily activities for children in an ECEC facility, up to the age of three*

The operating time of the facility ranges from 06:30 am. until 5:00 pm, or sometimes until 5:30 pm. It is adapted to the needs of parents. In the past, children stayed at the institution from 06:00 am until 6:00 pm, later until 5:00 pm. Directors of some facilities have accommodated the facility's operating time in favour of parents. Since you no longer need to open the facility in the early morning hours, current employed parents have the option of picking up the child from 5:00 pm. until 5:30 pm, depending on facility. The smooth operation of the facility is ensured in a three-shift operating time. In the morning, the caregiver receives each child individually. In collaboration with parents, he/she lists the group's diary and filters out children who might endanger other children in the group, or the child itself. If the caregiver discovers a child's unfavorable health condition, it is sent to the pediatrician for examination and subsequently accepted after submission of a satisfactory health certificate. The caregiver records every child's injury. She/he works intensively with the parents. Both sides are closely informed of each change in the child's behavior. The caregiver also keeps records of attendance. Morning exercise, snack and hygiene. In this part of the day the child learns to coordinate its physical activity, improve basic self-help skills, habits and learns to sit on the potty. Caregivers use different strategies to motivate the child to sit on the potty, stay there for a while, until the need is made. Disposing of diapers is a serious element in the development of the child, a step towards its independence. Therefore, we will discuss this topic in more detail later. We identified targeted educational activities, in a set of activities, carried out almost throughout the whole child's stay in the facility. The child's cultural literacy is developed by education. Based on research data, we have identified 7 areas of education:

1. Culture of communication - language, speech and communication as the core of education.
2. Movement culture - body movement, cognition and progressive control.
3. Safety and care culture - healthy lifestyle and health protection.
4. Culture of getting to know - physical and natural environment and its discovery.
5. Culture of coexistence - social environment and coexistence with others.
6. Culture of behavior - emotions, attitudes and their balance.
7. Culture of interpretation - art.

Caregivers prepare educational activities for children. Namely, it is an artistic, movement, intellectual and musical field of education, and self-help skills activities. The children in the facility are divided into groups according to their age: infant,

middle and large. There are children from 6 months to two years in the infant department, the middle department is for two, to two and a half year olds, and the large department is for two and a half, to three year olds. There are 3 caregivers in each group and they carry out educational activities. We find that they have no prescribed plans, methodological guides, or any support material, that would assist them in their work. They follow the methodology from 1989., but they are proactive and they look for inspiration on the Internet. In the facilities, it is up to the caregivers to agree on what targeted educational activities they will carry out on a given day; in unfavorable weather they also implement more targeted areas of education. We assume, that every day in the nursery, all educational areas are represented. Children listen to children's songs every day, sing, practice, try to draw, learn new things etc. The Caregivers approach the child individually. We have identified an individual approach when we observed the planning of activities. Each caregiver in the group offers a different activity with different levels of difficulty. The child decides on its own, chooses what it wants to do, depending on the zone of its current and proximal development. This means that it is essential to choose the educational activity, when realized what a child can do on its own and what it can do with help. There are situations where the child does not have the capacity to concentrate and carry out the educational activity with the other children in the group. For example, when it is teething. Then, the caregiver will offer the child a different activity. It is important to reassure the child to feel safe in the facility (some children call the caregiver grandma).

In good weather, children are allowed to move around in the school yard and walk around the facility. They observe the surroundings and the world around them. The caregivers show them and explain the surrounding phenomena (children develop speech and explore their surroundings), and patiently answer all their questions of interest.

#### *Significant Critical Points in the Institutional Educating Process of Children up to Three Years of Age and Family Educating*

In the following section, we present the results of the research obtained in 4 discussion groups with caregivers in the facilities, and 4 discussion groups realized with the parents of the children in the nursery centers. We also present the results of the latest discussion, at a professional level, with a relatively wide scope in the field of participant involvement. The involved, are experts in every early childhood education-centered area, ranging from academia, healthcare, psychology, up to politics. The discussion was also attended by the director and selected caregivers from the establishment, where the last discussion took place. Also 2 parents of the children participated. A substantial proportion of the experts involved, also play the role of parent or grandparent. We have subjected the research data to a thorough analysis and we have identified critical points in the process of education. At the closing seminar, we briefly presented the results of the research, where we pointed out these critical points. The identified critical points became a means of further discussion of all the experts involved. Our intention was not to influence the subjects, but to briefly justify our choice of topics discussed.

#### *Promoting the independence / competence of the child*

When we talk about supporting the child's autonomy, competence, it is important to point out the individual dimension. There are parents supporting independence, but also parents leaving the development of independence to the child itself. We note that it is essential to communicate with all the participants, respectively. By this we mean communication of the facility with the family and communication between family members.

#### *Parental congruence and co-operation with the caregiver*

We note that there are situations where there is a discrepancy between the caregiver's and the parent's actions, therefore cooperation between family and facility is important. For example, in a facility, the caregiver puts the child on the potty at regular intervals, and afterwards it is given a clean diaper. When the diaper is dry, it is useless to keep the child in the diaper. It is

essential to maintain the discussion and to cooperate with each other. Caregivers respect the reservations and needs of parents. It's as if they were on two poles. On the one hand, there is the caregiver, who knows what to do with a particular child, on the other hand, the parent, who refuses the implications. Caregivers are also encouraged to communicate with a parent who is not interested in how the child was doing in the facility during the day. Such parents consider staying in the facility as a key element in the upbringing, education, and teaching of a child to act independently and in the home environment the child simply just goes to bed. On the contrary, there are parents who want to teach the child everything themselves, and parents who cooperate. A significant breakthrough for successful cooperation seems to lie in the success of the child.

In the past, the infant/toddler has learned from diapers significantly earlier than today. We note that parents had more children, so they had to be more independent. The diapers were different, the child felt it was in a wet environment. Nowadays, children use diapers in which they feel dry. It is important to put the child on the potty at regular intervals and later, when it can hold the urine, you should dispose it of diapers. Independence, competence gives the child freedom. It is happy because it becomes independent. Independent of adult help. It doesn't have to be in a dirty diaper anymore, doesn't have to wait for someone to wash it, change it, because it can do it by itself.

We think communication with the child is beneficial. The child has to get used to self-help skills activities gradually. It should gradually learn and be given time to try to dress, wash, eat with a spoon, etc. We note that children in ECEC facilities have enough opportunities to progressively improve their autonomy. Caregivers consider the development of autonomy and competence a priority.

#### *Love*

The basic and immediate phenomenon we have identified in ECEC centres, as well as in the family, is love. Love has different forms in the family.

We identify that love is the foundation of education, and we conclude, that how parents understand and apply it in education, has a definite impact on parents' constructs in education. Rejecting an authoritarian approach to education, and seeking for respect for the child, is a phenomenon on which parents clearly agree. Their opinions differ in what behaviour they still respect from the child, and what they cannot, or in no case, will. Every parent tries to respect (more or less successfully) that a child needs a mother. She responds to the needs and wishes of the child - she carries it in her arms, sleeps with it in one bed, the mother breastfeeds it, etc.

*We assume that parents' opinions differ in the following:*

- Whether a child should be raised/educated within the boundaries of set rules or not.
- Whether, or not, the child should respect the specified rules. Whether only the child should respect these rules or the same goes for the parent too.
- Whether a parent has enough will and energy to be consistent. Whether he/she tries to evaluate - to "guard" the behavior of the child, or is able, and willing, to be attentive to him/herself (in the role of a parent and human being).
- Whether he / she can identify errors only in the child's behavior or in his / her own.
- Whether he/she can admit the mistakes, and stand up to them, as an opportunity to rectify (behaviour) or failure.

From a rigorous analysis of research data, we have found a clear match between the interpretations of caregivers and other professionals which shows that the basic feature of a good caregiver is to love children, have a positive attitude towards them. The caregivers simply said, they like children, have the will to make a child happy, as well as a parent in the question of raising a child. They ensure it by means of a purposeful educational activity. They are patient and try to offer new

activities to the child, to show it something new everyday. They have the sincere joy of every child's progress, every smile, do not hesitate to praise, encourage and support. They provide scaffolding for the child to follow. They are helpful to the child and know that this is how the child learns. What it can do with the help of a caregiver, will gradually become something it will be able to do by itself (the zone of actual and proximal development). For example, it doesn't matter whether it can paint or model from plasticine. What matters, is being happy, recognizing and learning something new. It does not matter that it gets dirty, because it recognizes new materials and uses them. We note that a positive relationship with the child is a prerequisite, and at the same time, a property of a good and responsible caregiver. It is the concern for a child, an interest in making a child happy, by means of a targeted professional activity (through play). By this, the child will learn to be independent and become happy when autonomous. Security and safety are also important. The rules and rituals introduced in the facilities provide the child/children with security and safety. A parent understands love differently from a caregiver. The caregiver makes the child happy through educational activities during the day, by teaching it to be relatively independent. A parent can only understand love from that emotional side. Or that he will let it do everything, and perhaps the parent considers it a manifestation of love. And when a caregiver does not do it, the parent may be judging that he/she does not like his child. Should the caregiver love the entrusted child/children, should they like it/them? The profession of a caregiver in ECEC facilities up to three years of age, is clearly feminized. There is a single man in Bratislava who not a caregiver, but a director. We note that experts as well as caregivers consider it beneficial to see men and children interact on special occasions. And here we can see a thin line of understanding love. When a man-caregiver says he likes children, that he loves them, the parent can understand it differently. In our opinion, a caregiver, man or woman, should have a professional approach, be responsible, be playful, creative.

*Respect for the child's personality, boundaries and rules in the child's educating in the family*

Based on the analyzed research data, we identified 4 approaches of parents to the phenomenon of respecting the child's personality:

1. Respect the child within the boundaries.
2. Respect the child - be benevolent towards it.
3. Respect the child and want to be respected.
4. Respect that the child/infant needs a mother.

Rules are closely related to boundaries. In our opinion, compliance with the rules can be understood as a kind of prevention aimed at not exceeding the boundaries of education. We believe that consistent compliance, with the rules established by common agreement, can be of benefit to the child not only because it must not do something, but also because pleasant things or experiences are repeated in the same way. Based on the obtained qualitative data, we identified 3 groups of parents to the phenomenon of education boundaries:

1. Parents considering the rules in education as important.
2. Parents classifying rules in terms of important and less important.
3. Parents considering the rules unnecessary, but safety is of high importance for them.

When we try to answer the question of how parents understand the boundary phenomenon, or how they apply it in education, we consider it important to divide their views into groups. Based on the data obtained, we identified three groups of parents:

1. Parents considering it important to give the child boundaries via educating.
2. Parents choosing boundaries in education, based on the character of the child.

3. Parents not perceiving boundaries in education as important.

*Collaboration of family and early childhood education and care facilities providing care up to the third year of the child's age*

We identify that communication is an essential critical phenomenon in family and facility collaboration. Parents approach the collaboration differently. Some are interested in how their child thrived during their time in the facility, others not as much. But still, caregivers' superiors require active communication and collaboration with parents. We note that caregivers are seeking for a way to cooperate with the parent. Oftentimes, parents do not attach seriousness to some aspects of education. The most effective strategy, identified by the caregivers, is to highlight the success of the child. Parents are surprised how come the child is doing things "right" in the facility and not at home. Importance lies in the fact that the child spends a substantial part of the day in the facility where, the caregiver actively engages the child, perhaps more than the parent. We assume, that the fundamental phenomenon, complicating the educating in the family, is consistency in parenting and the time enabling the parents to be consistent. Caregivers are consistent in their work and have a child-only time. Parents know how it should be theoretically, they are interested in the subject matter, they talk to friends about it, they do study various materials on the Internet, but still, the problem is consistency. They have no time. We note that active family educating (active time with the child) is often minimized for every parent-child interaction. Experts, as well as caregivers, warn of the need for active time spent by parents and children. In everyday life, education is part of all other activities, because education is life. The child observes the parent and their surroundings, and also learns what a parent might not even realize. The child mimics the behavior of the parents, as well as the behavior of the caregivers. It brings the family-inspired designs to the children's society (class). It is necessary to set aside active time, respectively. It means to talk to the child and teach it to think critically.

It often happens, that the child transfers patterns of negative rolemodels to the play activities. In such a case, the caregiver seeks to divert the child's attention by another activity, and/or uses the strength of the group and the positive patterns, that the child identifies (with) and then applies itself.

We note that for more serious problems, such as child aggression, family and facility cooperation is of high importance. The parent often finds it very difficult to accept that something is wrong especially, when the child behaves differently at home. It happens that the parent does not take the words/advice of the caregivers seriously, and hardly ever believes them. The parent often refuses the recommendations of a professional and only when a more serious problem arises, he/she will seek the help of a psychologist, etc. We note that the reflection of the child's behavior is a reflection of the family's educational situation, of the recognized or undeclared patterns. "This means that the behavior of the child is the mirror of that particular parent. The parent has a problem with accepting, or not accepting, realizing it, or not realizing. Unless there is a truly established diagnosis, it is important for the staff of the facility to explain to the parent why it considers it important that the child is to be examined, because only by examination the diagnosis can be confirmed or not. The caregiver should protect the other children in the group. When a child gets sick or has health problems, and the morning filter confirms it, the child cannot remain in the group until he / she has a proof of his / her health condition from the pediatrician. When an aggressive child threatens other children in the group, he / she may, in extreme cases, be excluded from the group. It depends on the operating rules, that the parents are obliged to sign and accept. However, we note that the staff is in every case, trying to work with parents and solve the problem.

*Parallels of educating in an ECEC facility, providing care up to the third year of the child's age and family educating*

The most important educational parallels in ECEC facilities providing care until the third year of the child's age:

- The carer defines and understands love in a completely different way than a parent. The means of the carer is targeted professional activity, educational activity (play). Independence and rules are the means of the carer, in order to make a child happy in the facility. It is a display of the carer's interest in the child. We note that a parent understands love more on the emotional level.
- Communication and collaboration with parents and cooperation with other professionals, especially the psychologist, is important. A healthy child successfully learns to respect boundaries, if the family works with the facility and can receive expert advice and assistance. The means is not a ban, but a distraction from the unacceptable behaviour. The caregiver teaches the child to think critically and explains the child's specific educational problems at an appropriate level.
- Pointing out the success of a child is a breakthrough phenomenon in family and facility cooperation.
- Communication and collaboration between family and facility is important. It is important that the child's independence is promoted both in the facility, and in the family, in terms of educational/pedagogical theory.
- The success of a child is a motivation to work closely together and trust the facility.
- Parents admire and sincerely enjoy each child's success. They are astonished and do not understand why a child would perform a particular activity and develop it in the facility, but refuse to do, or understand and apply, specific principles in education at home.

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## CONTINUITY IN EDUCATION: DEFINITION, ESSENCE AND ANALYSIS OF THE PROBLEM

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**Abstract:** The article analyzes the scientific approaches to the study of the problem of continuity. The research of theoretical and methodological bases of continuity realization in the "school-university" system is considered and a literature review on this topic is conducted. The continuity of learning, which ensures the interrelationship between the various levels of continuing education, is one of the approaches to solving the problem of increasing efficiency and improving the quality of the teaching and upbringing process. The problem of the continuity of the informatics content in the school and in the higher educational institution is being solved. The author suggests ways of implementing differentiation of the material in the teaching of computer science in conditions of independent educational activity among high school students and first-year students of a higher educational institution.

**Keywords:** continuity, regularity, methodology, process of instruction, didactics.

### 1 Introduction

One of the strategic directions of the development of the Republic of Kazakhstan is education and science, from development, which depends crucially on the pace of economic, technical and technological progress, political development, the state of culture and spirituality in society. Over the years of reformation, bold steps have been taken, for the introduction of innovations.

The changes taking place in Kazakhstan, to a large extent, affect the sphere of education. Education provides the individual, society and the state with sustainable development, stability, and security. This is also noted in the state program for the development of education and science in the Republic of Kazakhstan for 2016-2019: "The goal of the program is to increase the competitiveness of education and science, the development of human capital for sustainable economic growth" (29). Therefore, at the present stage of the development of the education system in our country, the task of modernizing it with the aim of achieving a high quality of preparation for the life of the younger generation (1). This is possible only in conditions of regularity and continuity of education, however, the processes taking place in modern education show that the mechanisms of regularity and continuity in it are very weakly expressed.

In the Address of the President of the Republic of Kazakhstan N. Nazarbayev to the people of Kazakhstan dated 18.02.2005. "Kazakhstan on the way of accelerated economic, social and political modernization" focuses on the education of vocational training (18). It states that a country that does not know how to develop knowledge is doomed to failure in the 21<sup>st</sup> century. Therefore, it is necessary to create a personnel reserve for high-tech and knowledge-intensive industries of the future. Without a modern education system and modern managers who think wide, large, in a new way, we will not be able to create an innovative economy. It is necessary to take adequate measures aimed at the development of technical and vocational education at all levels. The task of Kazakhstan universities is to provide education at the level of world standards, and the diplomas of leading universities should be recognized in the world (29).

According to the Law of the Republic of Kazakhstan "On Education" of July 27, 2007, No. 319-III, education system includes the following levels of education:

- Pre-school education and training;
- Primary education;

- Basic secondary education;
- Secondary education (general secondary education, technical and vocational education);
- Post-secondary education;
- Higher education;
- A postgraduate education.

The need to introduce the principles of continuity at all stages of continuing education is one of the most important areas of modern educational policy. Priority and significance of these aspects are defined in paragraph 33 of the State Obligatory Standard of Education of the Republic of Kazakhstan, approved by the Decree of the Government of the Republic of Kazakhstan of August 23, 2012 No. 1080: "Continuity of the content of basic secondary education and technical and vocational education is realized through in-depth study of individual and related subjects, including subjects of technological direction, within the framework of pre-profile training. The continuity of the content of general secondary education and higher education is realized through in-depth study of individual and related subjects in the framework of profile education" (6).

Continuity of school and university education, the problem is far from new to pedagogy and it would seem to be well researched on many aspects. However, in practice, many school leavers who find themselves on student bench experience difficulties in their educational activities - they find it difficult to adapt to new forms of the organization of the educational process and methods of teaching, the requirements for learning outcomes. In other words, there is an inconsistency in the content, methods, and means of education in schools and universities. The nature and methods of the schoolchildren's and student's educational activities differ substantially (9).

Today we need a teacher with an innovative type of thinking, with a developed worldview culture and a multicultural consciousness. In the modern socio-economic situation, the role of the education system is growing. The education of society is the main, the main one for solving social, economic, ethnic problems (20). Therefore, improving teacher training is always relevant, as the socio-economic tasks of society are changing; new requirements for the professional training of teachers arise. The issues of teacher training are reflected in government regulations. The state program of education in the Republic of Kazakhstan for 2005-2010, dated October 11, 2004, developed on the basis of the Message of the President of the Republic of Kazakhstan dated March 19, 2004 "To competitive Kazakhstan, competitive economy, and competitive nation", and one of the tasks is improving the quality of training specialists. To solve this problem, it is necessary to create an effective education management system that will ensure the formation of a competitive specialist capable of independently and creatively solving professional tasks, to realize the personal and social importance of professional activity, to be responsible for its results (24).

Modern transformations in society have changed the requirements for education and require it to be mobile and meet the needs of development and the economy.

In modern society, a system of social institutions has been created for normal life, development, and progressiveness. The school is one of them, differing in that it is in its purpose that should ensure the future of society, its development, progress, for this it must go ahead of society, focusing on the future.

Its life and activities must be built according to the laws of the norms, which today are represented in potential, and tomorrow will acquire real strength. To this end, it is necessary to purposefully educate the younger generation as deeply educated, cultured, moral, and creatively active and socially mature individuals.

The study of the basic ideas of the professional training of the future teacher based on the features of the object of his activity - a holistic pedagogical process is proposed in the "Concept of Pedagogical Education" (20). The concept stipulates the essence of vocational education reform, which should be considered from the point of view of forming a future specialist (personal aspect), introduction of changes in the content and structure of acquired knowledge (content aspect), training in ways of self-regulation of behavior and use of acquired knowledge for transformation into practical actions in solving standard creative professional tasks (technological aspect). Therefore, for effective pedagogical activity in modern conditions, the system of training pedagogical personnel must change the goals of pedagogical education, its content, and technology in accordance with the social order of modern society for teachers. The existing structure of pedagogical education as a whole reflects the idea of what it is necessary to teach the future teacher to give serious general theoretical training, to form the foundation of knowledge (20).

Based on all of the above, we can say that in the Republic of Kazakhstan there have been certain trends aimed at improving the quality of vocational education in higher education institutions, and the main tasks of training professional and competent specialists have been determined. It should be noted that the problem of training pedagogical personnel really exists, but it is being solved. The task of higher education institutions is their practical implementation.

The work of the school includes training and education of the individual, as well as working with parents. This direction is called "interaction", "cooperation", and "joint work".

The interaction between school and family is one of the necessary conditions in the whole pedagogical process (8).

The problems of establishing constructive relationships with the parental community, providing them with pedagogical, psychological support, the family as a social institution, including parents in the whole pedagogical process, are studied in the works of the scientists of Kazakhstan G.A. Umanov, N.D. Hops, S.A. Uzakbayeva, G.K. Bayeldinova, and R.M. Koyanbaeva.

The family in the new socio-economic conditions continues to be the main institution of socialization, but it is difficult to fulfill this function (5). This is due primarily to abrupt changes in the social background in which the family lives and its slow adaptation to new conditions.

At the present time, many sciences are studying the problems of the family: economics, law, sociology, demography, psychology, pedagogy, etc. Each of these sciences in accordance with its subject identifies certain aspects of its functioning and development. Pedagogy considers the educational function of the family of modern society in terms of goals and means, the rights and duties of parents, the interaction of parents in the process of raising children with the school and other children's institutions, reveals the reserves and costs of family educational impact (24).

It should be noted that today the interaction between the school and the family is one of the topical issues since the future teacher needs to know the problems of family upbringing, be able to cooperate with parents in the upbringing of the future generation.

Family and school are the main participants in the upbringing of the younger generation. The influence of the family on children is due to family ties. The role of the school is determined by its official status.

Family and school are two public institutions that are at the source of our future (9). The process of interaction between the family and the school should be aimed at the active inclusion of parents in the educational process, in extra-curricular activities, cooperation with children and teachers.

The family in pedagogy is regarded as one of the spheres of the child's living space. Studies confirm that in the life of a child the family has the strongest influence on its development. Philosophy, sociology, psychology, and pedagogy study the family as a unique phenomenon. It is associated with the concept of "sociocultural environment" - a socio-ethical characteristic, a typology, a characteristic of the everyday, objective world of the family, customs, and traditions (2).

The socio-cultural family reproduces from the generation to the generation universal values and on this the viability of the society depends.

Factors that affect the impact of the family on the child are different: the status of the family, the level of the social culture of the society, the typology, its microclimate,

According to Mudric (16), the factors of the life of the family are divided into the following types:

- Socio-cultural;
- Socio-economic;
- Technic-hygienic;
- Demographic.

With the advent of children in the family, parents must be psychologically ready to change their responsibilities and change in the socio-cultural environment. Modern parents need psychological and pedagogical knowledge. They are not only necessary for the successful education of children within the family, but also contribute to uniting the efforts of parents and educators (13).

Modern pedagogy emphasizes the priority of the family in the upbringing of the child, manifested in the diversity of forms of interaction, in the range of values that the child learns.

However, not all families fully realize the whole complex of interaction with the child. The reasons are different: one family does not want to raise a child, another does not know how to do it, and others do not understand why it is necessary.

Therefore, today qualified specialists are needed who can come to the aid of the family. The initiator of the establishment of cooperation should be teachers who are professionally trained for educational work and understand that its success depends on coherence, continuity in the upbringing of the younger generation.

The success of cooperation largely depends on the mutual attitudes of the family and the school. The best way is if both parties realize the need for a targeted impact on the child and trust each other. World statistics convince that modern family education is not as effective as it should be. Therefore, innovative programs are currently being developed to improve the pedagogical culture of the family (7).

Innovation is a purposeful change that brings to the educational space stable elements (innovations) that improve the characteristics of individual parts of the system, its components, and the whole.

There is a certain classification of innovations:

- 1) By type of activity;
- 2) By the nature of the changes introduced;
- 3) By the scale of the changes introduced;
- 4) By the scale of use;
- 5) By the source of occurrence;
- 6) By the subject of renewal.

The innovation process is "a complex activity for the creation, mastering, use, and dissemination of innovations" (21).

Thus, the innovation is regarded as a development process innovation (means, method, technique, technology, programs), their introduction into the education process and creative interpretation.

The urgency of considering this problem, first of all, is connected with the violation of successive links in the system of continuous education. Computer science, computer technology, computer programs, information and communication technologies have been developing so rapidly in recent years that the school and university content of educational disciplines in computer science will always lag behind them.

A specialist for successful professional and life activity in modern conditions needs to have a high level of information and communication competence, namely: to have deep fundamental theoretical knowledge, technological and practical experience with information and communication technologies (11). In order to effectively create and improve the level of information and communication competence of schoolchildren and students, it is necessary to pursue continuity in teaching computer science in schools and universities. In the context of the concept of lifelong education, great importance should be given to the continuity of education, and not only within one level but also at the junctions between different levels of education. High school is very often forced to solve the problem of the insufficient level of knowledge due to the lack of a single standard of general secondary education in informatics and differences in the material and technical equipment of the educational process in schools. This hampers the progressive development of the personality from one level of education to the next. Therefore, continuity must necessarily be present at all stages of training, in order to ensure the interrelationship between the various levels of continuing education (11).

At the present stage, the education system is one of the main factors ensuring sustainable growth and development of the economy and society of any country. Having completed the preparatory stage, Kazakhstan is ready to be quickly ready to enter the process of the political, economic and educational world community.

Integration of Kazakhstan into the world educational space, the change of the education paradigm, the formation of its new national model do not leave out the quality of training of pedagogical personnel.

Modern society needs a teacher capable of perceiving new ideas, adopting unusual solutions, actively participating in innovative processes, ready to solve stably and competently existing and emerging professional tasks (23).

In the implementation of innovative pedagogical ideas, constraints are always observed in the school's practice, including inertia of school principals, ill-considered implementation plan, lack of propaedeutic work with school personnel, the insufficient theoretical base of subjects of education (5).

One of the features of the reform of the school system in recent years is the introduction of the Level programs for the development of pedagogical workers developed by the Center for Pedagogical Excellence in conjunction with the Faculty of Education of Cambridge University.

Along with this program, designed to train teachers at the first, second and third levels, starting in 2012, a program was developed to improve the skills of heads of general education organizations of the Republic of Kazakhstan, aimed at transforming the school with the ideas of the school's collaborative development (28). And since 2014 the Program of additional professional education of students of graduate courses of higher educational institutions, which train teachers has been developed (27).

For the conduct of these courses, the center of pedagogical skill has trained trainers from among experienced teachers who have been certified by the International Cambridge Examination Board. The multidimensionality of the structure of the system of education dictated the need for retraining also of methodologists in the program of advanced training of specialists in the provinces, cities of Almaty, Astana, departments, district (city)

departments of education and methodical offices. That is, large-scale work is being done to reform the school system, where the leaders of general education organizations are given a key role.

A distinctive feature of the courses of managers is related to the duration of their retraining. So, in the centers of pedagogical skill, the course of school principals is designed for 9 months, consisting of two 4-week audit stages. After the first auditor phase, the leaders go through a 4-week practice and study problems in their schools. Then they come to the second 4-week audit stage and, along with studying advanced international experience, make a detailed program of school development on the basis of the school's priorities identified by them.

After the second auditor phase, the leaders pass a 6-month pedagogical practice in their schools, under the guidance of their trainers. Trainers give them continuous support in online mode; the network community leaders share their achievements and best practices. After the first three months of the second practice, trainers visit their students' schools to formally evaluate their research practice (5).

Formative assessment is a key element of the entire 9-month course of study since real practice is a criterion of the truth of professional achievements and leadership qualities of heads of general education organizations. The advantage of formative evaluation is that it allows in real conditions of the school to check the professional skills of managers and the skills of projecting theoretical knowledge and innovative ideas into the plane of practical activity (12).

In schools, for the interchange of experience, there is a tendency to increase the number of creations of in-school communities, the number of which far exceeds the number of inter-school professional communities. But the fact of increasing their number shows the interest of teachers in professional self-development and self-improvement (5).

Since the idea of professional communities is relatively new in Kazakh schools, it is necessary to strengthen the cognitive aspect of this topic during classroom sessions with the directors so that they can not only create their structural model but also be able to manage their functioning. The focus of school principals should be the continuous professional development of teachers.

It will be necessary to think and suggest to the director's specific mechanisms that can be used to monitor teachers' abilities to introduce theoretical knowledge acquired in coaching into the practice of teaching. It is necessary to involve all members of the development team and teachers in the collaborative and reflective process of professional development (17).

Formative evaluation during post-course support shows that the activities of managers are not entirely oriented towards the needs of the real practice. Therefore, it becomes relevant to monitor the orientation of the school development plan for specific requests of subjects of education.

Teachers in school are important feedback. The Directorate Corps should use feedback as one of the mechanisms for motivating and encouraging teachers to succeed in their professional activities. Strengthen the work of networked communities, which will affect the favorable relations between teachers, teachers with students, teachers with parents.

Strengthen the trust of school leaders for their colleagues, members of the development team. Members of the development team must create their own communities (14). Leadership authorities should be delegated by teachers within the framework of an effective system of organizational management and a positive working atmosphere.

School and university, working in a single key, can become the main lever for reforming and introducing pedagogical innovations in the development of the system of national education. Only close cooperation of the "school-university" system will help raise the education system to a better level, as

their functions are interrelated and interdependent (15). Therefore, universities are currently coordinating their activities with centers of pedagogical skill, emphasizing a special focus on the realization of a person-oriented and constructive approach in the training of future teachers.

The review and analysis of scientific sources on the research topic led to the fact that many scientists in their studies covered various problems of teaching computer science: the methodology and rationale of the scientific conceptual apparatus of informatics; the content and methodological foundations of

teaching computer science in the school and university; development and use of electronic educational tools, social aspects of computer science, the use of automated learning systems in the teaching and educational process of the university.

In modern studies of the problem of continuity in teaching and upbringing, several directions have emerged (Table 1).

Table 1. Directions in research on the continuity problem

№	The direction in research of the problem of continuity in teaching and upbringing	Researchers
1.	Studying the role of continuity in the holistic pedagogical process	A.Ya. Blaus, Sh.I. Ganelin, S.M. Godnik, B.S. Gershunsky, A.A. Kyveralg, A.A. Lublin and others.
2.	The study of continuity between preschool and educational institutions	O.A. Anishchenko, I. Shabalin and others.
3.	The study of the subject continuity between the various links of general education, including general education and vocational school	A.V. Batarshev, A.F. Basharin, Yu.A. Kustov, A.A. Kyveralg, and others.
4.	The study of continuity between secondary school and university	C.M. Godnik, Yu.A. Kustov, D.Sh. Sitdikova, A.P. Smantser, Mubarakov A.M., and others.

The results of the studies presented in Table 1 are general conceptual positions for the organization of continuity at various stages of continuing education.

The works listed in Table 2 do not consider the features of teaching computer science and ensuring continuity in pedagogical universities in the structural-content and educational-methodological aspects.

Table 2. Research results

№	Resources	Investigated
1.	A.P. Dekina, (2004). Methodical approaches to ensuring continuity in the informational training of students of pedagogical universities: On the example of the general educational course in computer science. Moscow.	The existing successive links between the content of education in informatics in the general education school and at various faculties of a pedagogical university are revealed. The methodological requirements for ensuring the continuity of teaching computer science in a pedagogical university have been formulated and scientifically substantiated. The interrelation of the factors that have a significant influence on the process of informational preparation of the future teacher has been revealed. Methodical approaches to ensuring continuity in informational preparation of students of pedagogical universities, which consider significant differences in the degree of pre-university teaching in computer science, have been developed and scientifically substantiated
2.	I.A. Zhuravleva, (2001). Scientific and methodological support of continuity of school and university computer science courses oriented to humanitarian applications. Stavropol.	The issues of establishment of successive links in the teaching of computer science at the school-university stage for computer science courses aimed at humanitarian applications
3.	S.N. Ryagin, (2010). Continuity of secondary general and higher vocational education in the context of their systemic changes. Moscow.	The results of studying the methodological foundations of the continuity of secondary general and higher professional education in the context of their systemic changes are presented. The results of a theoretical analysis substantiating the need and revealing the essence of a comprehensive study of the continuity of secondary general and higher professional education as a process was ensuring the development of high school students and students.
4.	G.A. Sumina, (2001). Continuity of computer training in the open model of education: Based on the synergistic approach. Saratov.	In the open model of education on the basis of the synergetic approach. Synergetic forms a special approach to the design of innovative activities in the field of education. A fundamentally different view of the education system and the process of education itself make it possible to predict significant results from scientific and practical activities in education built on the basis of synergetic.

To implement the principle of continuity in the teaching of informatics in schools and universities, it is necessary to consider the individual characteristics of students, their interests, the level of training, the pace of learning more fully. It is most convenient to organize the promotion of trainees to the goals of training on the lines of varying degrees of complexity of the

content of education by means of level differentiation of training while ensuring constant diagnosis and correction of the learning process. A differentiated approach is one of the ways to optimize the learning process. When using such a technology at different levels, the tasks performed by the trainee in practical and laboratory work are differentiated; the requirements and

criteria for evaluating the results of such works are differentiated.

## 2 Materials and Methods

### 2.1 The concept of continuity in education

Scientists, philosophers, statesmen of different historical periods, considering the problems of continuity in social development, organically switched to talking about the problems of the upbringing of the younger generation.

Socrates (469-399 BC) considered continuity as the basis for building an integrated system of education. He believed that the education system should fall into two interrelated stages: the first step - the defining and the second - the basic, which is designed to study life issues (22).

I.G. Pestalozzi (1746-1827) believed that the main task of the art of teaching is to help the man's natural desire for development. Therefore, Pestalozzi deduced continuity from the inner nature of man and believed that continuity is the continuous and gradual movement in knowledge from elements to the whole on the basis of the natural elements of this process, number, form, and word. He made the first attempt to build the learning process in accordance with the laws of the mental development of children, suggested moving in the process of learning and education from the elements to the whole, while observing continuity and consistency (22).

Continuity in education is reflected in numerous works of scientists as G.Gegel, E.A. Baller, B.C. Baturin, B.G. Ananiev, A.G. Asmolov, L.S. Vygotsky, V.V. Davydov, B.C. Lednev, A.B. Batarshov, Sh.I. Ganelin, S.M. Godnik, Yu.A. Kustov, A.A. Kyveryal, L.Yu. Orlov, K.K. Babansky, Sh.I. Ganelin, Yu.A. Kustov, A.G. Moroz, D.B. El'konin, Filatova L.O., and others.

Among Western scholars, the most significant in matters of continuity were the works of P. Woods, A. Green, A. Pollard, D. Hargreaves, R. Sharpe, and others (3).

In his definition of continuity, E.A. Baller focuses attention on reflecting the essence of the process of the formation of this "inherited". He writes that "continuity is a link between different stages or levels of development, the essence of which is the preservation of certain aspects of its organization when the whole is changed as a system. He emphasizes that continuity, connecting the present with the past and the future, determines the stability of the whole" (4).

The concept of "continuity" is ambiguously treated in pedagogical scientific literature. In accordance with this fact, Ganelin Sh. I. in his article "Pedagogical bases of continuity of teaching and educational work in the IV-V classes" defines continuity as follows. "Continuity is such a reliance on the past, such use and further development of the students' knowledge, skills and abilities, in which students create a variety of connections, reveal the main ideas of the course, interact with old and new knowledge, resulting in the formation of a system of strong and deep knowledge" (10).

The term continuity denotes the connection between phenomena and the development process in nature, society, and cognition, when a new, replace the old, preserves some of its elements.

And society means the transfer and assimilation of social and cultural values from generation to generation, from formation to formation. In the philosophical encyclopedic dictionary, the following definition of continuity is given: it is an objective necessary link between the new and the old in the development process, the preservation and further development of that progressive rational that was achieved at the previous stages. This definition is capacious and concise. However, it reflects the most common features of continuity.

In philosophy, there are two main types of continuity - "horizontal" and "vertical".

"Horizontal" continuity involves the process of quantitative changes occurring within the same level. "Vertical" continuity is a process of qualitative changes at different levels. From the perspective of the pedagogical approach, continuity is defined as a general pedagogical principle that acts as a condition and mechanism for implementing other principles (scientific, accessible, consistent, and systematic) of the educational process.

Traditionally in pedagogy continuity is considered on horizontal and vertical levels (19). The result of horizontal continuity is a sequence in the study of the material, the formation of a holistic knowledge, the unity of educational technologies, and the similarity of teaching methods. The result of vertical continuity is the preparation for learning at the next level of education.

Levels of education (preschool, school, primary vocational, secondary vocational, higher, and postgraduate) exist virtually independently of each other. This puts trainees in an inadequate position when training at each level of education is forced to begin from the beginning, at a certain level (23).

In much pedagogical literature, greater attention is paid to continuity in social development, building a system of public education, and in the West, continuity in the development of the child.

## 3 Results

### 3.1 The essence of the problem of continuity in education

The difference in positions on the problem of continuity in the pedagogical literature causes different points of view on the essence of the phenomenon being studied.

Continuity is regarded as the law of the functioning of all specially organized, controlled processes, for without progressive continuity progressive translational is impossible.

The essence of continuity in learning lies in the continuous transition of quantitative changes (information) to qualitative

(mental development), ensuring a regular and smooth change in the areas of development of schoolchildren and students, which is expressed in the successive complication of learning tasks and the purposeful change in the measure of each level of study. Simultaneously, the replacement of these zones is also a change in the stages of the development of the personality and serves as a prerequisite for its more active inclusion in the pedagogical process of the next stage (25, 26).

Continuity as a complex system consists of two substructures (Figure 1):

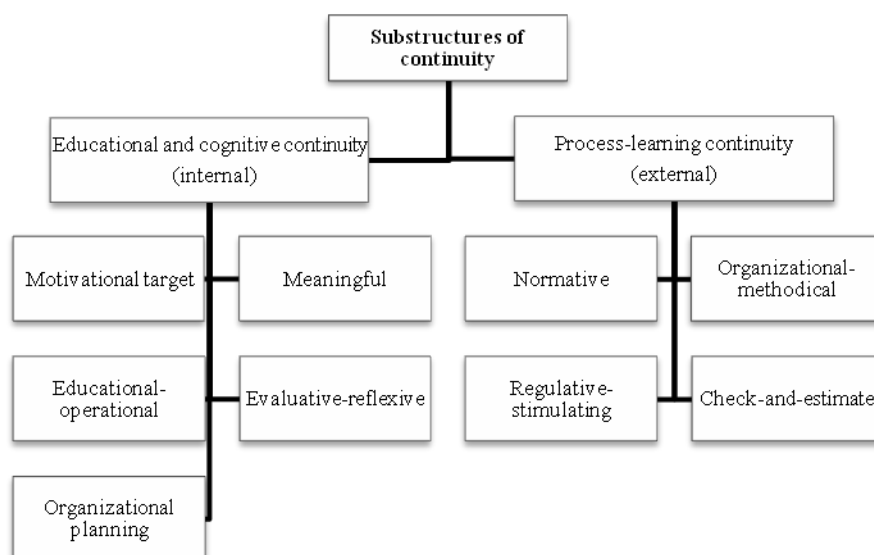


Figure 1. Substructures of continuity

Each of these components includes a number of elements.

In this case, the content side of the components of educational and cognitive continuity has interrelated components (Table 3):

Table 3. Components of educational-cognitive continuity (internal)

<i>Motivational target</i>	In the interrelation of motivation and goal-setting of the development of interest and professional orientation, studying at all levels of continuing education.
<i>Meaningful</i>	In the consistent and gradual mastery of knowledge, skill, and ability to link old and new information.
<i>Educational-operational</i>	Providing the development of general and special skills and abilities, the development of mental operations and in the selection of the necessary information.
<i>Evaluative-reflexive</i>	In the formation of schoolchildren' and students' skills in assessment and self-assessment, control and self-control, analysis and introspection, a reflection of their educational activities, self-knowledge of themselves as individuals.
<i>Organizational planning</i>	In the development of students' abilities and skills in organizing and planning educational activities, in creating favorable conditions for it at all levels of the system of continuous education.

The structural components of the educational-cognitive continuity are in dynamic interaction and close interconnection. There is a fairly close connection between the motivationally-targeted component with the meaningful and the educational-operational component, as well as between the meaningful and the educational-operational component. Significantly lower correlation links between other components of educational and

cognitive continuity. The weakening, and often the disruption of the links between the components of continuity that is taking place in the "kindergarten-school-university" system, is one of the reasons for the difficulties in the teaching of students in the university.

In the structure of educational-cognitive continuity at each stage of education, one of its components is system-forming (Figure 2):

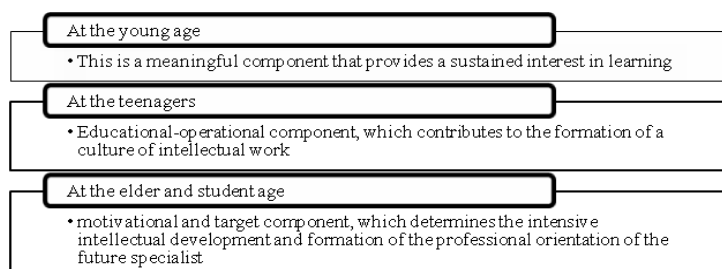


Figure 2. Hierarchy of the components of educational and cognitive continuity

Continuity in didactics is characterized by certain features (integrity, progressiveness, perspective) and performs a number of basic functions (socializing, directing, integral, heuristic, stimulating and control). It is implemented on three levels (high, medium and low).

Continuity satisfies individual requests and interests, promotes the development of creative abilities of schoolchildren and students, and provides a choice of own pace of learning, the level of mastering knowledge, mastering skills and abilities. This manifests the personal aspect of continuity in learning.

#### 4 Discussion

Diagnosis of educational and cognitive continuity gives an opportunity for the teacher to receive full information about the readiness of schoolchildren to study at the university (27) and, on the basis of this, to build individual work with them, and to the schoolchildren to relate the experience of the educational and cognitive orientation, the essence of which is to know the stages of activity, awareness of the prerequisites, processes and the results of each stage, with the requirements set in the university.

The substructure of the system of process-learning continuity, it should be noted that it has a number of components that allow implementing continuity in training:

- The teacher's knowledge of the psychological and pedagogical characteristics of students;
- The establishment of a relationship in the content of education at all levels of the continuous learning process, the coherence of the curricula and programs of the primary and secondary schools. He directs high school students to the need to raise their level of preparation to the required in the 10-11 grades;
- Ensuring interrelation in the forms of the organization of the pedagogical process, the types and methods of instruction at all levels of the continuous education system, considering account the specific features of student learning activities at various levels of the continuing education system;
- Regulation of the learning process at various levels, with the harmonization of all components of educational and cognitive activities, which ensures consistency in the ways and methods of stimulating learning activities, determines the appropriate level of communication;
- Teaching schoolchildren to the methods and methods of learning cognition, and in the senior classes of the school, involving students in the methods of university education.

All the components of the educational-cognitive and process-learning continuity are interrelated.

Continuity is needed to implement the logic of the learning and upbringing processes in their interrelations. Long before the emergence of ideas of continuity in pedagogy, the experience of previous generations was transmitted by the early inclusion of young people in general labor activity, with the observance of the unity of requirements and a certain sequence of mastering the techniques and skills that were to be mastered.

Pedagogical continuity is necessary for connection with the fact that the process of educational development and formation of young people is dismembered and discreteness acts as a basis for the functioning of continuity, while continuity and integrity are the results of its implementation.

In everyday practice, when continuity in the dynamics of the pedagogical process is observed, manifestations of continuity are not replaced and the question of its implementation is not raised. The need for continuity arises in circumstances where events occur that disrupt the habitual consistency and continuity of the learning process.

In general, the continuity plan is designed to resolve the contradictions between the need to ensure the continuity and integrity of the pedagogical process and its results and not favorable circumstances. In these or those specific processes, these contradictions take on various forms.

The regularity of resolving the contradiction between the discrete character of instruction and the need to ensure the integrity of the pedagogical process and its results is the basis for the content of the concept and suitability of continuity in pedagogy (28).

Based on the consideration of continuity as an effective system-forming factor that contributes to the creation of pedagogical conditions for the implementation of an integrative nature, the integrity of the process and learning outcomes, it is possible to

propose the following: continuity is a category of didactics that reflects the patterns of restructuring the content structure of educational material and optimization of teaching methods aimed at overcoming contradictions linear-discrete nature of the learning process, and characterizes the changes in the methods of realization of these laws depending on the purpose of training, development and education of students (13).

The continuity of the school and university stages of education includes the content of education, the forms, methods and means of education, the socio-psychological aspects of the moral development of the personality, the psychological and pedagogical conditions for the formation of an active creative personality, the objectivity in assessing the quality of knowledge of graduates of secondary schools, and the compatibility of school and university educational literature.

Under the continuity of school and university education is understood the consistent development of the university system of the educational process in close connection with the system of activity of the general education school. The realization of the principle of continuity on the basis of a modern personality-oriented approach in teaching involves a revision of the content of education, teaching methods and the system of interaction between the school and the university.

Many school leavers do not adapt well to the system of education in the university (30), which is associated with both a low level of their general education and insufficient skills of independent work and the activity of their cognitive activity.

If the main form of schooling is a lesson that can include the study of new material, its consolidation, and control, the basic system of study at the university is a lecture-seminar that presupposes a clear division: the study of new material in lecture classes and its consolidation on practical exercises. Such a change in load distribution causes great difficulty for students, most of who are not accustomed to working independently. Therefore, one of the tasks of the university teacher is to teach students independent work with lecture notes in preparation for practical classes (13).

For the realization of continuity, it is necessary not only the consistency of programs, textbooks of the school and university courses of informatics but also the main, specific feature of informatics - abstractness.

The first direction of succession is the elimination of gaps in school knowledge, abilities, and skills, the development of meaningful lines of the school course.

To establish the second type of communication, it is necessary to systematically compare certain concepts, definitions and theories of university informatics, the analysis of school definitions, and formulations.

The second direction of the continuity of learning computer science is the actualization of school and university knowledge.

Continuity in the methods and forms of the organization of the educational process presupposes the preservation of the best, further development in the subsequent stage. Therefore, active forms and methods should be used not only in secondary school but also in higher education.

The third direction of succession in teaching at the rate of informatics consists in the use of active forms and methods of organizing the educational process at the junior courses of the teacher training university.

These three areas of the continuity of the teaching of computer science require the consideration of the "school-teacher training" system as a single whole. The secondary school directly carries out the process of education and upbringing of the younger generation; the university prepares the cadres, equips them with the necessary abilities, knowledge, skills.

Continuity in the teaching of computer science implies ensuring an inseparable connection between the knowledge received by first-year students at school and at a university. As a result, knowledge, abilities, skills obtained earlier should expand and deepen, and individual ideas and concepts should be further developed. Continuity implies observance of scientific character, consistency, regularity, interconnectedness, and coherence, not only in content but also in forms and methods of instruction, which should ensure, as soon as possible, a faster and more positive learning of information and communication technologies in the university.

In conclusion, we note that the study of the system of continuous education as a special pedagogical object makes it possible to identify its most general characteristics: this system is discrete, from the point of view of pedagogical expediency, a single and integral one. Since subsystems of continuous education interact, at their joints, didactic contradictions inevitably arise. The succession of subsystems of continuous education is socially determined, and their actual continuity depends on the optimality of the conditions for resolving contradictions at the junctions of different subsystems. The continuity between the various links is the main condition for the creation of a holistic system of continuous education, encompassing all types of educational institutions, process.

## 5 Conclusion

In conclusion of the article, we want to emphasize that for the practical solution of questions of continuity of state compulsory standards of school and university education, it is necessary to conduct a scientific examination of secondary school curricula, based on the structure and content of educational and professional higher education programs.

The continuity of school and university education concerns not only the content of education but also the forms, methods, and means of education, including the socio-psychological conditions of moral development and the psychological and pedagogical conditions for the formation of the creative personality.

The application of the general education courses in informatics at the University for Tier Differentiation of education based on the diagnosis of students' readiness for training makes it possible to improve the quality of education and thereby significantly improve the level of knowledge, abilities and skills students need to live in the information society.

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## Primary Paper Section: A

## Secondary Paper Section: AM

## TOURISM FACILITIES ACCESSIBILITY IN CONTEXT OF SOCIAL TOURISM SUPPORT: EVIDENCE FROM THE CZECH REPUBLIC

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**Abstract:** Accessible tourism is one of the important discussed topics. It is a part of social tourism and it means equality for all tourism visitors. A town of Carlsbad as a famous spa destination should also be oriented on accessible tourism. That means to offer services also for disabled people or people with special needs. The article focuses on accessible tourism services in the town of Carlsbad in the context of access to cultural and natural heritage. It also deals with accommodation and catering facilities. The primary survey was conducted in 2017 and 2018. We used the methods of scientific work; and, i.e., the analysis method, a generalization method, mathematical, and statistical methods. Based on research results, we have to state that 15% accessible accommodation facilities in the town of Carlsbad with at least one available room. Almost one-quarter of catering facilities (23%) is accessible.

**Keywords:** Accessibility. Disability. Social Tourism. Travel.

### 1 Introduction

Tourism is not only an economic phenomenon but also includes social, cultural, political, and environmental dimensions. Therefore, in addition to the visible economic effects of tourism, such as income and foreign exchange input, non-economic and invisible social and cultural aspects should be given importance (Pizam & Milman, 1986, In Polat, 2018).

Globally, it is estimated that there are over 1 billion persons with disabilities, as well as more than 2 billion people, such as spouses, children, and caregivers of persons with disabilities, representing almost a third of the world's population, are directly affected by disability. While this signifies a huge potential market for travel and tourism, it remains vastly under-served due to inaccessible travel and tourism facilities and services, as well as discriminatory policies and practices (UN).

Social tourism is a term used to describe a wide variety of holiday types, destinations, and target groups: social tourism initiatives can be commercial and non-commercial, governmental and private. They range from small charities organizing holidays for children from low-income backgrounds, over government plans improving accessibility in hotels, to private tour operators offering ecological holidays. What all of these initiatives have in common, is that they bring a moral dimension to tourism, and that their primary aim is to include people in tourism who would otherwise be excluded from it (Minnaert et al., 2009).

The evolutionary concept of social tourism describes how socially excluded groups will benefit from the opportunity to experience holidays through financial support (McCabe, 2009).

The International Social Tourism Organization defines social tourism as the connections and phenomena related to the participation of both the host population of the countries of destination and the holidaymakers, of disadvantaged layers of society or of those unable to participate in tourism. This participation is made possible or facilitated by a combination of policies, clear social measures, and the commitment of social players (OITS, 2015).

Social tourism is a high ideal in the face of discrimination and the challenge of integration (OITS, 2015).

The core value behind the social tourism concept is the idea that that 'having a break' from daily life (and problems) contributes to the social, mental, and physical wellbeing of all individuals and subsequently contributes to 'good' health (Diekmann et al., 2018).

In the context of people with physical disability traveling is a part of social tourism, a phenomenon called accessible tourism.

Accessible tourism enables all people to participate in and enjoy tourism experiences. More people have access needs, whether or not related to a physical condition. For example, older and less mobile people have access needs, which can become a considerable obstacle when traveling or touring. Thus, accessible tourism is the ongoing endeavor to ensure tourist destinations, products, and services are accessible to all people, regardless of their physical limitations, disabilities, or age. It includes publicly and privately owned tourist locations, facilities, and services (UN).

In the context of accessibility for people with physical disabilities, it is preferable to speak about accessible tourism for all. It is a form of tourism that involves a collaborative process among stakeholders that enables people with access requirements, including mobility, vision, hearing and cognitive dimensions of access, to function independently and with equity and dignity through the delivery of universally designed tourism products, services and environments (Linderová, 2015, In Linderová & Janeček, 2017).

Accessible tourism for all is not about creating separate services for disabled people. It aims at full integration, or rather the inclusion of people with special needs, in particular, disabled and aged people, in the tourism sector. Viewed from the perspective of accessible tourism for all, the tourism policy in the European Union can be said to unite accessibility targets that are part of the otherwise commerce-related aspects of the tourism policy and a disability policy that, based on the UN's Standard Rules, support goals and specific measures at various levels that are designed to enhance accessibility in connection with tourism policy (Leidner, 2008).

For people with disabilities, traveling can be a challenge, as finding the information on accessible services, checking luggage on a plane, booking a room to fulfill access needs, often prove to be difficult, costly and time-consuming (UN).

Challenges for persons with disabilities include (UN):

- untrained professional staff capable of informing and advising about accessibility issues,
- inaccessible booking services and related websites,
- lack of accessible airports and transfer facilities and services,
- unavailability of adapted and accessible hotel rooms, restaurants, shops, toilets, and public places,
- inaccessible streets and transport services,
- unavailable information on accessible facilities, services, equipment rentals, and tourist attractions.

Accessibility is a significant part of social tourism support. Darcy (1998, In Darcy & Buhalis, 2011) divides the term access into three dimensions: physical access, sensory access, and communication access. Darcy (1998) views these three dimensions as an inclusive marketing process, which allows tourism players to realize the potential of accessibility for the marketing of tourism products and services to the widest possible client base (Linderová & Janeček, 2019).

Usability and universal design are also related to the term access and accessibility. The design for all is defined as the design for human diversity, social inclusion, and equality (EIDD, 2004, In Mosca et al., 2019). The purpose is to provide the same experience of the space, even with various solutions, to different people, regardless of their abilities, disabilities, age, sex, and culture. The application of design for all concerns the involvement of a plurality of stakeholders (both experts and final users) from the beginning of the design process (Buti, 2018; In Mosca et al., 2019).

## 2 Materials and Methods

The aim of this paper is to map the possibilities for people with physical disabilities to participate in tourism in the town of Carlsbad.

Partial aims are also defined:

- to map culture and historic heritage sites and their accessibility for disabled visitors,
- to map barrier-free tourist routes and natural heritage,
- to map accessible accommodation facilities which follow legal regulations,
- to map restaurant & catering facilities accessible for wheelchair users.

The paper is based on primary and secondary data sources. Among the secondary sources we used mainly professional books and journal literature, international documents regarding social tourism and the relevant legislative regulations of the Czech Republic. Furthermore, we used specialized web portals providing information to people with disabilities, databases of tourist information centrum of Carlsbad, Czech Statistical Office, various hotel portals, websites of accommodation and catering facilities, information materials of the spa, etc.

Primary data were obtained from field research within the framework of which we verified barrier-free access found out with the help of secondary research. A large number of tourism establishments and attractions were personally visited. Information about some of the establishments was verified by telephone.

Collecting of primary data took place in 2017 through 2018. The methods of analysis (also Correspondence analysis - CA) and generalization were used. Using graphic tools of this CA, it is possible to describe an association of nominal or ordinal variables and to obtain a graphic representation of a relationship in multidimensional space – for the readers; it is easier to understand. The analysis provides further evidence that dependencies exist between variables.

CA is a multivariate statistical technique. It is conceptually similar to principal component analysis but applies to categorical rather than continuous data. In a similar manner to principal component analysis, it provides a means of displaying or summarizing a set of data in a two-dimensional graphical form (Zámková & Prokop, 2014). All data should be non-negative and on the same scale for CA to be applicable, and the method treats rows and columns equivalently. It is traditionally applied to contingency tables - CA decomposes the chi-squared statistic associated with this table into orthogonal factors. The distance among single points is defined as a chi-squared distance. The distance between  $i$ -th and  $i'$ -th row is given by the formula

$$D(i, i') = \sqrt{\sum_{j=1}^c \frac{(r_{ij} - r_{i'j})^2}{c_j}} \quad (1)$$

where  $r_{ij}$  are the elements of row profiles matrix  $R$  and weights  $c_j$  are corresponding to the elements of column loadings vector  $c_j'$ , which is equal to mean column profile (centroid) of column profiles in multidimensional space. The distance between columns  $j$  and  $j'$  is defined similarly, weights are corresponding to the elements of the row loadings vector  $r$  and sum over all rows. In correspondence analysis, we observe the relation among single categories of two categorical variables. Result of this analysis is the correspondence map introducing the axes of the reduced coordinates system, where single categories of both variables are displayed in graphic form. The aim of this analysis is to reduce the multidimensional space of row and column profiles and to save maximally original data information. Each row and column of correspondence table can be displayed in  $c$ -

dimensional ( $r$ -dimensional respectively) space with coordinates equal to values of corresponding profiles. The row and column coordinates on each axis are scaled to have inertias equal to the principal inertia along that axis: these are the principal row and column coordinates (Hebák et al., 2007).

Table 1: Criteria of accessibility

Criteria	Characteristics
Accessible (barrier-free)	<ul style="list-style-type: none"> <li>▪ accessible all building/park/monument or a majority of its space – minimum one barrier-free access</li> <li>▪ visit possible without booking</li> <li>▪ ramps (mobile or fixed, inside/outside); 3m long ramp with a slope max. 12,5%, 9m long ramp max. 8%</li> <li>▪ fixed ramp width at least 110 cm</li> <li>▪ door width at least 80 cm</li> <li>▪ threshold high max. 2 cm</li> <li>▪ accessible WC</li> <li>▪ elevator (100 cm x 125 cm)</li> <li>▪ smooth motion inside the building (slightly elevated threshold, no step or stairs, easy and reliable access to all floors of a building)</li> </ul>
Partially accessible	<ul style="list-style-type: none"> <li>▪ access – not more than one stair</li> <li>▪ accessible only part of the building/park/monument or some from other requirements are not fulfilled</li> <li>▪ ramps (mobile or fixed, inside/outside); 3 m long ramp with a slope max. 16,5%, 9 m long ramp max. 12,5%</li> <li>▪ fixed ramp width at least 110 cm</li> <li>▪ door width at least 70 cm</li> <li>▪ threshold high max. 7 cm</li> <li>▪ accessible WC is not the main criterium</li> <li>▪ elevator (100 cm x 110 cm)</li> <li>▪ platform lift (70 cm x 90 cm)</li> </ul>
Inaccessible	<ul style="list-style-type: none"> <li>▪ complicated and difficult access to the building, to all floors of a building</li> </ul>

Source: Processed by the Prague Organization of Wheelchair Users (<http://www.presbariery.cz>)

## 3 Results and Discussion

The town of Carlsbad is one of the most famous spa towns in the Czech Republic. It is a popular tourism destination and a center of Carlsbad region with more than 230 thousand visitors per year. Indications for a spa treatment in the town of Carlsbad are gastrointestinal diseases, metabolic disorders, and musculoskeletal diseases.

Figure 1: Map of the Czech Republic



Source: <http://www.kijkjeinmijnhuis.nl/>

### a) Natural healing springs

In the town of Carlsbad, there are situated 15 natural healing springs. Springs: Vřídlo, Mlýnský, Rusalka, Prince Václav the 1st, Prince Václav the 2nd, Libuše, Skalní, Svoboda, and Haď have barrier-free access. Springs Zámecký upper, Sadový, and Štěpánka are partially accessible because of insufficient ramp

slope or stair. Springs Charles the 4th, Zámecký nether, and Tržní are inaccessible for wheelchair users due to stairs. Based on the ascertained data, it is possible to state about the accessibility of spa colonnades.

Table 2: Accessibility of spa colonnades

Colonnade	Springs	Accessibility
Mlýnská	Mlýnský, Rusalka, Prince Vaclav the 1 <sup>st</sup> and the 2 <sup>nd</sup> , Libuše, Skalní	Barrier-free
Sadová	Hadí Sadový	Barrier-free Partially accessible (1 step)
Tržní	Karel the 4 <sup>th</sup> , Zámecký nether, Tržní	Inaccessible (a lot of stairs)
Zámecká	Zámecký upper	Partially accessible
Vřídelní		Accessible
Pavilion of spring Svoboda	Svoboda	Accessible
Pavilion of Alois Klein	Štěpánka	Partially accessible (1 step)

Source: Own research

Also, forests are attractive for Carlsbad visitors. For wheelchair users is suitable scenic trail "U Lučních rybníků." The trail is situated in fallow deer reserve. Forest trail in reserve has adapted surface (gravel, asphalt, sand) available for wheelchairs.

The Golf & Spa Resort Cihelny and the Golf Resort Karlovy Vary are accessible and have barrier-free restaurants, toilets, etc.

Rolava is a relaxing area with sports facilities (grassy field, beach, natural aqua park, tennis, kids playground, etc.). Barrier-free entrance, toilets, and shower are available.

#### b) Cultural and historic heritage sites

To the cultural and historic sites in the town of Carlsbad belong churches, spa houses, and castle Doubí.

Churches are inaccessible for wheelchair users or accessible with assistance. The most famous church in the city (St. Mary Magdalena Church) is inaccessible because of 16 stairs.

In the town of Carlsbad, there are situated 6 historical spa houses – Praga, Purkyně, Chopin, Morava, Tosca, and Elisabeth spa. They serve as accommodation facilities with spa procedures. They are inaccessible with a lot of architectural barriers as the threshold, stairs, insufficient door width, etc. Because of their historical value, it is complicated to remove barriers.

The castle Doubí is a private object. A part of the castle is accessible as a museum, but it is inaccessible for wheelchair users. A lot of steps, threshold, no adapted doors, etc. are barriers for those visitors.

Table 3: Accessibility of cultural and historic heritage sites

Object	Accessibility
St. Mary Magdalena Church	Inaccessible (16 stairs)
St. Lucas Church	Inaccessible (13 stairs)
St. Ondřej Church	Partially accessible (1 step)
St. Peter & Paul Church (ev.)	Partially accessible (1 step)
St. Peter & Paul Church (ort.)	Partially accessible (3 stairs)
Spa houses	Inaccessible
Elisabeth spa	Accessible (barrier-free pool)
Castle Doubí	Inaccessible (stairs)

Source: Own research

Carlsbad region is well-known through Moser glass and herbal liqueur Becherovka. Museum of Jan Becher is situated in the town of Carlsbad. The object has few parts. Only square

Becherplatz is barrier-free. Museum of Moser glass is accessible by a ramp. Barrier-free parking and toilets are also available. Becher house is 103 years old building. After reconstruction in 2011 is the house accessible for wheelchair users. Interesting is gallery Supermarket WC, which is gallery oriented on "design for all." The object was rebuilt from public toilets.

Table 4: Accessibility of museums

Object	Accessibility
Jan Becher Museum	Partially accessible (Becherplatz, Charles the 4 <sup>th</sup> restaurant by elevator)
Moser Museum	Partially accessible (ramp, barrier-free WC and parking)
Becher House	Partially accessible (ramp, barrier-free WC)
Gallery Supermarket WC	Accessible

Source: Own research.

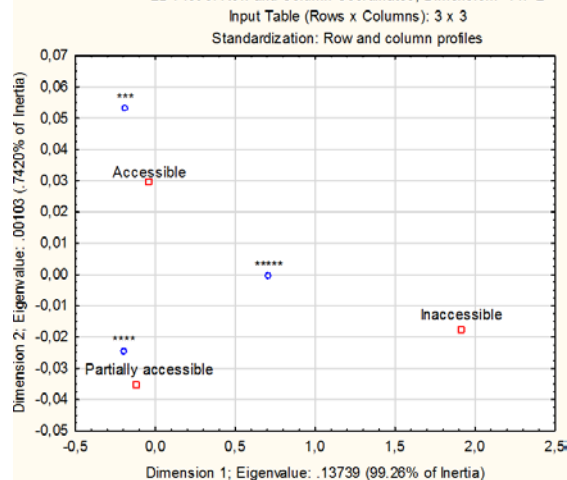
The International Film Festival in Carlsbad is the world-famous event and during this festival, there is available "Accessible cinema." The project started in the year 2000, for wheelchair users are available assistance services, information services, transport by barrier-free buses or cars, etc.

#### c) Accommodation facilities

Two hundred twelve accommodation facilities are situated in the town of Carlsbad according to the data of the tourist information office. Just 31 hotels and guest-houses of all accommodation facilities, (it represents 15% only), are accessible or partially accessible for immobile visitors. Linderová & Janeček (2017) state that the Carlsbad region offers 20% of accessible accommodation facilities.

Accessible accommodation should be as close as possible and on the ground floor where possible. A suitable telephone, alarm, or other means of calling for help must be available. A minimum transfer space for toilets, beds, and seating is 750 mm. The best practice is 950 mm or wider. Height of controls for door handles, switches, lifts should be within the minimum range of 900 mm to 1,400 mm from the floor. Best practice is 850 mm to < 1,200 mm. A minimum area of circulation space for all rooms, WCs, bathrooms is 1,200 mm x 1,200 mm (or diameter 1,200 mm). The best practice is 1,800 mm x 1,800 mm (or diameter 1,800 mm; Office for Official Publications of the European Communities, 2004).

Figure 2: Hotels in the town of Carlsbad and their accessibility  
2D Plot of Row and Column Coordinates; Dimension: 1 x 2  
Input Table (Rows x Columns): 3 x 3  
Standardization: Row and column profiles



Source: Own research

Table 5: Accessible accommodation facilities

Name of hotel	Accessibility	Accessible room by the hotel website
Eurohotel	Accessible	No
Grandhotel Pupp	Accessible	Yes
Hotel Bristol	Partially accessible (6 buildings, no connections for wheelchair users)	No
Hotel Čajkovskij	Partially accessible (no connection between room and restaurant)	No
Hotel Dvorana	Accessible	Yes
Hotel Hubertus	Accessible	No
Hotel Imperial	Partially accessible (bath with handles)	No
Hotel Iris	Accessible (1 room)	No
Hotel Jean de Carro	Partially accessible (little space in a room, threshold to restaurant)	No
Hotel Kolonáda	Accessible	No
Hotel Kriváň	Accessible	No
Hotel Malta	Partially accessible (restaurant 200 m far)	No
Hotel Quisisana Palace	Partially accessible (3 stairs)	No
Hotel Romania	PA (bath with handles)	No
Hotel Saint Petersburg	Partially accessible (2 stairs, insufficient elevator)	No
Hotel Savoy Westend	Accessible	Yes
Hotel Slovan	Accessible	No
Hotel Thermal	Accessible	Yes
Hotel Venus	Accessible	No
Interhotel Central	Partially accessible (manual front door)	No
Karlsbad Grande Madonna	Partially accessible (threshold in shower)	Yes
Luxury Spa Hotel Olympic Palace	Accessible	Yes
Parkhotel Richmond	Accessible	No
Retro Riverside hotel	Inaccessible	Yes
Spa Hotel Marstel	Partially accessible	No
Pension Stable JK	Partially accessible	No
Pension U Karla	Partially accessible	No
Vienna House Dvořák	Accessible	Yes
Wellness & Spa Hotel Ambiente	Accessible	Yes
Hotel Mignon	Partially accessible (stair – entrance door, bath with handles)	Yes

Source: Own research.

#### d) Catering facilities

In catering facilities as well as in hotel restaurants, cafés, etc., it is essential to ensure comfortable passage between tables. A passing space width of 800 to 900 mm is recommended. It is necessary to take into account space to maneuver and turn the wheelchair around in a circle with a minimum diameter of 1500 mm. Dining furniture must be adjusted to the wheelchair so that it is big enough to let the wheelchair fit under. It shall be possible to fit the wheelchair armrests under the dining table.

The optimum height of a dining table is 720 to 750 mm. The minimum space at the table is 900 mm per person. The areas connecting the interior of a restaurant with a terrace or garden should not have a gradient of more than 10% (Linderová & Janeček, 2017).

In the town of Carlsbad, there are situated 103 catering facilities. By the city statistics, 55 of them are accessible. Actually, according to field research on 24 of all catering facilities fulfill criteria of barrier-free access for wheelchair users.

Table 6: Barrier-free catering facilities

Hotel restaurant	Café	Restaurant	Bistro/ fast food
13	1	9	1

Source: Own research.

## 4 Conclusions

Based on research results, it is possible to state 15% accessible accommodation facilities in the town of Carlsbad with at least one available room. Almost one-quarter of catering facilities (23%) is accessible.

Wheelchair users can also visit some cultural sights and museums. But the majority of them are not fully accessible. Some natural trails are barrier-free or partially accessible.

The town of Carlsbad offers a large number of historical buildings (spa houses, museums, and hotels). If barrier-free entry for wheelchair users to the building is not possible due to heritage conservation, it is appropriate to ensure at least access for people with reduced mobility and the ability to orientate themselves (Linderová & Janeček, 2017).

We can observe an improvement in the situation of accessible tourism services in comparison to the past.

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**Primary Paper Section: A**

**Secondary Paper Section: AK**

# THE LONELINESS OF ADOLESCENTS FROM SOCIALLY DISADVANTAGED BACKGROUND

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The paper was created in the framework of the grant project Vega 1/0285/18 entitled "Risk behaviours of adolescents as clients of social work due to their loneliness".

**Abstract:** Every individual need social contact with other people in his or her life, to feel belonging, solidarity. If these needs are not fulfilled, he/she is threatened by loneliness, which significantly affects the quality of life of a person. It is particularly difficult to experience loneliness during adolescence. This alone is challenging for effective coping. Moreover, if the adolescent comes from a socially dependent environment, which is often not very stimulating, experiencing loneliness can lead to many negative phenomena, such as risk behaviour of a young person. The paper offers theoretical background and results of empirical research on the issue of experiencing loneliness in adolescents, while specifically focusing on young people from socially disadvantaged background.

**Keywords:** loneliness, adolescence, socially disadvantaged background

## 1 Introduction

Humans are social beings, they need other people in their life, they need to feel belonging and love, they need to be a part of different social groups. Yet, in the context of a very fast lifestyle of modern man, each of us is threatened by loneliness. It belongs to population global diseases of modern age. It represents an unwanted matter, reduces the quality of life, and while some people can handle this situation themselves, others need to seek professional help to deal with it. Loneliness threatens not only the standard life of individuals, but the functioning of society as a whole.

More and more attention is paid to issue of loneliness and its experiencing in adolescents. Adolescence is itself a challenging developmental period, adolescents often experience feelings of helplessness, insecurity, isolation, insignificance, or loneliness, and during this period they need to have an effective social network consisting of healthy supportive relationships around them. Their experiencing and consequently way of behaviour depend heavily on this. If a young person comes from a socially disadvantaged background, the whole developmental period is even more difficult for them.

## 2 Loneliness - a modern age disease?

Loneliness affects everyone, it troubles in a certain form and in certain life stages both young and old, married and single, rich and poor, educated or without education, sick or without health problems (Žiaková et al., 2008). Žitniaková Gurgová (2013) characterizes it as a subjective experience that results from our interpretation of events, a condition that is unpleasant to a person. And although, in the short term, loneliness can be positive (psycho hygiene) - it creates space to think about your life, about solving life situations, to recover strength, it helps to calm down, to find a way to yourself, to rest from other people, long-term loneliness affects people negatively, causes behavioural changes. Lichner (2018) classifies, for example, feelings of depressed mood, insecurity, shyness, social isolation, low self-esteem or anxiety to loneliness symptoms. Šarafín (2010) adds that this undesirable condition can escalate into more serious chronic problems, and it is therefore important to start tackling it in the early stages.

Solitude is not a bad condition, but loneliness can become one. The feeling of loneliness refers to our perception of relationships and it is not related to objective reality, whether we are part of a group, a class, a crowd, whether we are in long-term relationships or not. A lonely person considers his/her involvement in social relations to be weaker, unsatisfactory than he/she wishes. There are many people who, even if they live alone, do not feel loneliness intensely, and vice versa, there are

many people who have organized relationships and experience loneliness to varying degrees (Žiaková et al., 2008; Müller de Morais, 2015). In this case, Nakonečný (2009) talks about the absence of an element of intimate sharing in relationships.

## 3 Experiencing loneliness in the context of adolescence and socially disadvantaged background

Adolescence is one of the developmental periods of the individual, during which the most significant changes occur, not only in biological (sexual maturation, changes in appearance ...), but also psychosocial (change of lifestyle, changes in interests, values, social status ...) area (Vágnerová, 2012). It shapes the identity of the adolescent (Erickson, 2015).

A young person tries to break away from his/her family and to integrate into society as an independent individual, seeking his/her own place in it. His/her self-appraisal and self-esteem are formed. He/she is trying different alternatives and is looking for the limits of his/her possibilities, so he/she sometimes behaves extremely. He/she thinks about life priorities, he/she has doubts about his/her own direction, gives importance to his/her own experiences, addresses existential questions. He/she is confronted with various unknown situations, loses his/her usual stereotypes, often lacks regular constructive communication. Separation from family, friends can lead to the absence of more intimate contacts and subsequent isolation, because even in this "detaching" period he/she needs to feel the support of the loved ones and the community. If he/she does not experience satisfying personal interactions, he/she does not have suitable social contacts, it may come to the feelings of loneliness and to loneliness deepening. Such long-term non-fulfillment of the needs of adolescents can lead to various negative phenomena such as health disorders, suicidal tendencies, self-harm, inappropriate sexual behaviour, aggression, committing crimes or various addictions. According to Tóthová and Žiaková (2019), eating disorders can also appear among adolescents, as well as their modern forms associated with alcohol use, current social demand for healthy eating, physical strength and attractiveness, loneliness, maladaptive coping with difficult situations, insufficient social support, social isolation, social exclusion.

If a young person comes from a socially disadvantaged background, the whole developmental period is even more challenging for him/her. The most common group in the Slovak Republic, which is socio-culturally disadvantaged and comes from a socially excluded community, is the Roma minority (Burkovičová, 2016). Roma are characterized by different ethnicity and the complex of factors, including cultural, linguistic, territorial, social, racial, and also their specific history, social origin and self-perception. Particular lifestyle and a lower standard of living dominates. (Hudecová, Papšo, Kurčíková, Seberíni, Vavrinčíková, 2012). These young people are living in excluded locations that are typical by lack of amenities, often in catastrophic living conditions. They often have lower qualification, resulting in more difficult succeeding in the labor market. They are characterized by increased morbidity. The life of adolescents from disadvantaged background is not easy, because as already mentioned, they often face poverty and social exclusion due to such background (Lukšík, Lemešová, 2013).

## 4 Selected empirical findings

Based on the above-mentioned theoretical concepts, the main objective of our research has been to investigate loneliness in a group of adolescents from socially disadvantaged background.

Using a quantitative approach, we have obtained data based on the anonymous questionnaire survey method. In the next section, we used a standardized questionnaire from authors De Jong Gierveld and Van Tilburg (1999) called OESL, which was essentially focused on the specific experiencing loneliness of respondents. The questionnaire consisted of 11 questions that

could be answered using the following options: "yes!", "yes", "more or less yes", "no", "no!". Based on these, invited respondents were could comment on these questions in the questionnaire. In case that the respondent thought that the statement reflects his/her feeling and attitude very well, he/she clearly marked "yes!". On the other hand, if the respondent strongly disagreed with the statement, he/she marked "no!". If the respondent was not quite sure and decided between the answers, he/she could choose between "yes", "more or less yes", "no" based on the feeling to which answer he/she inclined the most. For the statistical processing and evaluation of the questionnaire, we assigned specific values to selected answers, where a value of 1 was assigned to the answer "yes!", the value 2 to the answer "yes", the value 3 to "more or less yes", the value 4 to "no" and the value 5 to the answer "no!". In questionnaire, we have used questions that reflected social loneliness with the numerical expression: 1, 4, 7, 8 and 11. Questions with numerical expression: 2, 3, 5, 6, 9 and 10 represented emotional loneliness. The standardized questionnaire was supplemented by two questions of socio-demographic nature (gender, age). In our case, reliability reached a value of 0.676.

By a deliberate, non-random, occasional selection, we gathered a research sample consisting of 80 respondents aged from 16 to 18 years. Respondents come from a socially disadvantaged background. This sample of respondents attends the Secondary Vocational School in Kecrovce. Our research sample was represented by 30 men and 50 women.

The data were processed in the statistical software SPSS 16. Based on the normality test, we found out that it is necessary to use non-parametric statistics (Mann-Whitney U-Test).

We investigated whether adolescents coming from a socially dependent environment experience loneliness. For this purpose, we have calculated the gross score in the overall loneliness category. Results show that 43.8% of the respondents do not feel lonely, but up to 56.2% of the respondents are experiencing loneliness.

Tab. 1 Experiencing overall loneliness

Overall loneliness	f	%
Experiencing overall loneliness	45	56,2
Not experiencing overall loneliness	35	43,8

We also looked at how respondents experience emotional loneliness. After calculating the gross score in the emotional loneliness category, we found out that 56.2% of the respondents did not feel emotionally lonely, but up to 43.8% of the respondents felt lonely.

Tab.2 Experiencing emotional loneliness

Emotional loneliness	f	%
Experiencing emotional loneliness	35	43,8
Not experiencing emotional loneliness	45	56,2

In the context of how do adolescents experience social loneliness, we found out that up to 80% of respondents feel lonely, while 20% of respondents who do not feel lonely.

Tab.3 Experiencing social loneliness

Social loneliness	f	%
Experiencing social loneliness	64	80
Not experiencing social loneliness	16	20

We were wondering whether adolescents coming from socially disadvantaged background experienced more or less loneliness. Statistically significant differences have not been proved. Male

adolescents' responses indicate a trend of higher extent of experiencing loneliness than responses from female adolescents. However, the uneven distribution of the research sample in terms of gender perspective may influence results.

Tab.4 Overall loneliness from gender perspective

Gender	Number (N)	$\bar{x}$	Z	p( $\alpha$ )
Male	22	32,55	-0,313	0,754
Female	58	31,28		

We were also interested in whether experiencing loneliness differs in relation to the age of the respondents. The research has been conducted in high school, we have set two age categories divided into those adolescents who were under the age of 17 and those who were older than 17 years old. Statistically significant differences have not been proven. Older adolescents' responses suggest a trend of higher rate of experiencing loneliness than responses of younger adolescents. However, the uneven distribution of the research sample in terms of age perspective, as well as the small age range of high school students may influence the results.

Tab. 5 Overall loneliness from age perspective

Age	Number (N)	$\bar{x}$	Z	p( $\alpha$ )
Less than 17 years old	50	31,34	-0,405	0,686
More than 17 years old	30	32,10		

## 5 Recommendations for practice and conclusion

We consider it important to pay attention to the research of loneliness in a group of adolescents, especially those who come from a socially dependent background. Not only the theoretical background, but also empirical research point to this. Adolescence is a difficult period of life that has an almost existential character. The situation of adolescents coming from socially dependent background, where conditions for development and independence are heavily constrained, is even more difficult. Theoretical concepts suggest that experiencing loneliness in adolescence can lead to the occurrence of many negative phenomena, such as risk behaviour of adolescents.

Author's research findings indicate alarming results. More than half of high school students from a socially dependent background feel lonely overall. Almost half of the respondents are experiencing emotional loneliness and up to 80% of the respondents feel socially lonely. Other research findings are also interesting. Although no statistically significant differences have been proven, the respondents' answers indicate that male adolescents feel more lonely than female adolescents, as well as those who are over 17 years old, just prior to the end of secondary education.

Social worker as helping professional may act on this issue in both prevention and intervention levels. It seems necessary to introduce the concept of the school social work in our conditions. Especially in schools where most, if not all of the students come from socially disadvantaged background (as it is unfortunately the case in many allocated secondary vocational schools) and where there is higher risk of negative phenomena. Experiences with social work in the school environment from abroad confirm its positive impact on students. Among other things, it has been shown that school social work can reduce the risk factors that affect various negative phenomena in the school environment (Newsome et al., 2008, in: Vasiľová, Lovašová, 2018). The school social worker provides social counseling to students or their parents, can organize various preventive programs, socio-psychological training, support peer programs, organize discussions, cooperate with a family of student, and so on.

Social workers working with youth can be equally effective, for example in community or low-threshold centers, whether within different non-profit organizations or in the founding competence of specific communities, where excluded communities are located and so on. Known are several programs of mentoring, effective leisure time planning, youth exchanges, including international youth exchanges that offer young people new life perspectives.

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#### Primary Paper Section: A

#### Secondary Paper Section: AN

## VALUATION OF INTANGIBLE ASSETS DEPOSIT INTO CAPITAL COMPANY IN CASE OF SPECIFIC TRANSACTION

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**Abstract:** In the case of the deposit of assets into a successor in the form of a limited company, it is possible to use the assets of the Association which has preceded the new formation. The need for the valuation of the Association's assets is necessary under such circumstances. The contribution focuses on the method of valuating intangible assets of the Association of two natural persons. The method of the difference of Association's assets value and yield value was used. The specific items forming the company's asset are valued by various procedures based on their characteristics. It has been proved that it is possible to set quickly and accurately the book value of intangible assets in case it has not been previously included in the Association's accounts. The value of intangible assets is set on the basis of the difference of asset and yield values.

**Keywords:** valuation of assets, intangible assets, association, yield method, equity method

### 1 Introduction

Provided an Association of two or more persons which is not a legal subject intends to change their status into a capital company, it has to be established first. The Association's asset subsequently becomes the company's asset by depositing it into the newly established company. In our case the asset of the modelled Association of two natural persons is transferred into the newly established limited company (Ltd.). Accountancy Act No. 563/1991 Coll. requires setting the value of the deposit. The asset can be valued using acquisition method, at own production expenses, reproductive price, etc. It is necessary to set the value of the Association's asset for this purpose in order to gain an accurate monetary calculation of the deposit. The valuation of company's asset is made by several methods. Since the asset is classified according to its type we specifically deal with the setting of the value of intangible assets. An Association is defined in the Civil Code, Act No. 89/2012, §27160-§2717 (Czech Republic, 2012a). The rights and obligations of Association's members and the members of a limited company are defined in Trade Company and Syndicate Act No. 90/2012 Coll., i.e. Trade Corporation Act (Czech Republic, 2012b).

The valuation of Association's asset is addressed by both the Accountancy Act No. 563/1997 Col. & the Asset Valuation Act No. 151/1997 Col., which deals with the valuation of asset and the adjustment of certain acts of law.

### 2 Literary research

An association is formed by the contractual obligation of two or more natural persons. The number of Association's members is not enclosed or limited; other natural persons can enter the Association in the course of its existence as well as they can quit the Association. The formation of Association does not require a written contract. The oral agreement of the Association's members bears the same gravity. In case of the association of the asset the list of the items must be made (Bezouška, Piechicizová, 2013).

The association is not eligible to legal subjectivity and therefore it is not eligible to the rights and obligations, moreover, it cannot possess, sell or donate anything. The asset acquired in the course of the activities of Association's members becomes a shared asset of the members. There is no obligation for Association's registration (Nývltová, Marinič, 2010).

If two or more natural persons take on contractual obligations in the Association, if they associate and make a mutual effort to

achieve a common purpose by their activities or their investment of asset, they are obliged to meet the commitment. The share of asset of Association's individual members should be included in the contractual obligation. If it is not addressed in such a manner, the shares of all the Association's members are equal (Horáková, 2014).

Act No. 89/2012 Col. §2727 prohibits every Association's member from acting in a competitive manner in relation to their common purpose. If such action is committed, the Association's members may require its termination (Czech Republic, 2012a).

If an Association's member begins to do book-keeping, all the other members must do so as well (Nývltová, Marinič, 2010). If an Association's membership is terminated, the issue of a member's asset rights must be settled (Doležal et al., 2018).

The Association's members provide the third parties with the guarantee jointly and severally. In contrast, all the members of a general partnership (G.p.) provide a guarantee in an unlimited manner with the whole commercial and personal asset. In the case of capital companies, such as a limited company (Ltd.), such type of legal person is liable to provide unlimited guarantee. However, the individual members of a limited company provide a guarantee with up to the limit of the amount of the difference between the paid deposit obligation and the amount recorded in the Commercial Register at the moment of a call for the fulfilment to the creditor. In a public limited company (PLC) the shareholders are not obliged to provide a guarantee with any liabilities; they are only liable to payment obligation (Hobza et al., 2015).

The valuation of asset is defined in the Asset Valuation Act No. 151/1997 Col., which deals with the valuation of asset and the adjustment of certain acts of law. Act No. 151/1997 Coll. §2 Article 1 states that the asset and the service are valued in the usual manner provided the law does not provide an alternative way of valuation (Czech Republic, 1997). The usual price is a price which is usual on the sale of identical or similar asset or in case of the provision of an identical or similar service in commerce in the country on the day of valuation. It includes the consideration of all the circumstances which influence the price without being affected by the influences of extraordinary circumstances in the market, personal situation of the seller or the purchaser, or the influence of particular delight.

Svačina (2010) claims an intellectual asset belongs to intangible assets. It includes copyrights, related works, software and databases. In case of the valuation of intangible assets, it is possible to use several ways of valuation. For instance, the first way is a valuation on the basis of purchase price, i.e. the value of intangible asset is equal to the value of purchase price (Falson, 2019). Next, the other way of valuation is a valuation on the basis of replacement cost, i.e. the price of asset at the moment of its purchase and record in the books. Last but not least it is a valuation based on own costs, i.e. the self-made intangible assets the costs of which are the costs of their production (Sandner, 2010).

The majority of the company's intangible assets generate premium revenues. The intangible assets are sources which provide competitive advantages (Reimsbach, 2013).

Chung et al (2014) demonstrates and describes eight models of the valuation of intangible assets. They are income-based model, cost-based model, market-based model, excess operating profits model, premium pricing model, cost savings model, royalty savings model and option model.

Pastor et al. (2017) deals with the list of the most frequently used methods of the valuation of intangible assets. However, he adds that the international bookkeeping standards only deal with an

identification of intangible assets, not with its valuation. Moreover, he claims that the interest of academics and experts ought to be more focused on the valuation of the obligations related to intangible assets as they are usually overlooked on the valuation of intangible assets.

It is necessary to realize that the valuation of intangible assets is important in several aspects. Not only is it possible to value the intangible assets in parallel with the tangible assets but there is a link to the value of the certain type of tangible assets which is influenced by the intangible assets which are directly connected to this particular type of tangible assets (Sequeira, Fernandez, 2010).

Corrado et al. (2009) maintains that there has been an incorrect determination of the value of the GDP in the USA. The reason was the ignorance of the value of intangible assets. The intangible assets worth \$800 billion were excluded in 2003. Although this type of asset is gradually recognized, there is a value of more than \$3 billion which is excluded from the determination of the US GDP.

Hanafizadeh and Hosseinioun (2015) add an interesting point. The authors focus on a valuation of company's business plan which employs scientific economic theories for the purpose of its operation. The theories are regarded as intangible assets. The valuation of the business plan is interesting for investors as the value of the business plan may fill the gap between the book and the market value of the company. It provides an additional instrument for the enhancement of negotiating power in terms of the fusions and acquisitions of companies.

Sanchez-Segura et al. (2014) note intellectual asset is company's intangible assets. The capital can be divided into human capital, i.e. the employee's knowledge, structural capital, i.e. the expertise in terms of the organization of company and the use of technologies, and relational capital, i.e. the expertise in terms of business relations with clients and related subjects.

The neglected intangible assets of every company are a brand. The current book standards rather deal with tangible assets. Rarely is the brand included into its financial statement. If it is included, its quantified value is not based on a universally respected economic and market foundation. A significant number of companies are currently attempting to change the trend (Antic et al., 2008).

A number of international experts agree on the fact that yield methods are the most popular valuation methods on a global scale. Above all, it is a discounted cash flow method. The yield methods of valuation view a company as a 'black box' of investment. It ought to bring the investor an advantage either in terms of financial or in terms of non-financial nature. Therefore, it is supposed to reflect the belief in the future revenues flowing from the company to the owner, i.e. investor (Kislingerová, 2001).

Act No. 151/1997 Col. §24 Article 3 permits to employ the method of discounted cash flows (DCF) for the purpose of the valuation of company (Czech Republic, 1997). The DCF method can be in three variants in practice: DCF entity, DCF equity, DCF APV, i.e. adjusted present value (Kislingerová, 2001).

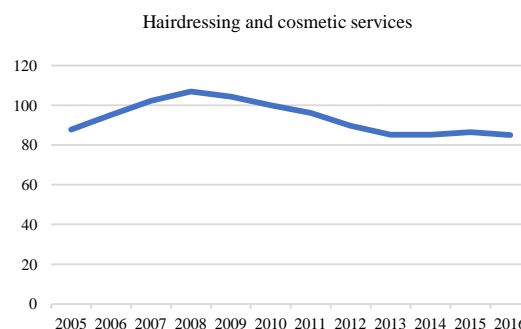
The methods of asset valuation are employed for the purpose of valuating of individual items. These items can be valued on the basis of historic prices, on the basis of the reacquisition of such items, on the basis of spared costs and on the basis of market values (Mařík et al., 2018).

### 3 Material and methods

The objective of the contribution is to determine the value of the Association's intangible assets. All intangible assets will be valued as of 31 December 2017. Specifically, it is the association of natural persons engaged in hairdressing (hereinafter referred to as Association XYZ) established on 1 January 2008 by the

Association Agreement. For the purposes of the research, Association XYZ provided all necessary data for five consecutive years (between 2013 and 2017). According to CZ NACE, by the type of its activity, Association XYZ belongs the group G. Since the largest share of its business is the hair cosmetics, the Association depends on the development of customers' demand according to the classification CZ NACE, group S. For the historical development of sales in the category CZ NACE S in the CR, see Graph 1.

Graph 1. Sales development in category CZ NACE – S (96.02, 96.09, 93.13) between 2006 and 2016, basic index (mean in the year 2010) – common prices



Source: Czech Statistical Office (2016).

Graph 1 shows that the sales in this sector did not change much year on year. Although after 2008 there was a slight decrease by several percent compared to the basic year, in the following year the situation did not change much. Before 2008, the sector showed a relatively fast growth of sales, but between 2008 and 2010, there has been a slight decrease.

As a new limited company will be established and subsequently the Association, whose assets will be the initial contribution in the newly established limited company, will cease to exist, another basis will also be legislation. Specifically, it will be Act No. 151/1997 Coll. on valuation of asset and on the amendment of some other Acts, Act No. 90/2012 Coll. On Commercial companies and cooperatives (Act on Business Corporations), and Act No. 89/2012 Coll. (Civil Code).

For our calculation, it will be necessary to determine the revenue and asset value of Association XYZ. Company revenue value represents the company's capability of generating revenues in the future. It is a sum of all items able to generate these revenues, including all tangible and intangible assets of the company. Therefore, if it is necessary to determine the intangible assets value, it is possible to calculate as a difference between the assets and revenue value of the Association XYZ. For this reason, the issue of determining of these values will be addressed.

In terms of determining the assets value of individual tangible and intangible assets, first the Association XYZ inventory will be valued. The valuation of the inventories will be based on their purchase value. Furthermore, the fixed tangible assets will be valued. Fixed tangible assets include a special tablet. This asset will be valued analogously to low-value assets using the assumed linear decline. The fixed assets also include motor vehicles. Association XYZ owns a total of 11 vehicles, out of which 7 vehicles are a direct asset of the Association XYZ, 3 have been acquired through loans that have not been fully repaid yet, and one vehicle is used on the basis of the operating lease contract. This vehicle is thus not included in the valuation due to the specificity of the loan. The remaining vehicles will be valued using Cebia, s.r.o.'s CabiCAT GT software, which enables to determine fast and precisely the current market value of a concrete vehicle in the CR. In terms of valuation, this software works on the principle of a comparative method. Subsequently, low-value fixed tangible assets will be included in the valuation. This kind of assets can be valued by means of amortization

scale. Amortization scale represents the residual percentage value of assets by the time of their purchase.

The last item that constitutes the asset value of the Association XYZ is its financial assets together with its receivables and liabilities. Due to the fact that the chances of acquiring overdue receivables decrease with the increasing period of time, while the costs of recovery grow, the valuation will not include the receivables with a maturity longer than 1 year. Such receivables usually become irrecoverable.

Yield value perceives a valued company as a system, a set of all tangible and intangible items necessary for doing business and achieving the economic results that are and will be achieved. Yield method will be performed using the discounted cash flow method (DCF) in a two-phase variant. The newly established limited company requires the adaptation of the existing economic results of the Association XYZ, which can be appropriately incorporate in the DCF method using a financial plan.

The discount rate in using the DCF equity method corresponds to the alternative cost of equity ( $r_e$ ). For valuation, complex build-up model will be used that will draw on the data on the Czech market released by the Ministry of Industry and Trade of the Czech Republic that react to the specifics of the Czech market. The calculation is based on the identification of possible risks, and the subsequent sum of several partial risk margins and risk-free long-term state bonds rate. The calculation of the cost of equity is shown in the formula (1). The individual items for calculating cost of equity will be obtained from the Czech National Bank and Ministry of Industry and Trade data for the 1<sup>st</sup>-4<sup>th</sup> quarter of the year 2016 (since no data from a period closer to the valuation date is available) according to the code CZ NACE, group "G" (Wholesale and retail).

$$r_e = r_f + r_{pod} + r_{finstab} + r_{la} \quad (1)$$

Where:  $r_e$  cost of equity,  
 $r_f$  risk-free yield,  
 $r_{pod}$  risk margin for business risk,  
 $r_{finstab}$  risk margin for financial stability,  
 $r_{la}$  risk margin for company size.

Yield value of the Association will be calculated as a sum of the value of phase 1 and phase 2. The individual calculation steps can be seen in Formulas 2 and 3. Yield value in phase 1 will be calculated according to Formula 2:

$$H = \sum_{t=1}^T \frac{FCFE_t}{(1 + n_{VK(z)i})^t} \quad (2)$$

Where:  $H$  company value,  
 $FCFE_t$  Free cash flow to equity in the year  $t$ ,  
 $n_{VK(z)i}$  cost of equity at specific debt in the year  $i$ .

Subsequently, phase 2 will be calculated using the Formula 3.

$$PH = \frac{FCFE_{T+1}}{n_{VK(z)T+i} - g} * \frac{1}{(1 + n_{VK(z)i})^T} \quad (3)$$

Where:  $T$  number of year in phase 1,  
 $g$  growth rate in phase 2.

#### 4 Intangible assets

Intangible asset is one of the essential components of business. It can consist e.g. of licenses, copyright, software, brand, know-how or goodwill. During its existence, Association XYZ has not made any reference to intangible assets in its accounts, but it is clear that the intangible assets created by own activity in the form of know-how and goodwill is of key importance for the incoming legal person. Due to taking over the existing customer

base, business relations, experience, and employees, the incoming legal person can to a large extent reduce the initial introductory and growth phase, thus building on the existing activity and development of the Association XYZ, which is already in the maturity phase. The maturity phase is characterized by a more stable customer base, stabilization of relations with suppliers as well as building the internal processes and management systems of the whole company and achieving adequate profitability. In the maturity phase, the development of the company is slower, and the business policy focuses more on retaining the customers than on gaining new ones; most changes are evolutionary in nature and conceptually planned in the long run.

To identify and measure the advantage that the newly established limited company will have from taking over the intangible components of the business, there are two possible different approaches. The first approach consists in determining the intangible asset value as a difference between the revenue and asset value of the Association XYZ. This approach assumes the dissolution of the Association XYZ and taking over all the intangible components of the business by the newly established limited company, which corresponds with the expected development of the Association XYZ. The second approach is so-called licensing analogy, which is based on quantification of the difference between the expected economic results of the newly established limited company when using or not using the relevant intangible components of the business. This method requires preparation of the company financial plans when using or not using the intangible components of the business until they are equal to each other or at least close to the expected economic result. It can be stated that in the long term, the value of intangible components of the business gradually decreases, e.g. as the customers accept the person in the business, the share of taken know-how decreases to the new know-how created by the own activity, etc.

In the case of the Association XYZ, the first approach will be used, that is, first the return value of the Association XYZ will be determined on the basis of the financial plan, subsequently, the asset value will be calculated based on the market.

#### 5 Results

Overall, according to the historical financial indicators, it can be said that the Association XYZ appears to be a financially sound company without any significant hidden threats. As of the valuation date, that is 12 December 2017, the current inventory was determined (based on their inventory and the purchase price) at the value of CZK 2,522,172.

The fixed tangible assets of the Association consist of automobiles and one special tablet. The automobiles were valued using the CebiCAT GT software, and the value was determined at CZK 2,285,922 CZK, while there was still a debt on three automobiles purchased on credit at the total amount of CZK 309,130.01 CZK (specifically, CZK 40,448.98, CZK 84,830.09, and CZK 183,850.94). The above mentioned tables (purchase price CZK 53,722.38) was, taking into account the purchase date (15 September 2014) and its lifetime (5 years), valued at the total residual price of CZK 21,488.95 CZK. By adding these two valued, the fixed tangible asset was valued at CZK 2,307,411 CZK.

Fixed tangible low-value assets were valued based on the amortization scale. Since these assets are of different age, which was determined according to the date of purchase based on the invoices available, the value of these assets was calculated at CZK 52,578.79. It was a total of 16 items (electronic and computer technology) that was purchased in the period between February 2010 and the valuation data, and was still used by the Association XYZ. The purchase prices ranged between CZK 269.7 and CZK 7,484.

The value of the financial assets was set at CZK 543,095 after adding the cash balance, bank account, and two fuel cards. The liabilities of the Association XYZ including vehicles loans,

wages of employees, trade payables, and other flat-rate payments necessary for operation total CZK 2,604,181. The resulting value of the asset value of the Association XYZ is shown in Table 1.

Tab. 1. Asset value of Association XYZ as of 31 December 2017

Assets	Value
Inventories	CZK 2,522,172
Fixed tangible assets	CZK 2,307,411
Short-term tangible assets (low-value)	CZK 52,579
Financial assets	CZK 543,095
Gross value	CZK 5,425,257
Liabilities (-)	CZK 2,604,181
<b>Net value</b>	<b>CZK 2,821,076</b>

Source: Own processing.

Subsequently, in accordance with the methodology, the cost of equity was determined. It was determined using the build-up model described in the methodology. The individual values from the Czech National Bank (2019) data (the value of the ten-year state bond yield was available only for the period of 10/2017 at the time of the survey) and the Ministry of Industry and Trade (2017) of the CR are given in Table 2.

Tab. 2. Items for calculating risk-free yield ( $r_e$ ) according to Ministry of Industry and Trade

Item	CZ NACE 55
Risk-free yield	1.45%
Business risk margin	2.65%
Financial stability margin	1.87%
Company size margin	1.09%

Source: Czech National Bank (2019) and Ministry of Industry and Trade (2017), own interpretation.

On the basis of the Czech National Bank (2019) and the Ministry of Industry and Trade (2017) of the CR data, cost of equity ( $r_e$ ) was determined at 7.06% (using Formula (1)). This was followed by the calculation of phase 1 and phase 2 of the yield value using the DCF method. Considering the current development of the Association XYZ, only a short time can be expected to be required for the stabilization of all components of business which results in a rather short duration of the 1<sup>st</sup> valuation phase. The length of phase 1 was thus set at 3 years.

For calculating phase 1 of the yield value, Table 3 was compiled, which contains the input calculation values for the whole duration of this phase.

Tab. 3. Current value of phase 1 cash flow

	2018	2019	2020
Free cash flow after tax [CZK]	198,049.35	202,010.34	206,050.55
Discount rate [%]	7.06	7.06	7.06
Current value of cash flow [CZK]	184,989.12	176,245.94	167,915.99

Source: Own processing.

On the basis of the input values, the value of phase 1 was calculated at CZK 529,151.06 in accordance with Formula (2). For the calculation of phase 2, it was necessary to use the values for the year following the end of phase 1. In this case, it was the year 2021. Free cash flow after tax was determined at CZK 210,171.56 with the same discount rate (7.06%). The value of phase 2 was calculated using Formula (3) (CZK 3,384,867.82). After adding up the values of phases 1 and 2, the yield value of the Association XYZ was set at CZK 3,914,019.

At this point, the value of the Association XYZ's intangible assets could be determined in accordance with our methodology.

$$\begin{aligned} \text{return value} - \text{assets value} \\ = \text{intangible assets value} \end{aligned} \quad (4)$$

3,914,019 CZK – 2,821,076 CZK = **1,092,943 CZK**  
In words: one million ninety-two thousand nine hundred and forty-two Czech crowns

## 6 Conclusion

After analysing the assessed Association XYZ, for the purposes of its tangible assets valuation, asset-based approach was chosen; based on its character, it was direct comparison approach, flat-rate method, or valuating the assets in nominal amount. Using the two-phase alternative of the DCF method, the yield value of the Association XYZ was determined. Subsequently, intangible components of the Association's assets were calculated as a difference between the yield and asset value. Using this method, the intangible and tangible components of the overall Association's value were separated. Considering the fact that there is a certain yield potential in the Association XYZ, its value equals to the sum of the tangible and intangible components of business at the total amount of CZK 3,914,019 as of the valuation date (31 December 2017). All these assets will be transferred to the newly established successor's organization (public limited company).

Based on the methodology used, the value of intangible business components was determined at CZK 1,092,943 CZK. It is the value of the company that was not in the Association's accounts, as was already mentioned above. This value will be transferred in the newly established limited company as an intangible assets item. This will cause that the newly established limited company will not "start from scratch" and will achieve the stable phase in its life cycle much faster. However, the value of the company's intangible assets will decrease and thus additional intangible assets (e.g. in the form of new customers) will have to be generated by its own activity so that the expected decrease is compensated.

It can be stated that the method of determining the intangible component of the model Association's asset appears to be applicable. The objective of this contribution was thus achieved with a positive result and at the required extent. It shall also be stated that it is a relatively simple calculation method, and its applicability can be assumed even in other fields of entrepreneurship for valuation of intangible components of other companies' business. This is considered to be the greatest contribution of this article.

A given valuation of an intangible asset can be used in a "business transformation" situation, whether it is a right transformation (by law) or false transformation, as in this case, in a situation where the previous business ceases or completely ceases business in the industry/area and the subject matter of the valuation are the intangible components of the business, where the successor entity follows the past business (the word successor is meant in a broader context).

There are other applicable methods that shall be tested on other suitable companies. In this field, there are many opportunities for doing so and it shall be a subject of further research.

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#### Primary Paper Section: A

#### Secondary Paper Section: AE, AH

## LOGISTIC SYSTEMS IN CLUSTERS: BIOMASS CASE STUDY

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This article was created within the project VEGA no. 1/0918/16 title: Risk management of SMEs in the context of clusters' involvement activities in the Slovak Republic.

**Abstract:** Logistics systems in many sectors of the modern economy have a significant impact on their competitiveness. Having examined the general logistics systems functioning principles, their types and conditions of formation, authors of the article have determined that in order to ensure the competitiveness of each more or less clustered economic sector, a unique logistics system is needed. By researching biomass clusters, authors of the study have developed their logistics system that involves planning, provision, production, resource flow distribution from producer to user, and ensures synergistic effects for cluster participants. Authors' empirical research on hypothetical biomass clusters fully confirmed the theoretical assumptions about the impact of logistics systems on the competitiveness of biomass clusters. The results of empirical research have indicated, that logistics system is effective in case of both large and small intensity of biomass consumption. It has been established that evenly increasing demand for biomass can be based on further biomass deposits, and closer deposits are used to neutralize the sudden jumps in demand.

**Keywords:** Logistic systems, supply chain, clusters, biomass clusters, competitiveness.

### 1 Introduction

Logistics systems today are critically important when seeking business efficiency. In a competitive market, rational logistics solutions ensure the ability to profitably operate in the market. Many scientists who investigate the logistics systems indicate that they link production and consumption (Bartolacci, M. R., Leblanc, L. J., Kayikci, Y., Grossman, T. A., 2012), and that logistics is a science that covers production, planning, organization, control and delivery of the final product to the consumer (Bazaras, D., 2005, Christopher, M., 2007, Palšaitis, R., 2010). Logistics includes transportation of goods, warehousing, customs operations and payment systems (Arvis, J.F. et al, 2014). Logistics, therefore, consist of processes involving the planning, implementation and control of the flow of goods, services and related information (Vitasek, K., 2013). Logistics object is movement of material goods and their transformation process (Braškiene, L., 2009); the goal and mission is to deliver high-quality products on time (Palšaitis, R., 2010).

In the context energy market transformation, the use of fossil resources is abandoned moving to the use of renewable resources. At this point biomass is the only renewable resource that allows to ensure uninterrupted production of energy. To achieve this a logistics system adapted to specific activities (energy production) in the region needs to be established. This way, the authors of the study created a medium-sized hypothetical biofuel cluster logistics system. The main axis of the cluster's activity is the use of indigenous biofuels for the production of thermal energy, electricity or natural gas. Biomass cluster is a dynamic structure therefore in different countries it can be formed using different types of entities. It depends on the abundance of biomass, the existing supply and distribution infrastructure, and prevailing type of energy production in particular country. Biomass that is not used for process heating can either be converted into products, thus increasing the conversion efficiency, sold as feedstock or fuel to external customers (Hackl R., Harvey S., 2016). Another advantage of integration into an industrial cluster is that the existing infrastructure (boilers, utility systems, air separation plant, etc.)

is already in place. The cluster structure can be influenced by the general state of cluster culture in the country. Other factors, such as financial state of the business, scale of cooperation, and level of corruption, create the conditions for facilitating or complicating the development of clusters. As the Fourth Industrial Revolution is approaching, technological advancement and responsiveness to innovative solutions significantly impact the clustering of biomass. Biomass clusters help to preserve forests, but it requires the involvement of all stakeholders. Stakeholder engagement within the cluster is necessary to ensure efficient and coherent use of forest resources. In forest based rural communities this approach requires tighter coordination between members of the community, existing forest product producers, non-forest business, landowners, and land managers interested in developing cluster benefits (Saah, D., et al., 2014)

The research topic is unique, because authors aim to investigate the processes of logistics system functionality adapting them to biomass clusters. This is achieved by developing the most rational versions of logistics systems based on which the cluster would operate on the given region level. Since biomass cluster is a specific business system (dominated by logistics), it requires a smoothly functioning logistics system. Cost management is one of the key factors determining the success of a logistics system. Authors' research suggests that cost management contains continuous analysis and control seeking to deliver solutions that are relevant to a particular season.

In this study the authors would like to introduce the types of logistics systems and the context of their development. Logistics systems contain different business activities - purchasing, marketing, and distribution. Having evaluated these factors, we can move towards the energy systems. The activity of the biomass energy cluster is shaped by its specific characteristics. Biomass-fired energy projects have also been shown to generate local income, through sales of energy and by providing a market for local wood, agricultural wastes and energy crops (Walker, G., 2008). It lets to compare the different regions and revenue of business subjects in these regions. biomass contributes to the decentralization of the energy market (Grigoras, G., Scarlatache F., 2015, Faße, A., et al., 2014). The decentralized electricity generation is intended to provide small-scale power close to users, using a broad range of renewable technologies. Having considered these important circumstances, we can better understand the components necessary to develop a biomass cluster logistics management system.

Our study develops a logistic system tailored to the biomass cluster. It takes into account the purpose of the supply, the frequency, the main operating costs of the biomass cluster, and the specifics of the activity of the biomass cluster. The cluster's activity ensures that natural waste will be used for the production of energy, which cannot be otherwise recycled. Sustainable use of resources is a prerequisite for the biomass cluster, which distinguishes it from other energy producers. Building on the economic and financial value of unprocessed bio-waste, the cluster is becoming an important economic entity shaping the energy policy of the country's regions.

The logistics of biomass energy sector is quite complicated. It is impacted by seasonality and which affects the final energy price. Under more favorable climate conditions, it is possible to obtain the required amount of biomass at a lower cost. However during the winter or prolonged periods of rain biomass price rises at a significant rate. In the spring time, working with heavy machinery in the forest and transporting wood from distant and uninhabited areas is difficult because of the wet soil and missing or poor conditioned roads (Kuula J., et al., 2011). For overcoming seasonal changes and for making all these processes efficient and smooth, one should develop the whole production process in general, and each actor's role separately. In addition, the logistics and infrastructures in this process should be improved nationwide, which is expensive and diminishes the profitability of the whole bioenergy. This necessitates a very

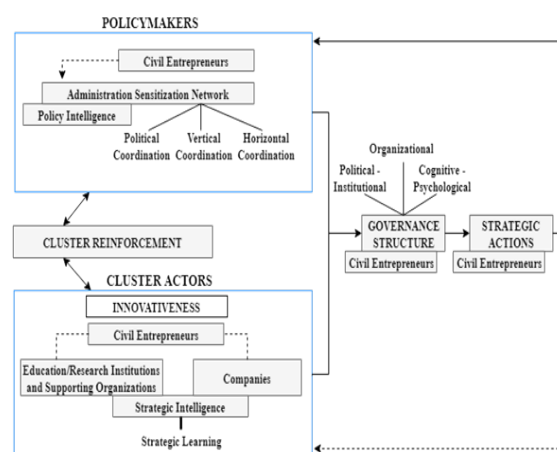
accurate assessment of the biomass supply chain by including specific factors that could prolong the supply chain. Therefore, biomass processing quantities and raw material supply must be modeled at least several months ahead. Having a consistent supply chain planning mechanism would make it possible to ensure the continuous supply of required amount of biomass at a similar price range.

## 2 Theoretical background

### 2.1 Logistics Systems in Different Clusters

The logistics system is based on the type of business and the type and quantity of products transported. It is an important measure ensuring smooth functioning of the business. State of specific sector that involves both private and public entities has to be taken into account when investigating logistics options. Both sides are pursuing similar goals - to maximize benefits, expand opportunities and business development. Cluster management model (Fig. 1) is presented as a cluster-government interaction. Based on this decision makers and cluster participants strengthen their ties thereby persuading the government to allow the development of their activities.

Figure 1. Cluster governance model



Source: Ebbekink, M., Lagendijk, A., 2013

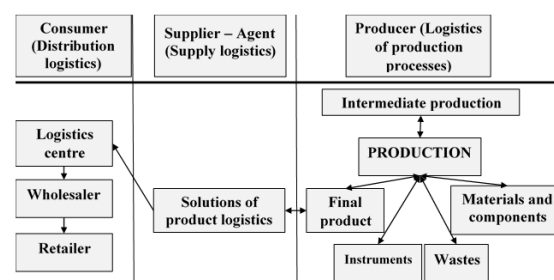
Thus, cluster activities are based on the promotion of innovation, inclusion of educational institutions, and collaboration with policymakers (Figure 1). The interaction of the above mentioned entities allows the negotiation with the government in order to legitimize its activities in a given region. Under this model, cluster policy and public policy need to be more closely linked and based on co-operation. It would be possible to achieve a positive effect that would benefit both the business subjects and the society. Presence of civil entrepreneurs is another important aspect. They are one of the main cluster activity catalysts, as they enable the development of new ideas and the ability to convince those dubious public institutions. The interaction between business and government members can extract relevant social and environmental solutions. If this model is applicable in a biomass cluster, then from a government perspective, consumers are being targeted to help them pay the lowest price for energy. From the point of view of business, the objective is to get the market operating conditions in order to earn profit. Biomass users operating on the market should seek maximum efficiency, they will only be able to compete on the market and persuade the government to allow them to operate.

In simple companies entrepreneurship is determined by the characteristics of the leader; in planning companies it is defined by explicit and product-market strategies; while in organic companies it is defined by a function of their environment and structure (Gawel, A., Jankowska, B., 2012). An entrepreneurial company is characterized by three dimensions: pioneering (proactiveness), innovation and risk taking. Such businessmen help the cluster to grow and increase its competitiveness.

Renewable energy will not only address the limitations associated with current energy consumption patterns and provide much needed modernization of the energy sector, but will also promote sustainable development objectives (Kaygusuz K., 2007). Constant pursuit of efficiency and the application of innovations are key factors ensuring smooth functioning of the biomass energy sector.

Logistics system should be perceived as a wider structure with essential elements inherent for private business entities. It allows them to achieve full operational performance, including pre-production and post-production processes. In reality, logistics system includes not only the logistics of production, marketing and distribution, but also procurement logistics. This allows creating just-in-time operational procedures where purchases, production and sales are synchronized (Figure 2). Procurement logistics is important in terms of ensuring continuous operation and avoiding situations where user needs cannot be met.

Figure 2. Main chains of the logistics system



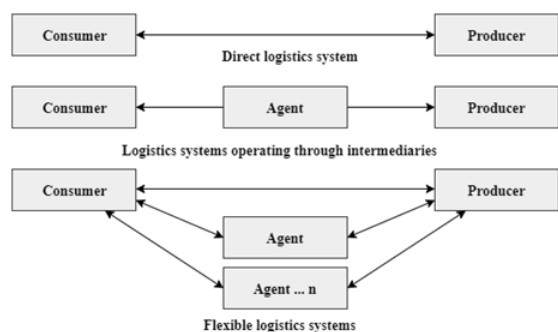
Source: created by authors

Studies show that marketing or distribution logistics can be seen as an entirety of logistics functions and goals that affects the distribution of goods. Distribution logistics includes activities related to the supply of services and goods from the production warehouse to the outlet market. Production logistics is also a combination of logistic functions and goals that ensure continuous production, including activities related to the movement of materials and raw materials at all stages of the production process, as well as interim storage until the finished product reaches the warehouse. Supply logistics ensures timely provision of material resources to the company, as well as inventory management, supplier selection, reduction of logistics related risks (due to non-compliance with supply parameters).

Logistics systems can also be seen from a generalized perspective taking into account the prevailing environment. It can also be applied to a separate business branch. Usually logistics systems are valued based on the prevailing relationship between the business and the end user. This is considered as macro-level logistics. Macro-level logistics includes direct, intermediary and flexible logistics systems (Figure 3). They are relevant for businesses of different sizes and sectors that operate in both production and in service sectors. Logistics systems may have exceptions however these are currently universally accepted types of systems.

Direct logistics system (A) is a system in which the flow of material goods moves directly from producers to consumers. In this case there is no intermediary structure. This type of system is most common in small and medium-sized businesses that do not have a large storage capacity. In this case it is easier for them to deal with individual manufacturers. It allows developing direct contact with those subjects ensuring continuous supply of goods. This system can function smoothly only if small quantities of goods is delivered to customers because communication with different manufacturers can deprive the consumer of a significant proportion of time and human resources.

Figure 3. Types of macro logistic system



Source: created by authors

The most commonly used logistics system is based on intermediaries (B). This way the movement of material goods goes through one or several intermediaries before reaching the end user. In case of industrial products, the role of intermediaries is usually carried out by wholesale distributors or logistics centers that distribute goods closer to end users. In case of services, business entities manage the service packages that are later distributed to consumers. In case of energy, two business parts need to be distinguished - the supply of fuel and the supply of the final product. Power plants can procure fuel supply directly or through intermediaries. The latter is quite common among low power plants. Meanwhile the final energy is usually sold through municipal energy supply companies that, in this case, carry out the role of intermediaries.

Flexible logistics system (C) is characterized by its flexibility and ability to adapt to the emerging situation. A flexible logistics system is based on the fact that intermediary services are not mandatory - they can be used or not. This can be adjusted based on the response to changes in demand. This system is considered to be the best reflection of the biomass cluster case because intermediate suppliers able to provide greater quantities of biomass are needed when weather conditions and energy supply change. In this case it is considered that biomass manufacturer is a provider and heat, energy or natural gas producing power plant is a consumer. In normal cases direct communication is used however, the possibility to rely on the services of intermediaries remains.

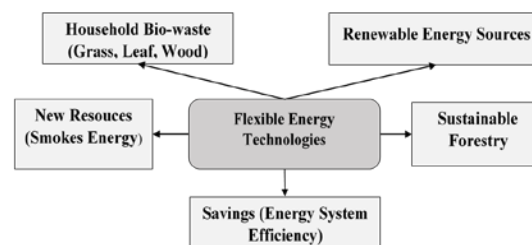
Logistics systems are applied in almost all sectors of the economy. They help to control the growth of the costs and effectively fill the needs of consumers. One of the key competitive advantages of a biomass cluster is a balanced fuel supply to the power plants. It helps to manage the costs and win a competitive battle against fossil-based power plants. The logistics system in the cluster occurs through both direct links and cooperation with the intermediaries.

## 2.2 Features of Logistics Systems in Biomass Cluster

Sustainable development of the biomass energy sector makes it possible to reform the energy structure and increase its efficiency in different countries and regions. As fossil-fuel equipment installations are more often replaced with equipment suitable for burning biomass it creates conditions for the joint review of the local energy grid. This results in reduced amounts of wasted energy and increased efficiency of energy production and supply. Controlling the growth of potential biomass helps cultivating the flexibility. The success of a bio-based industry depends on an accurate forecast of the raw material flow coming from the forests for the entire biomass supply chain up to the industrial processing stage (Husmann, K., et al, 2018). This ensures the sustainable use of biomass based on economic logic. Cluster developments encourage a highly specific territorial process, which performs as an intermediate system between the micro-economy of the commodity-producing society and the structure of the modern space-economy (Yang, Z., et al., 2015). Increasing efficiency and ensuring supply flow dynamics are the key components ensuring sustainable development of the

biomass sector (Figure 4). The development of biomass energetics allows obtaining various types of fuel from different sources, making it possible to ensure long-term price stability. At the same time it is possible to generate different volumes of energy production based on demand.

Figure 4. Components ensuring sustainable development of the biomass sector



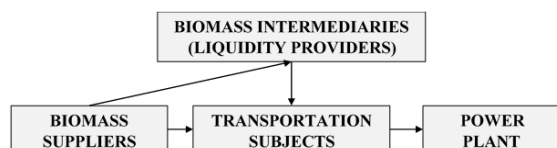
Source: created by authors

Biomass energy sector has favorable clustering possibilities as it uses local renewable resources. Such resources are usually managed by small entities that are not able to supply regional biomass processing facilities all by themselves. In case of cooperation they would not only satisfy the demand for biomass but at the same time would also receive tangible financial benefits. It is more favorable for biomass processors to cooperate with a larger number of suppliers as this allows them to obtain the required quantities of renewable fuels faster and at a lower cost. It is therefore extremely important to involve residents who would generate different types of bio-waste. By handing over their bio-waste to be recycled they would help to increase the competitiveness and flexibility of the cluster. At the same time, biomass energy structure can be community-based, where members of the community contribute to the production of the resources they need.

A result it can be argued that biomass cluster structure can be favorable to logistics system development. Moreover, it is essential for this sector to have a smoothly functioning logistics system as it helps maintaining high competitiveness level in the energy market. Logistics system covers the planning, provision, production and distribution of goods from manufacturer to customer. All these elements interact and affect each other. System efficiency is also influenced by marketing. An efficient logistics system can only exist if all elements interact with each other. When evaluating the efficiency of the biomass cluster logistics system, marketing does not play a vital role as it only acts in the local market where the all products are the same. In this situation, energy producers need to compete for the market share but not for consumers. The main instrument for securing the market share is the effective operation leading to lower final energy prices. For this reason biomass cluster logistics system plays a vital role in optimizing the fuel costs and transportation costs.

The biomass cluster and its logistics system require a specific structure. Since biomass energy requires high quantities of raw materials, it is necessary to ensure a smooth material processing and supply flow. In case of biomass cluster, intermediary services are required on several occasions - when fuel is supplied and when it is burned. Business in biomass cluster is highly seasonal because during the winter the demand for thermal energy is significantly higher compared to the summer time. This influences the volumes of cluster logistics at the same time affecting the entire logistics system (Figure 5). Subjects providing transportation services are also required. In this case, they shall be called service staff.

Figure 5. Simplified biomass cluster logistics system



Source: created by the authors.

When demand for biomass is rapidly rising biomass supply intermediaries are needed the most. Intermediaries are able to quickly supply themselves with biomass usually obtaining it from their managed biomass areas and forest massifs. In terms of the latter, forests are also cleaned by removing poor-quality wood. This also carries out a specific market-forming function because when possibility is presented stable quantities of biomass are produced and increase in prices is stabilized. In most cases such entrepreneurs diversify their risks by producing biomass in winter while shifting their businesses to other activities during the summer. This ensures some sort of synergy taking into account seasonal changes.

Clarity and goal to fulfil consumer needs are key characteristics of a logistics system. Similar phenomenon is present in the case of biomass clusters. It focuses on the supply of sustainable energy resources ensuring continuous production of thermal energy and electricity. The cluster is oriented to a local area, and its extent is easily controlled. Following a biomass cluster logistics system analysis it is estimated that different quantities of biomass are supplied during different seasons. It creates conditions for a dynamically managed logistics system that ensures continuity and competitiveness of biomass cluster activities.

### 2.3 Methodology and research findings

The research analyses the hypothetical supply chain system in areas where all of the thermal energy is produced using biomass. The study uses data from two cities (A and B). Creating this model it is assumed that the first city consumes approximately 18,618 TOE (Tonnes of Oil Equivalent) of biomass per year. The second city consumes about 1850 TOE of biomass per year. The model examines the situation where the first city can be supplied from seven biomass production sites located in different areas meanwhile the second city is supplied from five sites. Different supply proportions are determined depending on the size of the biomass production site in the area. The difference between the least and most exploited production sites is almost twice as high. Data provided in Table 1 shows that the differences between biomass production sites are not significant allowing to maintain balanced supply quantities. The areas are selected based on the potentially available biomass, annual forest harvesting volumes, quality of transportation services and potential to supply large quantities of biomass in the short period of time.

The map of biomass supply sites and cities (Figure 6) shows that biomass supply sites are located in different areas. Their exploitation mostly depends on seasons and unexpectedly increased demand for biomass. During the warm season when demand for energy is lower, supply sites that are closer to the cities are exploited the most. During the cold season when demand for biomass is higher, the exploitation level of further supply sites is increased. Biomass extraction is viewed from a broader perspective as different size supply sites are exploited taking into account the planned forest harvesting volumes and the scale of cleaning in small forests. For the most part, large arrays are utilized because of the planned forest harvests. The conditions for this situation are the ongoing forest harvestings. Waste gathered during the harvest is used for energy production. In all cases, the waste is then shredded locally and afterwards transported to the incineration point. Waste gathered cleaning less woody areas is also used for energy production. Forest cleaning can be done in order to increase the sustainable use of the forest resources.

In the first area the incineration facilities are located in the middle (city A), this enables smooth supply of required biomass quantities. Forest areas are located in the southern part of the area. Since distances are optimal (up to 30 km), biomass is delivered to power plants within 1 hour using trucks. This enables quick response time in situations when demand for biomass increases significantly. In the second area, the power plants are located in the northern part. This changes the logistics system, since all biomass supply sites are located south of the city B. The prolonged supply distance helps to better express how significant is the efficiency of the logistics supply chain. Basic operating costs are related to biomass processing and transportation. Unlike in the case of fossil fuels here a supply chain based on human resources is needed and high automation level cannot be ensured. Therefore, it is necessary to anticipate a weekly biomass sourcing strategy that would be adjusted based on the changing seasons. Depending on the weather, the number of trucks entering the power plant can differ 2-3 times.

Table 1 Demand for biomass in the area distributed among the biomass supply sites.

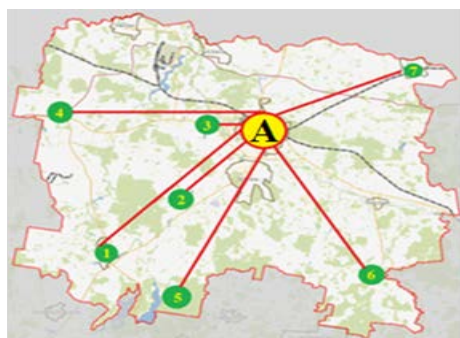
Supply site ID (First area)	Required quantity of biomass (TOE)	Supply ID (Second area)	Required quantity of biomass (TOE)
1	2243	1	515
2	2984	2	245
3	2123	3	215
4	2759	4	335
5	3450	5	540
6	3235		
7	1824		
Total	18618		1850

Source: created by the authors

The map of biomass supply sites and cities (Figures 6 & 7) shows that biomass supply sites are located in different areas. Their exploitation mostly depends on seasons and unexpectedly increased demand for biomass. During the warm season when demand for energy is lower, supply sites that are closer to the cities are exploited the most. During the cold season when demand for biomass is higher, the exploitation level of further supply sites is increased. Biomass extraction is viewed from a broader perspective as different size supply sites are exploited taking into account the planned forest harvesting volumes and the scale of cleaning in small forests. For the most part, large arrays are utilized because of the planned forest harvests. The conditions for this situation are the ongoing forest harvestings. Waste gathered during the harvest is used for energy production. In all cases, the waste is then shredded locally and afterwards transported to the incineration point. Waste gathered cleaning less woody areas is also used for energy production. Forest cleaning can be done in order to increase the sustainable use of the forest resources.

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Figure 6. Layout of biomass supply sites (1-7), in first area



Source: created by the authors

Figure 7. Layout of biomass supply sites (1-5), in second area



Source: created by the authors

Distances between biomass mines are different based on the quantity of available biomass resources. The highest quantity of biomass is extracted from areas that are located further from the power plants in the cities. In operational terms, if demand for biomass has increased significantly, it can be satisfied by bringing supplies from the nearby areas. In other cases, sustainable circulation of biomass supply is being developed, taking into account established demand and fuel resources in the area. Table 2 indicates the distances between biomass supply sites and central consumption point in city A or B. Each supply site is assigned a separate number. Supply sites are located at a sufficiently optimal distance, which allows to sustain balance in the supply chain processes.

Table 2 Distances between supply sites to power plants

Supply site ID (First area)	Distance from supply site to power plant, km.	Supply site ID (Second area)	Distance from supply site to power plant, km.
1	26	1	34
2	12	2	25
3	4	3	9
4	22	4	19
5	23	5	23
6	24		
7	20		

Source: created by the authors

To assess the supply chain functionality and costs, formulas determining these components were selected and adapted to the simulated case. Primary supply chain costs are related to biomass processing and transportation. In each case they vary because of the different distances between biomass supply sites. Characteristics of processed fuels are also different. Whereas Just-in-Time (JIT) system is used storage need is not being considered.

In this simulated situation thermal energy is produced using four biomass power plants in city A and two in city B. The demand for biomass varies based on the changing weather. During the

warm season biomass is used to provide hot water and during the cold season it is also used in thermal energy production. Data in Table 3 shows how required biomass quantities are distributed based on seasons. There are three periods - warm, intermittent and cold. The intermittent period is exceptional because at that time biomass power plants operate in a capacity that is just slightly higher than average. The intermittent period partially covers spring and autumn seasons.

Table 3 Distribution of biomass quantities based on seasons.

Month names and group ID	Biomass demand in city A, toe	Biomass demand in city B, toe
November - December - January - February (1)	8058	820
March - April - October (2)	5760	570
May - June - July - August - September (3)	4800	460

Source: created by the authors

The selected formulas help to assess biomass supply quantities and the efficiency of logistics system. They are related to biomass processing and transportation cost analysis. The logistics system is based on the biomass supply chain. Despite the fact that only two hypothetical areas were used for this research, this research instrument can be applied in more extensive research of other similar areas. Indicator values can change significantly depending on the distances between the biomass supply sites and power plants, fuel price and conversion ratio. It is generally accepted that efficient transportation distance is between 50 and 100 km. If distances are longer, the logistics system needs to be rearranged to include other means for transportation such as trains and water transport. In this research diesel powered trucks were used for transportation.

Transportation costs play a vital role in the logistics system. Optimal transportation plan enables competitive activities. If biomass supply transportation distance is greater than 100 km there is a risk to lose competitive advantage against subjects that are using fossil fuels. For this reason when developing a supply chain scheme it is important to estimate the transportation costs from each biomass supply site. Alongside the estimation of transportation distance it is important to include the transportation costs per kilometer. In this case it is estimated based on fuel consumption. The following formula is used to estimate the transportation costs.

$$TC = \sum(TD * 2) * TP \quad (1)$$

TC – Transportation Costs (EUR); TD – Transportation Distance (km); TP – Transportation Price (EUR/km).

To assess the efficiency of the supply chain it is important to evaluate the extent of preparations required at each biomass supply site. Production of biomass depends on the distance to the biomass supply site, its potential and season. When developing the supply chain system it is important to include the extent to which different biomass supply sites will be exploited. The exploitation extent is defined based on the quantity of unrefined wood and its availability in particular site. Subsequently biomass supply demand is calculated based on the time of year. This indicator can be calculated using the formula below.

$$BPC = FPR * DBP * RPC \quad (2)$$

BPC – Biomass Processing Coefficient; FPR – Feedstock Production Ratio; DBP – Daily Biomass Production (TOE/Day); RPC – Relative Production Capacity (depending on the season).

FPR is a percentage of biomass feedstock production per site compared to overall production in the area. APB is daily feedstock production capacity within the supply site. Relative production capacity is calculated based on the biomass demand during particular time of year. In winter, when the demand for biomass is highest, the relative production capacity is 1 and this coefficient is lower in warm seasons.

Another indicator shows the changes in biomass processing costs. Costs are calculated based on one conditional unit, in this case it is equal to tonnes of oil equivalent. It is assumed that a certain amount of fuel is needed to process one biomass unit. In this case it is estimated that this amount equals to 8 liters per unit. The price of fuels varies depending on the time of therefore companies have to plan fuel costs otherwise their logistics system can result in higher supply costs. This should be considered during fuel purchases. If there is a tendency for rising fuel costs. Fuel prices might differ from one region to another and that also influences the final energy price.

$$DBPC = \sum FN * FP \quad (3)$$

*DBPC* – Daily Biomass Production Cost; *FN* – Fuel Needs (L/TOE); *FP* – Fuel Price.

In the empirical study transportation costs are calculated first. They are estimated based on the cost of bringing one biomass unit to power plant. Due to changing fuel prices cost estimates might differ. In this case two optimal transportation prices are selected to reflect fuel price volatility. This indicates how important it is for businesses to evaluate how fuel price will change and its effects on the price of the final product. Data provided in Table 4 shows that transportation costs can vary significantly depending on the distance and fuel price.

Table 4 Simulation of transportation costs.

Supply site ID (First area)	Distance from supply site to power plant, km.	TC (TP = 0,55)	TC (TP = 0,75)
1	26	28,6	39
2	12	13,2	18
3	4	4,4	6
4	22	24,2	33
5	23	25,3	34,5
6	24	26,4	36
7	20	22	30
Supply site ID (Second area)	Distance from supply site to power plant, km.	TC (TP = 0,55)	TC (TP = 0,75)
1	34	37,4	51
2	25	27,5	37,5
3	9	9,9	13,5
4	19	20,9	28,5
5	23	25,3	34,5

Source: created by the authors

In Table 4 two transportation prices are selected. Based on that transportation costs of one biomass unit are calculated and expressed in amount of trucks needed. Transportation costs are calculated estimating the distance of a round trip therefore the volatility of transportation costs is financially more significant. It can be seen that average costs in the second area are slightly higher compared to the first area. This is related to the distribution of supply sites in the second area where the plant is located in the northern side of the region and there are no conditions to bring supplies from areas that are located to the north from the plant. Transporting biomass from the supply sited located in the southern part results in increased transportation costs. In the first area transportation costs are distributed evenly. Feedstock supply sites located closest to the power plant generate lowest distribution costs. However the feedstock production capacity is not high enough for them to fully cover demand for biomass. For this reason the logistics system should help manage the costs and balance the biomass transportation from separate supply sites.

Another indicator is biomass processing coefficient that is calculated for three different seasons lasting for different period of time. The highest amount of biomass is used during the winter months. The consumption of biomass is lower in other months and the amount is calculated using the adopted coefficient. In summertime coefficient is 0.2, during the interim period before and during the end of the heating season the coefficient is 0.6.

Data in Table 5 show that indicators the first area vary considerably when seasons change. The highest coefficient value is generated in the 5th supply site because it supplies the power plant with largest amount of biomass. In the event of an unexpected jump in energy demand precisely this supply site can quickly provide required amount of biomass to the power plant. Meanwhile during the tactical period resources are supplied from sites 3 and 7, as they are relatively close to the power plant and can meet the lower energy needs.

Table 5 Biomass processing coefficient in the first area

Supply site ID (First area)	FPR	DBP	DBPC (1)	DBPC (2)	DBPC (3)
1	12,05	6,15	74,03	44,42	14,81
2	16,03	8,18	131,03	78,62	26,21
3	11,40	5,82	66,32	39,79	13,26
4	14,82	7,56	112,02	67,21	22,40
5	18,53	9,45	175,15	105,09	35,03
6	17,38	8,86	154,00	92,40	30,80
7	9,80	5,00	48,96	29,37	9,79

Source: created by the authors

Same actions were taken in the second area. As Table 6 shows the highest coefficient value is calculated in the 5th supply site. Indicators in the table vary significantly and this variation is related to season changes. Following the values calculated for the warm season it can be seen that supply site exploitation is symbolic and it is only used to fulfil the hot water needs for that period of time. This allows maintaining the efficiency of the logistics system in both active and passive operating periods.

Table 6 Biomass processing coefficient in the second area.

Supply site ID (Second area)	FPR	DBP	DBPC (1)	DBPC (2)	DBPC (3)
1	27,84	1,41	39,28	23,57	7,86
2	13,24	0,67	8,89	5,33	1,78
3	11,62	0,59	6,85	4,11	1,37
4	18,11	0,92	16,62	9,97	3,32
5	29,19	1,48	43,18	25,91	8,64

Source: created by the authors

Finally, the costs of biomass production for each site and the entire area are estimated. It is assumed that there are 2 fuel price rates that can change the overall costs of the logistics system. In the case of the first area, estimation of supply site operating costs show that most distant sites and those supplying largest amounts of biomass generate highest processing costs (Table 7). As diesel is used for biomass processing it amounts to the largest part of the processing costs.

Table 7 Daily biomass preparation cost in the first area

Supply site ID (First area)	Required quantity of biomass, toe	Sum (NF)	DBPC, (FP = 1,10)	DBPC (FP = 1,20)
1	2243	17944	19738,4	21532,8
2	2984	23872	26259,2	28646,4
3	2123	16984	18682,4	20380,8
4	2759	22072	24279,2	26486,4
5	3450	27600	30360	33120
6	3235	25880	28468	31056
7	1824	14592	16051,2	17510,4
Total:	18618	148944	163838,4	178732,8

Source: created by the authors

Similar trends are also apparent in the second area. Data provided in Table 8 shows that changes in costs are relatively small when production output is low. This enables a more stable

logistics system management process as it can quickly adapt to relatively small changes. Assessing the fact that the price may rise or fall gradually makes the logistics system even more resilient. If the prices rise cluster subjects in the area can provide themselves with the required amount of cheap fuel, which would enable cost-effective operations over a long period of time.

Table 8 Daily biomass preparation cost in the second area.

Supply site ID (Second area)	Required quantity of biomass, toe	Sum (NF)	DBPC, (FP = 1,10)	DBPC (FP = 1,20)
1	515	4120	4532	4944
2	245	1960	2156	2352
3	215	1720	1892	2064
4	335	2680	2948	3216
5	540	4320	4752	5184
Total:	1850	14800	16280	17760

Source: created by the authors

The results obtained in the empirical study show that the logistics system can be effective in areas with both high and low demand for biomass. Transportation and biomass processing costs are heavily influenced by fuel costs. Changing operational costs also change the final biomass price. Generally speaking it can result in increased or decreased energy prices for end users.

In the second area, due to the relatively unfavourable distribution of the mines, biomass cannot be supplied from the northern part of the area, but the logistics system helps maintaining region's competitiveness in terms of energy. In the case of the first area, a more even distribution of biomass processing sites enables a balanced distribution of biomass flows, and the logistics supply chain is key in achieving this goal.

### 3 Conclusion

Logistics system is a universal tool that helps balancing the supply of resources in required directions. This is especially relevant for a biomass cluster as its activities are based on smooth biomass supply to power plant. In the case of biomass clusters flexible logistics system is used and depending on demand intermediary services may or may not be used to fulfil it. There are several types of logistics systems, but it is generally acknowledged that the main elements of the logistics system are the manufacturer, the intermediary (if necessary) and the user. All trading operations are carried out between these entities.

In this research we used data related to the amount of biomass consumed and seasonality in two hypothetical areas. Areas have different energetic capacities, which allows us to reveal the flexibility of the logistics system. In the first area there are seven biomass supply sites and the power plant is located almost in the middle of the geographical region. In the second area there are five biomass supply sites but the combustion point is located in the northern part of the region. The latter complicates the biomass supply process and emphasizes the need for a logistics system. Seasonality changes the demand for biomass, which affects the intensity of the logistics chain. To analyze the impact of the logistics system costs of fuel used for biomass transportation and processing are examined.

The obtained empirical research results show that the logistics system works in both high and low intensities of biomass usage. It has been established that more distant supply sites can be used when demand for biomass is increasing evenly and closed sites can be utilized to neutralize sudden jumps in demand. Fuel price volatilities significantly increase the costs therefore when the fuel price rises, logistics system enables a more responsible management of the costs associated with biomass transportation and processing.

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### Primary Paper Section: A

### Secondary Paper Section: AH

# CAN MOTIVATION FOR CHOOSING TEACHING AS A PROFESSION PREDICT ACADEMIC ACHIEVEMENT? THE ROLE OF GENDER, SECONDARY SCHOOL TYPE AND STUDY PROGRAMME

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**Abstract:** The paper deals with the relationship between motivation for choosing teaching as a profession and academic achievement among Slovak teacher trainee students. The aim of the research is to identify the role of a gender, secondary school type and a chosen study programme as intermediary factors between motivation for choosing teaching as a profession and academic achievement. Motivation for choosing teaching as a profession was examined by using the SMVUP-4-S scale and academic achievement was measured as a GPA on a sample of 402 teacher trainee students. For measuring the statistical prediction Multivariate regression model analysis was used. The results showed that motivation for choosing teaching as a profession is a significant predictor of academic achievement ( $F(1, 325) = 2.307, p < .01$ ), while gender ( $F(1, 325) = 2.658, p < .01$ ) and a secondary school type ( $F(1, 325) = 2.087, p < .001$ ) play a significant role as an intermediary factor. The model consists of motives for choosing teaching as a profession, academic achievement and a study programme is not statistically significant in terms of the statistical prediction ( $F(1, 325) = .539, p > .05$ ).

**Keywords:** motivation, profession choices, teacher development, STEM, academic success, gender differences, teacher trainees

## 1.1 Motivation for choosing teaching as a profession

Students have different reasons that lead them to choose teaching as a profession. It is particularly important to understand and establish the type of motivation for choosing teaching as a profession, because the type of motivation is likely to affect professional engagement and teaching style (Watt, Richardson & Devos, 2013). The most commonly identified motivational types of teaching in teacher training literature are: intrinsic, extrinsic and altruistic motives (Brookhart & Freeman, 1992), which is in concordance with the expected "values" - categories that are further divided into specific components. The intrinsic motivation is more durable and effective than the other types of motivation (Klein, 2006). The intrinsic motives are the most frequent when choosing teaching as a profession. They are considered the most important because they are directly related to the content of profession (Watt, Richardson & Devos, 2013), and they are predominately good professional engagement in this field (Fresko, Kfir & Nasser, 1997). The motives that are connected to this issue also occur in pedagogical and psychological literature, such as extrinsic and altruistic motivation. Although higher performance might be achieved via extrinsic motivation, it is only for a short term. The disputable relation is also between motivation and a specific activity (Klein, 2006). The extrinsic motives in a teaching profession are undesirable because of dissatisfaction in performance may be shown in the teacher's workplace, as well as in their actions (Fresko, Kfir & Nasser, 1997). We registered the following extrinsic motives in pedagogical and psychological literature: a desire to have steady income (Saban, 2003), a stable working place after studies (Papanastasiou & Papanastasiou, 1997), holidays (Kyriacou & Coulthard, 2000), job security (Johnston, McKeown & McEwen, 1999), more time for family and children (Watt & Richardson, 2007), and teaching profession prestige in the society (Bastick, 2000). Altruistic motivation plays an important role when choosing teaching as a profession. An altruistic motive may be understood as the desire to improve well-being of others (Klein, 2006). It is connected with the concept of prosociality and it covers doing things intentionally to help another person or a group of people. The altruistic motives are closely related to intrinsic motives because they correspond with the professional content (Kyriacou & Coulthard, 2000; Saban, 2003). In relation with this issue, several models of motivation for choosing teaching as a profession have been developed. For example, SMVUP and Fit-Choice (Watt & Richardson, 2007) models of motivation for choosing teaching as a profession are based on the theory of expectation and values (Eccles & Wigfield, 2002) and work motivation (Holland, 1985) and self-determination theory (Ryan & Deci, 2000). Presuming

the impact of various social factors on the personality that are the decisive factors in the choices of profession, the impact of socio-cultural, family environment, peers, personality and other influences can be considered to be significant determinants of the choice. The model of motivation for choosing teaching as a profession points to different psychological mechanisms that are involved in the process of choosing teaching as a profession, but all parts of the model work together in the decision making process (Tomšik, 2016; Watt & Richardson, 2012; Figure 1).

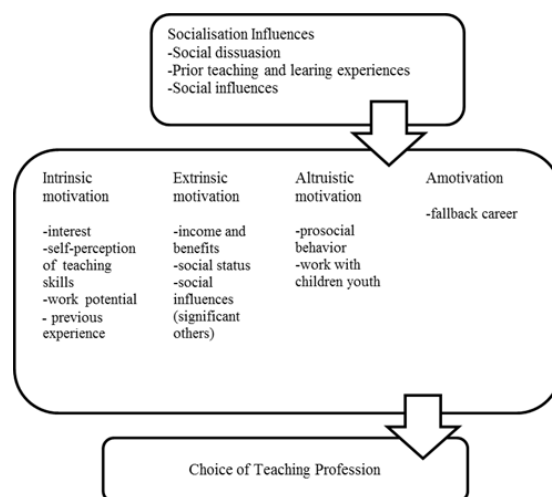


Figure 1. Theoretical Framework of SMVUP Model Based on Fit-Choice Model by Watt & Richardson (2012).

These models, based on the theory of work motivation, point to the fact that not only the previous factors influence the motivation (in general, or motivation for choosing teaching as a profession), but also that the motivation influences the performance (for example work performance, academic achievement, demand for the tasks, interpersonal relationships).

## 1.1 Motivation and academic achievement

Motivation is defined as the process that accounts for an individual's intensity, direction and persistence of effort toward attaining a goal. The psychological meaning of motivation refers to the internal mental state of a person that relates to the initiation, direction, persistence, intensity and termination of behaviour. The issue of motivation and performance is not only relevant in education science, but also in other spheres such as work motivation or work performance. Motivation of individual in the work place still remains one of the sensitive subjects that determine the level of input that employees will put in the organization to commit to good performance. This means that motivation either intrinsic or extrinsic contribute to employee satisfaction and thus enhances performance and productivity (Bhattacharyya, 2007; Kuranchie-Mensah & Amponsah-Tawiah, 2016). Motivation plays an important role in the academic achievement of students. In the educational perspective, motivation has a multidimensional structure which is correlated with learning and academic motivation. Psychologists have noted that motivation should be taken into account in education because of its effective relationship with new learning, abilities, strategies and behaviors, and they have presented motivation for academic achievement as one of the preliminary constructs for defining such a type of motivation. Motivation for academic achievement is attributed to behaviors which lead to learning and achievement. In other words, motivation for academic achievement is such a pervasive inclination towards doing a task achievement fully in a particular context and assessing the performance spontaneously (Amrai, et

al. 2011). Academic achievement is still discussed and an insufficiently clarified term. According to the pedagogical terminology (Průcha, Walterová & Mareš, 1995), Academic achievement or (academic) performance is the extent to which a student, teacher or institution has achieved their short or long-term educational goals. In this context, school achievement means an average grade of all the subjects at the end of the school year (great point average – GPA; Tomšik, 2015). Cumulative GPA and completion of educational benchmarks represent academic achievement. Previous research (Bandalos, Gwske & Finney, 2005; Chemers, Hu & Garcia, 2005; Zohar, 1998) shows, that the achievement of the stated goals, the fulfillment of the academic tasks, the interest in the tasks and their achievement positively correlate with the GPA. Several studies have pointed out that internal motivation is positively related to students' learning outcomes and their competencies (Ames, 1992; Blumenfeld & Pokay, 1990). Internally motivated students engage in activities for their own purposes, working on tasks, which make them satisfied. On the other hand, students may also be motivated by external motives if they believe that work or achievement will be positively evaluated, for example through rewards, good grades, praise from parents, teachers, and so on. In contrast, internal motivation usually leads to greater cognitive engagement than external (Ryan & Deci, 2000). However, the relationships between internal and external motivation, engagement and achievement are complex. It is more appropriate to ponder internal and external motivation as two separate continuums than two antithetic poles of motivation, as students can score low in one, and high in different types of motivation, low in both or high in both (Pintrich & Schunk, 2002; Tomšik, 2016). However, external motivation is not as effective as internal. People tend to avoid effort, which is also reflected in engagement in a particular work environment (Watt & Richardson, 2012). However, the motivation for choosing teaching as a profession is also associated with other factors, such as gender (Yüce, et al. 2013), study program (Watt, Richardson & Devos, 2013), satisfaction with the choice of profession (Tomšik, 2016), impact on work performance (Watt, & Richardson, 2012), personality traits (Tomšik & Gatial, 2018), etc. These factors overlap with time. For example, personality traits, and gender have impact on motivation, while motivation has an impact on satisfaction or learning outcomes of the academic achievement. This study focuses on a number of these factors: gender and motivation for choosing teaching as a profession, academic achievement and motivation for choosing teaching as a profession, a previous secondary school type and chosen study program in relation to motivation for choosing teaching as a profession. Studies have shown that the teaching profession is increasingly feminized; moreover, there are factors such as low income (Blount, 1999; Johnson, 2008), a low social status (Cushman, 2005) and public suspicion of men who want to work with children; especially at pre-primary or primary stage of education. On the other hand, such problem is rare at secondary stage of education, where men are the most typically teachers of subjects such as mathematics, physics or technology (Birrell & Rapson, 2006; Watt, Richardson, 2012). Watt & Richardson (2012) found that women showed stronger motivation than men in their desire to work with children/adolescents ( $F = 18.93$ ;  $\eta^2 = 0.023$ ). The category *Benefits for individuals and their families* that teaching profession is offering ( $F = 5.27$ ;  $\eta^2 = 0.007$ ) was also significantly higher elected by females respondents as well as intrinsic motivation, and dedication/passion to the teaching profession ( $F = 7.15$ ;  $\eta^2 = 0.009$ ). At the same time, female respondents showed more experience of teaching than male respondents ( $F = 4.83$ ;  $\eta^2 = 0.006$ ). In contrast, men showed a negative statistically a significantly higher score on a scale *Fallback career motivation* – decision to become a teacher ( $F = 6.73$ ;  $\eta^2 = 0.008$ ). Despite the gender differences, researchers in the national studies published in 2001 found that among graduates in the STEM study programs (Science, Technology, Engineering and Mathematics) there is lack of interest in teaching (Papanastasiou & Papanastasiou, 1997). Watt, Richardson & Devos (2013) compared motives of choosing teaching as a profession on a sample of Australian students of STEM and non-STEM teaching study programs found

differences in following motives of choosing teaching as a profession: an alternative option (Fallback career), where students of the STEM subjects score significantly higher ( $F(1.799) = 6.66$ ,  $n^2 = .008$ ) in the motive of learning experiences. The students in STEM subjects score significantly lower in comparison to students of non-STEM subjects ( $F(1.799) = 4.46$ ,  $n^2 = .006$ ), but they were significantly higher motivated by the benefits of teaching profession and time for family ( $F(1.799) = 7.38$ ,  $n^2 = .009$ ).

## 2 Methods

The aim of research is to point out the importance of motivation for choosing teaching as a profession. This aim involves measuring the level of specific motives for choosing teaching as a profession and covariant factors. In order to confirm the predictions mentioned above, it was decided to carry out quantitatively oriented research. Validated research tools were chosen (questionnaires, paper form) for measuring research variables. Participants submitted questionnaires with their consent to data processing. All questionnaires were anonymous. The data were collected by the psychologists at Slovak universities. Participants had 45 minutes to complete the questionnaires. The final version of the research tool was elaborated and piloted in June 2017. The data were collected in September 2017 (mapping motivation) and June 2018 (mapping academic achievement). In September 2018 the data were processed and analyzed.

### 2.1 Research sample

The research sample consists of 402 teacher trainees. The respondents aged from 18 to 20 years ( $M=19.10$ ) were from the following regions of Slovakia: Nitra, Bratislava, Banská Bystrica, Prešov, Trenčín, Trnava, Košice and Žilina. The parent population was 3300 teacher trainee students that were enrolled in the academic year 2015/2016 into their first year of study. According to the approximation of Morgan & Krejcie (1970), at least 346 respondents must be included in the set, with a percentage distribution corresponding to the size of the parent population in each region. This criterion is fulfilled (Confidence 95.0%, Margin of Error 5%). Based on the aim of the research, the research sample was divided into several groups based on gender, Secondary school and Study program (Tab. 1).

Table 1: Distribution of research sample.

Characteristics	N	%
Gender		
Males	132	32.8
Females	270	67.2
Secondary school		
Grammar School	221	55.0
Secondary Vocational School	116	28.9
Secondary School of Education	42	10.4
Art School	23	5.7
Study program		
STEM	46	11.4
nonSTEM	249	61.9
Combination	62	15.4
Art	12	3.0

### 2.2 Instruments

The Scale of Motivation for Choosing a Teaching Profession (fourth re-edition, version for students (S); thereafter SMVUP-4-S) is a validated research and diagnostic tool for identifying the motives for choosing teaching as a profession. The SMVUP-4-S scale was based on the globally used Fit-Choice scale (Watt & Richardson, 2012), which was adapted to the conditions of the profession and educational system of the Slovak Republic. Following the agreement of the authors of the Fit-Choice model,

the scale was translated into Slovak language and subsequently translated by different translators into English. Based on several validations (Tomšík & Verešová, 2015; Tomšík, 2016, Tomšík, 2016) of the internal consistency and validity of the model, the final, fourth re-edition of the SMVUP model was developed for the teacher trainee students. This model consists of three scales that are saturated with the following factors, based on Confirmatory Factor Analysis: Intrinsic motivation: interest, self-perception of teaching capabilities, work potential, previous experience; Extrinsic motivation: benefits, income, social status, significant others; Altruistic motivation: prosocial behavior, work with children, work with youth. Each of the subscale consists of four items. The score of the respondents can range from 4 points as a minimum score to 20 points as a maximum attainable score. The higher score represents a higher level of motivation factor. Items of the range are in the form of assertions that the respondent answer on a 5-point Likert's type scale.

Academic achievement GPA – a measure of a student's academic performance, calculated by dividing the total number of grade points received by the total number attempted. The GPA score is reversed and can range on a scale from 1 to 3 (lower score represents better academic performance).

### 2.3 Statistical analyses

For the description of the research data and detecting associations between variables statistic programs SPSS (Statistical Package for Social Science ver. 20) and STATA 13 were used. MCAR test (Little's Missing Completely at Random

test) was used to verify the missing data. After assuring that the data in the file is missing randomly, the Missing Value Analysis (Expectation-Maximization method) was applied to replace the missing data. To verify the normality of the research data the D'Agostino's K2 test was used. Null hypotheses have been rejected ( $p < .05$ ). A multivariate regression model (GLM) was used to determine the relationships between motivation for choosing teaching as a profession and academic achievement. Results of Levene's Test of Equality of Error Variances were non-significant ( $p > .05$ ).

### 3 Results

Table 2 indicates the intensity data of the constituent motivation factors. From observing the average values of the constituent variables, the most frequent motives for choosing a teaching profession are intrinsic and altruistic motives: Self-perception of teaching capabilities ( $M = 14.78$ ,  $SD = 3.210$ ), Work potential ( $M = 14.67$ ,  $SD = 3.389$ ), Working with children ( $M = 14.62$ ,  $SD = 4.504$ ), Prosocial behavior ( $M = M = 14.47$ ,  $SD = 3.155$ ) Interest ( $M = 13.25$ ,  $SD = 4.418$ ) and Working with youth ( $M = 12.47$ ,  $SD = 4.264$ ). Mediate or lower score was achieved in extrinsic motives for choosing teaching as a profession: Benefits ( $M = 11.89$ ,  $SD = 3.535$ ), Significant others ( $M = 10.90$ ,  $SD = 4.727$ ), Income ( $M = 10.38$ ,  $SD = 3.786$ ) and Social status ( $M = 9.91$ ,  $SD = 3.586$ ), as well as in Fallback career ( $M = 8.80$ ,  $SD = 4.143$ ) variable and Previous experience ( $M = 11.20$ ,  $SD = 4.888$ ). Average academic achievement of the teacher trainee students was  $M = 1.59$  with  $SD = .488$  on scale 1 to 3.

Table 2: Descriptive statistics of research variables: motives for choosing teaching as a profession and academic achievement.

Variable	N	M	SD	SEM	MIN	MAX	SK	KU
Academic achievement*	375	1.59	.488	.025	1	3	.311	-.610
Interest	402	13.25	4.418	.220	4	20	.007	-.971
Self-perception of teaching capabilities	402	14.78	3.210	.160	4	20	-.266	.008
Work potential	402	14.64	3.389	.169	4	20	-.207	-.386
Previous experience	402	11.02	4.888	.244	4	20	.166	-1.076
Social status	402	9.91	3.586	.179	4	19	-.079	-.869
Benefits	402	11.89	3.535	.176	4	20	.046	-.272
Income	402	10.38	3.786	.189	4	20	-.019	-.835
Significant others	402	10.90	4.727	.236	4	20	.047	-1.087
Working with children	402	14.62	4.504	.225	4	20	-.365	-.882
Working with youth	402	12.47	4.264	.213	4	20	-.135	-.656
Prosocial behavior	402	14.47	3.155	.157	4	20	-.057	-.396
Fallback career	402	8.80	4.143	.207	4	20	.401	-.958
Intrinsic motivation TOT	402	53.70	11.299	.564	19	80	.102	-.132
Altruistic motivation TOT	402	41.78	8.753	.437	16	74	.124	.396
Extrinsic motivation TOT	402	43.08	10.390	.518	19	70	-.069	-.561

Notes. N = number; M = mean; SD = standard deviation; SEM = standard error of mean; SK = skewness; KU = kurtosis, \* = score is reverse.

Table 3 shows the results of multivariate tests (GLM analysis). The analysis shows that the model consists of the motives for choosing teaching as a profession, academic achievement, gender and secondary school type, and it is statistically significant in terms of prediction. However, the analysis confirms that motivation for choosing teaching as a profession is a significant predictor of academic achievement ( $F(1, 325) =$

2.307,  $p < .01$ ), while gender ( $F(1, 325) = 2.658$ ,  $p < .01$ ) and secondary school type ( $F(1, 325) = 2.087$ ,  $p < .001$ ) play significant roles as intermediary factors. The model consists of motives for choosing teaching as a profession, academic achievement and study programme is not statistically significant in terms of prediction ( $F(1, 325) = .539$ ,  $p > .05$ ).

Table 3: Multivariate tests.

Effect	V	F	Hypothesis df	Error df	p	$\eta^2$
Academic achievement	.081	2.307	12	313.000	.008	.081
Gender	.092	2.658	12	313.000	.002	.092
Study program	.060	.539	36	945.000	.988	.020
Secondary school	.221	2.087	36	945.000	.000	.074

Notes. V = Pillai's Trace value, F = ANOVA, df = degrees of freedom, p = p-value, level of significance,  $\eta^2$  = Partial Eta Squared coefficient; Computed using alpha = .05.

Table 4 shows tests of between-subjects effects. Only a few motives were detected as a significant prediction of academic achievement among teacher trainee students: Social status ( $F(1, 325) = 13.039, p < .001$ ), Benefits ( $F(1, 325) = 6.162, p < .05$ ) and Income ( $F(1, 325) = 8.267, p < .01$ ). These motives are in a negative correlation ( $p < .01^{**}$ ) with academic achievement, which means that weaker extrinsic motivation leads to higher academic achievement. Nevertheless, gender is a significant predictor of motivation for choosing teaching as a profession. An effect of a specific component on academic achievement has a different level in terms of variance. While assuming gender as an intermediary factor, statistically significant differences have been found in following variables: Social status ( $F(1, 325) = 8.008, p < .05$ ), Benefits ( $F(1, 325) = 4.614, p < .05$ ), Income ( $F(1, 325) = 14.664, p < .001$ ), Significant others ( $F(1, 325) = 4.449, p < .05$ ), and Fallback career ( $F(1, 325) = 7.385, p < .01$ ). In all the mentioned variables, men score significantly higher compared to women, based on the t-test comparison analysis ( $p < .001$ ). The previous secondary school type has shown as a significant intermediary factor between studied types of motivation for choosing teaching as a profession and academic achievement, specifically: Previous experience ( $F(1, 325) =$

6.154,  $p < .001$ ), Income ( $F(1, 325) = 8.008, p < .001$ ), Working with children ( $F(1, 325) = 2.628, p < .05$ ). Based on Post Hoc LSD analysis, students from Secondary school of education ( $M = 16.14, SD = 3.440$ ) scored significantly higher in variable Previous experience compared with students from Grammar Schools ( $M = 10.31, SD = 4.547$ ), Vocational schools ( $M = 10.78, SD = 5.159$ ) and Art schools ( $M = 9.69, SD = 3.197$ ). Similar, result was achieved in variable Working with children: Secondary school of education ( $M = 17.66, SD = 3.905$ ), Grammar School ( $M = 14.135, SD = 4.327$ ), Vocational school ( $M = 14.55, SD = 4.727$ ) and Art school ( $M = 14.62, SD = 4.115$ ). Interestingly, students from Secondary school of education scored higher in extrinsic motivation variable Income ( $M = 12.36, SD = 3.406$ ), compared with students from Grammar School ( $M = 10.25, SD = 3.860$ ), Vocational schools ( $M = 10.13, SD = 3.362$ ) and Art schools ( $M = 9.17, SD = 3.142$ ). All differences were significant at level  $p < 0.001$ . As has been show in Multivariate tests analysis, study program do not play significant role as an intermediary factor between studied types of motivation for choosing teaching as a profession and academic achievement ( $p > .05$ ).

Table 4: Tests of Between-Subjects Effects.

Source		Type III Sum of Squares	df	Mean Square	F	p	$\eta^2$
Corrected Model	Interest	1190.555 <sup>a</sup>	25	47.622	2.657	.000	.170
	Self-perception of teaching capabilities	862.681 <sup>b</sup>	25	34.507	4.009	.000	.236
	Work potential	470.957 <sup>c</sup>	25	18.838	1.720	.019	.117
	Previous experience	1639.224 <sup>d</sup>	25	65.569	2.959	.000	.186
	Social status	1109.996 <sup>e</sup>	25	44.400	4.185	.000	.244
	Benefits	437.943 <sup>f</sup>	25	17.518	1.343	.130	.094
	Income	873.683 <sup>g</sup>	25	34.947	2.601	.000	.167
	Significant others	1065.740 <sup>h</sup>	25	42.630	2.031	.003	.135
	Working with children	1888.766 <sup>i</sup>	25	75.551	4.483	.000	.257
	Working with youth	775.968 <sup>j</sup>	25	31.039	1.756	.015	.119
	Prosocial behavior	432.918 <sup>k</sup>	25	17.317	1.812	.011	.123
	Fallback career	1535.199 <sup>l</sup>	25	61.408	4.390	.000	.253
Academic achievement	Interest	52.288	1	52.288	2.917	.089	.009
	Self-perception of teaching capabilities	14.790	1	14.790	1.718	.191	.005
	Work potential	2.030	1	2.030	.185	.667	.001
	Previous experience	20.048	1	20.048	.905	.342	.003
	Social status	138.329	1	138.329	13.039	.000	.039
	Benefits	80.386	1	80.386	6.162	.014	.019
	Income	111.087	1	111.087	8.267	.004	.025
	Significant others	17.360	1	17.360	.827	.364	.003
	Working with children	.013	1	.013	.001	.978	.000
	Working with youth	2.347	1	2.347	.133	.716	.000
	Prosocial behavior	4.273	1	4.273	.447	.504	.001
	Fallback career	31.109	1	31.109	2.224	.137	.007
Gender	Interest	6.340	1	6.340	.354	.552	.001
	Self-perception of teaching capabilities	24.822	1	24.822	2.884	.090	.009
	Work potential	15.078	1	15.078	1.377	.241	.004
	Previous experience	3.632	1	3.632	.164	.686	.001
	Social status	84.952	1	84.952	8.008	.005	.024
	Benefits	60.194	1	60.194	4.614	.032	.014
	Income	197.055	1	197.055	14.664	.000	.043
	Significant others	93.384	1	93.384	4.449	.036	.014
	Working with children	59.015	1	59.015	3.502	.062	.011
	Working with youth	21.035	1	21.035	1.190	.276	.004
	Prosocial behavior	1.573	1	1.573	.165	.685	.001
	Fallback career	103.304	1	103.304	7.385	.007	.022

Table continues on next page.

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Source		Type III Sum of Squares	df	Mean Square	F	p	$\eta^2$
Study programme	Interest	41.194	3	13.731	.766	.514	.007
	Self-perception of teaching capabilities	7.056	3	2.352	.273	.845	.003
	Work potential	12.361	3	4.120	.376	.770	.003
	Previous experience	11.219	3	3.740	.169	.917	.002
	Social status	16.629	3	5.543	.522	.667	.005
	Benefits	15.065	3	5.022	.385	.764	.004
	Income	5.285	3	1.762	.131	.942	.001
	Significant others	23.945	3	7.982	.380	.767	.004
	Working with children	40.798	3	13.599	.807	.491	.007
	Working with youth	27.168	3	9.056	.512	.674	.005
	Prosocial behavior	13.227	3	4.409	.461	.709	.004
Fallback career	36.062	3	12.021	.859	.462	.008	
Secondary school	Interest	71.947	3	23.982	1.338	.262	.012
	Self-perception of teaching capabilities	32.151	3	1.717	1.245	.293	.011
	Work potential	3.694	3	1.231	.112	.953	.001
	Previous experience	409.093	3	136.364	6.154	.000	.054
	Social status	22.411	3	7.470	.704	.550	.006
	Benefits	29.591	3	9.864	.756	.519	.007
	Income	222.776	3	74.259	5.526	.001	.049
	Significant others	34.374	3	11.458	.546	.651	.005
	Working with children	132.449	3	44.150	2.620	.049	.024
	Working with youth	25.050	3	8.350	.472	.702	.004
	Prosocial behavior	52.910	3	17.637	1.846	.139	.017
	Fallback career	57.681	3	19.227	1.375	.250	.013

Notes.  $F$  = ANOVA,  $df$  = degrees of freedom,  $p$  =  $p$ -value, level of significance,  $\eta^2$  = Partial Eta Squared coefficient.

a.  $R$  Squared = .170 (Adjusted  $R$  Squared = .106)

b.  $R$  Squared = .236 (Adjusted  $R$  Squared = .177)

c.  $R$  Squared = .117 (Adjusted  $R$  Squared = .049)

d.  $R$  Squared = .186 (Adjusted  $R$  Squared = .123)

e.  $R$  Squared = .244 (Adjusted  $R$  Squared = .186)

f.  $R$  Squared = .094 (Adjusted  $R$  Squared = .024)

g.  $R$  Squared = .167 (Adjusted  $R$  Squared = .103)

h.  $R$  Squared = .135 (Adjusted  $R$  Squared = .069)

i.  $R$  Squared = .257 (Adjusted  $R$  Squared = .200)

j.  $R$  Squared = .119 (Adjusted  $R$  Squared = .051)

k.  $R$  Squared = .123 (Adjusted  $R$  Squared = .055)

l.  $R$  Squared = .253 (Adjusted  $R$  Squared = .195)

m. Computed using alpha = .05

#### 4 Discussion and conclusion

The aim of the research was to find out whether it is possible to predict school success on the basis of motivation for choosing teaching as a profession. Also, the research has investigated whether factors such as gender and previous secondary school type affect the motivation and academic success, or whether motivation affects the choice of study program. In assessing the frequency of motives for choosing a teaching profession, it was found that the most frequent motives for choosing the teaching profession are intrinsic and altruistic motives. Mediate or lower score was achieved among extrinsic motives for choosing teaching as a profession as well as in Fallback career. This can be seen as a positive result, although we expected the internal motives to be scored even higher (taking in account scale range).

Based on GLM analysis, it has been found that the motivation for choosing teaching profession is a significant predictor of the academic success of teacher trainees,  $F(1, 325) = 2.307$ ,  $p < .01$ , but only the extrinsic motives (Social status, Benefits, Income) were shown as a significant predictors. This means that extrinsic motives reduce engagement in learning and do not predict good academic success. Students who are rather motivated by extrinsic motives have reduced the level of intrinsic motives and

are not so strongly interested in the field of study. Acquiring knowledge and good academic achievement is not a priority for them. What is interesting, however, is that intrinsic and altruistic motives were not statistically significant in terms of prediction.

Gender has been shown as a significant moderator of the motivation for choosing teaching as a profession ( $F(1, 325) = 2.658$ ,  $p < .01$ ). While significant differences have been found only in the following variables: Social status, Benefits, Income, Significant others and Fallback career – in other words, in all the extrinsic motives and in the Fallback career variable, based on statistical analysis ( $p < .001$ ). That means that extrinsic motives are preferred by men rather than women, and this is a logical consequence meaning that the professional orientation of men tends to focus on technical disciplines while teaching is a profession that is highly feminized. This is reflected in the results of these analyses and in this research sample of the Slovak teacher trainee students.

The previous secondary school type has been shown as a significant intermediary factor ( $F(1, 325) = 2.087$ ,  $p < .001$ ) between studied types of motivation for choosing teaching as a profession and academic achievement, specifically: Previous experience, Income, Working with children. Based on Post Hoc

LSD analysis, students from Secondary school of education (scored significantly higher in variables previous experience and Working with children compared with students from Grammar Schools, Vocational schools and Art schools. Logically, these students have more experience with teaching practice and teaching than students from other secondary schools under this review. This means that the secondary school type predicts this type of motivation and academic success. Interestingly, students from Secondary school of education scored higher in extrinsic motivation variable Income, compared with the students from Grammar Schools, Vocational schools and Art schools – this is probably caused due to fact that these students have much higher experience with teaching and the teaching profession, they are also more familiar with the content of the work, duties and income of the teachers, and then require a higher income for this job.

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#### Primary Paper Section: A

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## TEACHER AND A FUTURE TEACHER AS A RESEARCHER

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**Abstract:** Action research has the potential to promote reflective teaching practice and to form educational change. Only a few studies have examined how students perceive the preparation to do research during their future careers. The aim of the present qualitative study was to explore the perspective of students – future teachers of themselves as researchers. Two focus groups with 29 students were conducted. Data analysis revealed how they perceive the methodology courses, how they experience the process of their own research and how they construct this aspect of teacher professional identity. The findings are discussed in the context of current research, limitations of the study are mentioned, and suggestions for future research are proposed.

**Keywords:** students, future teachers, education, action research, focus group

### 1 Introduction

Preparation of students in teaching programs and their development during their educational practice is a never-ending process of finding the answers appearing in everyday school life. These are the results of numerous studies, primarily in the field of teacher research. The history of teaching profession proves that the teaching profession has become more and more demanding as the requirements for the work of a teacher have broadened teacher's competence profile. In the context of increasing demands on teacher's job, the entrance into the space of research takes its place due to several aspects.

Our study focuses on a teacher in the role of a researcher of his/her educational environment and activities. Based on the document of the Council of the European Union (2007) Campos (2010, pp. 13-31) underlines, that "research – based qualification" of a teacher is a current request and one of the distinguishing characteristics of initial teacher education today. As he states, there is a need for such a competence, which will support a teacher in developing new knowledge and skills. On the other hand there exist a demand to be engaged in reflective practice and research (this is one way how to be an innovative teacher). A closer relationship with research is considered to be a sign of higher level of teacher qualification.

The narrower connection of the teacher profession with research as an imperative stands out for creation of such study programs for teachers that will support investigative attitudes of undergraduate students in teaching programs within their professional practice and acquisition of knowledge and competences to work in research (get to know methods and principles of research for specific educational context).

#### 1.1 Research competence of a teacher

Numerous foreign and home authors in their papers focus on competences and skills of a teacher. In the professional literature we encounter the topic 'Teacher and Research' written by more authors. Research competences are discussed, as well as developmental competences (Švec, 2005), then also pedagogical and research competences (Lukášová-Kantorková, 2003). Seberová (2015) points to the fact that the research competence is a new requirement for teachers.

Regarding to professional activities performed by a teacher, research activities – action research and participation at various developmental projects are analyzed by Kasáčová and Tabačáková (2000). Spilková et al. (2008) pinpoint that in European context the attention is focused on 'Culture of

reflexive practice and research' and 'research based teacher education'. There is an evident effort of joining students/teachers mainly into action research studies in their own classroom or school (Spilková et al., 2008, p. 48).

Generally, the European context accepts the definition stated in the document 'A Tuning Guide to Formulating Degree Programme Profiles' (Lockhoff et al., 2010). Competences of teachers to be are divided into generic, general (applicable, transferable in various fields of curriculum) and specific (related to the specific field of the study). Among the generic competences we can find also 'research ability'. Gray and Campbell-Evans (2002) stemming from the study of several authors state that appreciation of the need to strengthen teachers through the research from their own practice is constantly growing as well as appreciation of the teachers who reflect the complexity of school environment and research of teachers representing self-reflection of their own professional practice. Thus, the need of teachers who are not only recipients and subjects of research, however, they are those who generate pedagogical knowledge. A new role of a teacher-researcher is considered to be a decisive factor in interconnecting effective pedagogical practice with the following professional teacher development.

Fulfilling the growing expectation of the society from the side of a teacher, the requirement to encompass the role of a reflective practitioner in the professional role and a researcher at the same time is not only intellectually demanding but it also requires a solution of serious and often difficult questions on a classroom practice and learning results of students. The double role of a teacher and researcher has currently become extremely demanding in the fast changing current conditions of schools. The difficulties are growing if a teacher is not properly prepared for such a role and has not gained enough experience in the field of the pedagogical research. Sometimes even reading research studies can be difficult for many teachers in the practice due to the fact that they find academic research very artificial, language of research too distant from their way of expression. Academic research is not considered to be a voice of teachers (Gray and Campbell-Evans, 2002).

Similarly, Shkedi (1998) suggests, that the idea of teachers as researchers arises from the encounter between the teacher's world and the researcher's world, which may be characterized as a deep gap. He found that the teachers do not perceive positivistic university-based educational research to have the potential to express their professional world. It is often too theoretical and the findings do not suit specific situations in which practitioners work. On the other side, qualitative research, being more narrative and reflecting real-world experience, may represent a bridge between the research and practitioners, help raising their professional levels, and reinforce their status as professionals.

#### 1.2 Action research

The first signs on action research and its distinction from academic research can be found in the work of the American social psychologist and educator Kurt Lewin from the 1940s. Lewin is considered to be the author of the term action research (Ferrance, 2000). The action research was perceived as an activity with its potential to strengthen the "science of education", as well as a status of the professionals who had been working at schools and faculties. Research of teachers and with teachers was one of the ways of improvements in this field and clearly points at the action research as knowledge/cognition generating activity (Noffke, 2009).

Throughout establishing action research, the terms such as practitioner research or teachers as researchers were used. In any case, the reason is apparent that it is about research activities that are performed by teachers themselves in their educational

environment (sometimes in cooperation with colleagues and academics). The research aim comes from the problematic situation (i.e. phenomenon) in a certain classroom or school with the results serving for immediate improvement of pedagogical practice. Application of teacher investigations and findings are not bound with various lengthy defenses, approval procedures or licenses as it is in the case of other studies. However, they are immediately reflected in the changes and making the pedagogical practice more quality like. Even if regarding the character of the stated research, a research sample is small but the presentation of findings at the workplace or through publishing the results (journal, conference, teacher meetings, etc.) gives space to apply the positive experience of others in own practice.

Kincheloe (2012) defines the research teachers do as taking matters into their own hands, suggesting that good schooling is not possible when it fails to account for social, historical, philosophical, cultural, economic, political, and psychological contexts that shape the educational process. The teachers that do a research of their own professional practice, explore and attempt to interpret the learning processes that take place in their classrooms, become empowered.

Action research has been currently most frequently defined as a process in which participants systematically and carefully research their own educational practice and use there different research techniques. This research is performed with the aim to change educational practice in the future in a particular education environment of a teacher, with students/pupils, with whom the teacher is dealing, at school where he/she works and therefore it raises questions directly connected with his/her educational work. Ferrance (2000) states that this type of research comes from several assumptions. Teachers and school directors solve best the problems that are identified by them, they work more effectively if they are challenged to find out and evaluate their own work and after that consider the way of how to differentiate their work. Efficacy increases if they help each other and work together. Despite that, cooperation among colleagues helps teachers and directors in development of their professionalism (Ferrance, 2000).

Relevant literary sources limit various types of action research. Ferrance (2000) according to the nature and aim of the research describes the action research performed by a teacher in his/her own classroom and a group action research of several teachers dealing with the same issue. There are also team action researches of teachers or others who jointly solve a problem on a level of the whole school or respective geographical district.

Action research is characterized by its cyclical form and phases in which it is performed. The most frequently these are the steps as identification of a problem in educational environment, study of relevant theoretical literature about the subjected issue, data collection (interview, questionnaires, tests, diaries, portfolio, audio and video recordings, etc.), identification, classification and analysis of collected data, their interpretation, processing the design 'action – intervention' in the classroom/school, evaluation of the results of intervention, communication of the results or their written publication. In each phase a teacher researcher applies chosen methods of pedagogical research (Seberová, 2015).

### 1.3 Preparation for the role of teacher-researcher

University study is for an undergraduate from the first days meeting with science and research. Pointing significant personalities in science and research creates a specific aspect of academic environment and it is an integral part of its culture. New students enter this culture and they are gradually taken into creation of such environment. Organization of university study gradually gives space to getting closer to science and research and their specific language, enables them to follow results and apply them into their student work, engage them into solution of different research projects. It seems that an interest in student research work can be influenced by personal motivation of

a student, internal persuasion about the meaning of his/her study, fulfilling own expectation in particular courses of the study but also other informal activities held at university, supporting atmosphere and university culture (hidden curriculum), possibilities to study abroad, a level of communication between a university teacher (or scientific authority) and student, etc.

Success of student work when creating final thesis as well as their later interest in applying research skills in their future practice both depend on several factors. Unfortunately, there are only a few studies that have examined how future teachers learn the processes of action research, what they learn, and how they see the connections between classroom inquiry, teaching and educational change (Price, 2001). Gray and Campbell-Evans (2002) emphasize the need for exploring the views of students on research work.

Price (2001) examined 11 future teachers' experiences of action research and suggests that the knowledge, skills, and experience students gain during their university studies powerfully influence the shape of their teaching practice. Based on data, the author examines four critical components of an action research course – reflection and inquiry; learning about students; learning about pedagogical content knowledge; and learning about social justice and democracy. In another study, Price and Valli (2005) used case-study methodology to explore novice teachers' experiences of action research. They identified five central tensions that form the process and pedagogy of action research – individual and institutional change, action and understanding, support and challenge, passion and reason, and regulation and emancipation. Authors suggest that educators use them as framework to develop understandings of change in relation to biography, teaching, and context of their students.

Kitchen and Stevens (2008) used self-study methodology to conduct an action research project as they introduced action research to their students. They analyzed written data from both students and teachers. The students reported that engaging in action research helped them to understand how to connect theory to practice and expanded their conceptions of teaching. The authors conclude that when teachers learn they are capable of transforming student learning by researching their own practice, their conceptual understanding of teaching and learning changes and the connection between teacher-growth and student-growth becomes explicit.

### 1.4 The present study

The research of the authors comes out of the several-years practice of the authors during supervision of students at their final bachelor and master theses or through solving doctoral research projects. These are activities that significantly support the student orientation in theoretical cognition in the field of pedagogical science (or related fields), they provide the space for interconnection of theoretical knowledge with current problems in pedagogical practice, the "training" of skills for scientific and research activities and moreover, strengthening the sense of never-ending search for truth, attentive research of environment, lifelong learning and connecting different fields of teacher work. The issue is that only a part of the students enter their teaching professions with this mind set and only a small proportion seeks for opportunities to continue in searching and innovating work. A small part of them consider the double role of a teacher and researcher as a part of their profession.

The main objective of the study was to explore the factors determining the perspective of students – future teachers of themselves as researchers and to highlight the key areas they consider significant in their future role as researchers.

## 2 Methods

### Participants

The sample consisted of students – future teachers who study the master degree of pedagogy at the Faculty of Education,

Constantine the Philosopher University in Nitra. The sampling was non-random. Two focus group interviews with 29 students were conducted until the condition of theoretical saturation of data was met (Strauss and Corbin, 1997). Two of the authors of this paper (V. K. and T. T.) were moderators of the focus groups.

#### Methods of data collecting

With regard to the nature of the research problem and to the aim to explore unique experience of students – future teachers the method of qualitative focus group was employed. Qualitative data is authentic, complex, and rich, and provide insight into phenomenon of interest. A set of open-ended questions was defined according to the previous research in this area. Group interactions that arise during the moderated interview bring dynamics into the process of phenomenon exploring – anything that is said can be confirmed, supported or disproved in a group discussion. Data of the focus groups were digitally recorded and transcribed verbatim.

#### Methods of data analysis

Data were analyzed by means of grounded theory as proposed by Strauss and Corbin (1999). Two independent coders (T.T. and J.T.) analyzed the data to detect as many aspects of studied topic as possible and also for validity check. Their partial results were confronted to reach congruent view at the phenomenon. They used multi-level coding of participants' statements. In the next phase central categories and sub-categories were created, relationships among them were explored and the findings were included in a model (Miovský, 2006).

### 3 Results

The analysis of focus groups data showed three categories that explain how the perspective of students – future teachers about themselves as researchers develops and what determines it. The categories include – knowledge and education at the university, practical experience with basic and action research, and personal vision.

Overview of key categories and subcategories is given in the following model (Fig.1). The relationships between the categories and their definitions are presented in brief below.

Fig. 1 Main categories and subcategories

<b>1 Knowledge and education at the university</b>
- quality of university education (theory)
- models of the teacher's profession at the university
- complicated language of science and statistics
<b>2 Practical experience with research</b>
- models of training teachers in teaching practice
- cooperation with the supervisor in a diploma thesis (trust and engagement)
<b>3 Personal vision</b>
- personal objectives
- attitude and activity

#### 3.1 Knowledge and education at the university

The idea of students – future teachers about themselves as researchers is determined primarily by the quality of university education. Understanding the methodology is important for students. Students perceive that more attention is given to the theory and less to the process of applying knowledge.<sup>1</sup>

*"Although we knew everything about the methodology, we were supposed to learn it, but only in theory."*<sup>4</sup>

*"The methodology was good. We were prepared theoretically. We learned about all the research methods. But we did not really learn how to work with them."*<sup>5</sup>

*"For example, I know that there are rules for formulating hypotheses. But I still have problems creating hypotheses."*<sup>9</sup>

Models of the teacher's profession at the university are another important part of creating the idea of students – future teachers about themselves as researchers: *"The great motivation is, if the teacher is active, communicative, and open to new things."*<sup>12</sup>

Students also verbalize some deficiencies in the competence to statistically process their own data: *"We have solved mathematical examples at the statistics lesson. However, I do not know how to apply it to my research. This is a barrier for me."*<sup>1</sup>

*"It would be better to learn statistics with our own data we have in diploma theses than to count some fictional examples during the lesson."*<sup>14</sup>

Research respondents emphasized one more problem. The language used in the methodology and research studies is often complicated: *"Recently we were reading a research paper and it was very difficult. It bothers me if the author uses too complicated language to describe the results."*<sup>11</sup>

*"Sometimes the professional language of the teacher is also a barrier. The supervisor is trying, but there are situations when I don't understand at all. I don't know what she's talking about. She can't explain what to do in a clear way."*<sup>23</sup>

#### 3.2 Practical experience with research

The idea of students – future teachers about themselves as researchers is determined by their practical experience with research: *"Practical experience is a problem. Already at school, we should do some action research. Maybe it does not need to be complete, but at least demonstrative. We had nothing like that during our teaching practice."*<sup>20</sup>

*„Yes, it's true. Educational practice is focused only on learning. Less attention was dedicated to action research. In the future we will have to do it. They should prepare us for this."*<sup>7</sup>

Models of the training teachers are another important part of creating the concept of future teachers about themselves. Future teachers reported rather poor experience, suggesting system changes are needed in this area: *"If we wanted to teach something in a different way, something new, the training teachers disagreed."*<sup>14</sup>

*"Teachers gave us simple instructions. This has to be dictated, explained, and taught. And that is the image of the teacher, when he is not open to himself, to improve himself, so he will hardly try to improve something through action research."*<sup>1</sup>

Positive self-image of students is supported by confidence in their abilities. Trust between the student and the supervisor is created through their cooperation. An important motivating element is confidence and encouragement: *"The supervisor trusted me. Recently, she has finished her own research. She showed me how to do it. I have similar research design, so it helped me a lot. We collected the data together."*<sup>9</sup>

Effective cooperation between the supervisor and the student has many aspects. It is important to support the student through his or her involvement in further research work. It is necessary to offer the students the opportunity to present the results of their own work. An example of good practice can be the organization of student conferences: *"The supervisor supported me to attend the student conference. It helped me. I have gained more confidence in my ability to conduct research, for now and in the future."*<sup>15</sup>

Engaging the student in research of his or her supervisor is an effective method of cooperation between tutor and student. Publishing results of the research they conducted together can be very motivating.

<sup>1</sup> to ensure the anonymity of research participants their identification data were replaced by a number, it is placed as a superscript at the end of each statement.

### 3.3 Personal vision

The idea of students – future teachers about themselves as researchers is formed also by their personal vision. School innovation is related to the personal objectives of future teachers. Future teachers who want to teach in a modern way are aware of the great importance of action research. The activity of future teachers and the belief that it is possible to teach modern is important: *“I want to teach at primary school, because I'm not happy with the way education looks. It is the same as twenty years ago.”*<sup>17</sup>

*“There are only a few schools where students work more than a teacher and come up with new ideas themselves. I would like to try new methods, something interesting and then verify it in action research.”*<sup>2</sup>

The personal vision gets formed by individual activity, identification with the teacher role, positive attitudes, enthusiasm, and additional education and self-education.

### 4 Discussion

The aim of the present study was to explore how students perceive the research as a part of their future career and everyday practice. The data suggest some key findings. One of the most often mentioned problems is the dominance of theory over practice in methodology courses. Students understand the theoretical basics of methodology well, but they have difficulties applying the knowledge. The lack of practical research experience affects the concept of students – future teachers about themselves negatively. Without the opportunity to experience the process of designing and conducting a research with a support from a teacher or supervisor, they do not feel competent to do research by themselves. The first contact of students with research work should be a part of basic courses during the first years, before the student starts to work on his or her diploma thesis. Current research (e.g. Price, 2001; Price and Valli, 2005) on experience of students of action research courses may provide a useful inspiration. As Kitchen and Stevens (2008) found the students who engaged in action research during the course reported that it helped them to understand how to connect theory to practice and expanded their conceptions of teaching.

Our data of future teachers reflect general attitudes toward research that teachers have, as being too theoretical, complicated and not suitable for practitioners (Shkedi, 1998). Students perceive the language of many research papers as a barrier preventing them from interest in research. It may be useful to introduce the students to the qualitative research, which is narrative, authentic, explores individual experience, and uses stories and real-world language.

Working on the diploma thesis is a significant experience for most of the students. The quality of relationship with the supervisor may have determining impact on the outcome of the process. Our data provide a picture of a good supervisor – he or she can speak about the research clearly, shows examples of a good research, and expresses confidence in the skills and knowledge of the student. The supervisor and student may work on a research together and eventually publish together. Student conferences at universities seem to be a good platform for gaining experience with presenting and defending results of their own research. Future teachers may receive useful feedback from the audience and support the confidence in their abilities.

The teachers who the students meet at the university or training teachers may represent significant models – the students want to be like them or the students perceive them as rigid, burned-out and unwilling to try anything new. Especially training teachers have the potential to influence the students through their personality, enthusiasm and competency, promoting climate for innovative ways of teaching.

### 4.1 Limitations of the study and suggestions for future research

There are some limitations that may threaten the validity of our results. One of them is related to the sampling. We tried to follow the rule of theoretical saturation of the data, however, we believe, that different, more heterogeneous sample may yield different results. Since there is a lack of similar studies in our country, we suggest the attention of both qualitative and quantitative researchers should be dedicated to the exploration of this issue. Understanding the experience with action research and attitudes toward action research of future teachers and in-practice teachers may help educators design the courses of research, methodology, and statistics for university students and in-practice teachers who take part at various forms of lifelong education. While the qualitative approach brings deep insight and understanding of a process and experience of an individual, quantitative approach may provide useful data on attitudes in relation to various variables, e.g. the field of study.

### 5 Conclusion

The main objective of the study was to explore the factors determining the perspective of students – future teachers of themselves as researchers and to highlight the key areas they consider significant in their future role as researchers. Only a few other studies have examined how students perceive the preparation to do research during their future careers. Two focus groups with 29 students were conducted. The main factors determining the perspective of students are: knowledge and education at the university, practical experience with research, and personal vision of students – future teachers. We discussed the findings in the context of current research and we mentioned the limitations of the study.

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**Primary Paper Section: A**

**Secondary Paper Section: AM**

## CREATING AND EVALUATING THE IDENTIFICATION OF CHILDREN AND YOUTH TALENT FOR FINE ART

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The study presents an analysis of findings from a long-term research supported by the VEGA agency 1/0179/17 Research on the Identifiers of Fine Art and Talent of Children and Youth.

**Abstract:** The study describe the process of identifying the indicators of art talent in children and youth and specify one of the indicators based on the internal structure. The process of searching the indicators of art talent was carried out by the process of identification, which served us to recognize and then assign a particular category to the basic three indicators of fine art talent (so-called triads of fine art talent).

**Keywords:** art talent, process of identifying, indicators, fine art

### 1 Fine art talent - characteristics

The topic about talent and gifted children and youth for fine art is based on the concept of talent. When we talk about gifted people or talent, we usually refer to other areas of human activity than art. It is possible find information about cognitive or other kinds of talent in the literature for specific purposes. Talent, endowment, natural ability or gift are expressions and terms closely related to the arts. At present, we can find different definitions of the term talent: from innate assumptions, above average abilities or creativity and deep interest.

We can find both terms in literature, talents and endowment used differently. In literature (especially from local provenance), the terms (talent and endowment) are used differently, e.g. talent as an actual ability (Musil, 1985), endowment as potential ability for intellectual activities and skill for non-intellectual activity (according to Hvozdič, see Valachová, 2005). Dočkal (2005) mentioned these terms as synonyms, used them as equivalent. It is also possible to continue in equivalence, as according to Winner (1997) talent and endowment have a lot in common. The author (Winner, 1997) describes the common triadic model. According to the author, he has three basic pillars (claims), which include the following premise:

1. An individual with talent is usually prematurely mature
2. He/she needs minimal help
3. He/she wants to stand out in the area where he is gifted

When trying to define the scientific notion of art talent, it is necessary to have an effort or ambition to uncover the essence of the phenomenon, ie to break away from the word and associations from colloquial language. According to Dočkal (1987) every healthy person can do some activity, he has some prerequisites for it, some talent. Talent and endowment must be understood as a component of the personality that is responsible for regulating his/her activity, both in qualitative (kind of activity) and in quantitative meaning (performance, success of activity).

Dočkal (2005, p.158) points out that it is useful to use the terms gift (and talent as synonyms) as the belief that talent and talent are two different concepts is a myth. Both terms refer to the same term - the ability of a person to practice. This statement, in turn, contradicts Musil's claims (1985) that the main quantitative difference is that talent is considered a high degree of talent.

The basic theoretical background for the understanding of talent from our point of view, as well as the talent of art, is the definition of the term from a psychological vocabulary (Abramenkovová et al., 1987), where it is understood as:

1. A qualitatively distinctive set of competences that underpin the successful implementation of the activity, the synergy of capabilities that form a certain structure, make it possible to compensate for the shortcomings of some skills through the development of other abilities.
2. General abilities or general elements of competences that determine the subject's ability, level and specificities of his / her activities.
3. Reasonable potential, or intelligence, holistic individual characteristics of cognitive possibilities and learning abilities.
4. A summary of beliefs, innate facts, level manifestations and the specificities of innate assumptions.
5. Talent, existence of internal conditions for achieving excellent results in action (Abramenkovová et al., 1987, p. 120).

Consequently, in the context of giftedness and abilities are essential as a precondition for action. According to Dočkal (2005, p. 11), some of the constantly evolving hardware is the use of which we can only provide with the use of appropriate (constantly developing) software. The ability to represent a java and quantitative aspect, the feature puts emphasis on a pro-active and dynamic aspect. Ability is in function and develops at the same time as it is used by the function, which is particularly significant in a child of pre-school age. Although the child's autonomous activity gains a major place in the process of perfecting innate abilities, it is not possible for a child to reach his or her own limits naturally, solely on the basis of his or her own activity, but due to appropriate educational action. Our interest is art talent, which is one of the artistic talents. Dočkal (2005) argues that no artistic activity can be successfully carried out with insufficient intellectual abilities. The unequivocal determination of the type of childhood talent is complex. Adequately developed intellectual abilities allow the development of artistic talent.

### 1.1 Approaches to talent studies

Three basic theoretical approaches to giftedness have been preferred since the 20th century (*see Cognitive approach, Personality development approach, Social cultural approach*):

**Cognitive approach:** He has the longest tradition in psychology. The original interest of the authors of this direction was to explore the cognitive assumptions of children and to identify individual differences between children. The research was focused on testing cognitive assumptions, focused primarily on IQ height.

**Personality development approach:** Representatives of this approach understand talent as an interplay of multiple personality characteristics. This model has many advocates and their ideas influence school policy in several countries.

**Social cultural approach:** This approach brings together the psychological and pedagogical tendencies of the problem. Their application is primarily in pedagogical practice, where it is desirable to address not only the individual's talents but also related areas and problems. In connection with artistic talent, we are most satisfied with the socio-cultural approach to giftedness study. The most important authors who have contributed to the development of this approach are H. Gardner's theory of diverse intelligences, followed by A. J. Tannenbaum, M. Csikszentmihalyi and A. Robinson (see Bartko et al., 2018).

## 1.2 Indicator (s) of creative talent and assessment options

The linking of indicators and artistic talent is characterized by the fact that the acquired findings concerning the talent of art had to be differentiated in a concrete way and the indicators are those that were helpful during the research. We understand the indicators as indicators of the children's art talent. Quite often, characters are used in art or visual art that we understand as being used more or less in the entire population, in a comparable development period. The signs of a child's drawing are well known, in which the characters appearing in a particular human developmental period are described. However, the indicators do not understand how the characters in the context of artistic expression are explained. In our understanding, these are indicators that are typical of the population with artistic talent, i.e. their perception is not so narrowly understood because a particular indicator may be present in the creation of an 8-year-old child and may even appear at a later age. Therefore, the indicators are not strictly tied to the age of a person with artistic talent.

For the presence or absence of individual indicators, we have the ambition to use a table in which the values (those used by the researcher) are expressed as a percentage, supplemented by a comment on the presence of weak or strong in the context of artistic talent. Each of the indicators that is part of the triad of key indicators can be evaluated by a five-step point scale (Valachová, 2018).

The term indicator is associated with several sectors. In the Pedagogical Dictionary (Průcha et al., 2009), the educational indicators are defined as a qualitative indicator that tells about the characteristics of products, the functioning and financing of the learning process (p. 82). Indicators are seen as data that monitor the learning process. The indicator is an identification index that Kadlec (1999) characterizes as a group of properties expressed by a code that characterizes just one object or expresses a defined group with generalized properties (Kadlec, 1999, p. 330). The indicators of children's creative talent (Valachová, 2018), in the context of the present research, are understood as the monitoring of a specific phenomenon, which is the artistic talent as a basis for the theoretical-research approaches in the examined issue. We include three main indicators, namely: environment, process and product, as shown in the processual circular arrow. In the process of assessing the talent of art, it is necessary to define primarily the main indicators that are considered significant during the evaluation of research and they are supposed as significant for its actual realization of research and subsequent evaluation (Valachová, 2018).

The process of searching the indicators of art talent was carried out by the process of identification, which served us to recognize and then assign a particular category to the basic three indicators of fine art talent (so-called triads of fine art talent).

## 2 The triad of indicators for fine art

The fine art talent indicators (I<1; 3>) show a triad that suggests a range of assessing the specificity of art talent. Their specificity was taken by a circular arrow, which creates a grouping of visual talent indicators and, at the same time, an individual saturation of one of the triads and points to the fact that art talent does not have to be confirmed.

Quantities (called basic and specific categories) have been identified at the interface of the triad of indicators, which are decisive for the visualization of the internal system of artistic talent assessment. This sequence at the interface of three indicators allows determining the saturation of individual categories within a particular indicator, whereby it can confirm or not to confirm each individual having prerequisite for creative talent.

Despite the fact that the issue of artistic talent is unique (several studies have been devoted to art talent in our conditions, but

there is no mention of concrete indicators, author's note), we find a relatively plastically described identification process (Strieženec, 1996), which we consider consistent with the course research (see Valachová, 2018). Strieženec (1996) argues that identification is a process by which we identify the identity of an object. In our case, it is the phenomenon of art talent in human being within his or her journey of life, we start in the pre-school age, when it is likely that the child proves the uniqueness of the art work to adolescence. We recognize similarities or differences in these periods. When identification touches a person, it is a process of knowing a certain characteristic attribute (a talent for art). Based on this characteristic, a personality can be assigned to a particular type of class, or considered to be unique from a certain point of view. It may also be unconscious with another subject, group, or model. We encounter it in the elimination of tensions, in the failure to achieve the goal when the client identifies (or links) with those who have achieved a similar goal during social work (see Strieženec, 1999).

## 2.1 Artefact: the foundation of fine art talent

The basis of the art talent was (and remained) an artefact. Hrubec et al. (2009) defined artefact division into material artefacts and non-material artefacts within the elements of cultures. Based on this division, we used a multi-level hierarchy system that allowed us to display basic information whose hierarchy will branch out in a horizontal direction. Based on the authors' classification (Hrubec et al., 2009), and by taking into account the narrow specification of the talent of fine art, we have formed by modifying two generally defined groups, which include indicators. We consider the described indicators to be a fundamental and basic triad defining the structure within the framework of assessing the artistic talent. It should be noted that the individual indicators are typical in that they can be realized by a researcher in different spheres of his research or practice. They are intended for professionals who need, or more precisely, they have a requirement within the environments to determine whether a person possesses or does not possess talent for fine art.

## 2.2 Characteristics of the main indicators

As we have already mentioned, a triad was created as part of the assessment of indicators, which includes three indicators, which are considered to be the crucial (main) indicators and from them are indicators in coaction with the characteristics of a particular indicator.

The ENVIRONMENT is the first indicator within the triad of indicators and at the same time it is of a material nature. It is referred to as Indicator 1 (abbreviated I-1). If I-1 is evaluated, art talent can be assessed in a school environment of varying levels of education at both environment home and artistic or in an art environment where a variety of artistic work arises as an interior or exterior studio, various galleries and museums. For this reason, each of the indicators needs to be hierarchically divided and defined from the categorisation point of view. Individual categories will be the result of a specific indicator environmental data collection.

As part of the assessment of the recipient [R8], we will assess his artistic talent so far in five specific indicators of artistic talent in the home environment, i.e. it is clear that assessment by family members can be significantly subjective. Within the general category of home environment, we will assess specific indicators (Tab. 1).

Tab. 1: Specific indicators of artistic talent within the environment indicator

Specific indicator of fine Art giftedness	Marking specific artistic talent indicator
He/she is interested in fine art working in home environment.	I-1-A
He/she searches various options and situations for creative art work without the help of another person.	I-1-B
He/she forms fine art production on the basis of various stimuli	I-1-C
He/she is interested in a variety of materials	I-1-D

and their unusual uses	
He/she is very active in art activities in the home environment	I-1-E

Source: own elaboration

The frequency of specific indicators is also saturated with respect to the number of recipients in the database. Individual claims that are within the scope of B and C assessments are continually re-evaluated by another assessor in order to be considered objective and relevant.

Fig. 1: Assessment of specific indicators in the context of the environment indicator

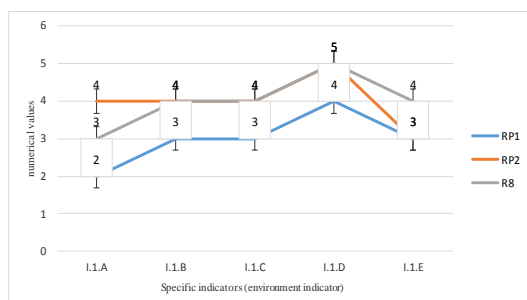


Fig. 1, shows the specific indicators and is evaluated by three assessors, shows a very strong indicator of artistic talent in one of the 5 items, so it is necessary to realize the conversion and then compare. Recipient [R8] excels in one of five indicators (I.1.D, interested in diverse material and its non-traditional uses). On the basis of the average, it can be assessed that it received 36.62 % under indicator I.1, thus confirming a weak indicator confirming possible art talent. It is necessary to evaluate each environment in this way, i.e. school and out-of-school, to confirm the reality. The more saturated the individual indicators will be (within the specific indicators of art talent, the greater the likelihood of identifying art talent in a person, regardless of age).

PROCESS is the second indicator in the triad of indicators and is also material in nature. It is referred to as Indicator 2 (abbreviated I-2). We will re-evaluate recipient [R8] in the context of a free theme without any required indications. In the context of the general category of free topic processed product, we will evaluate specific indicators (Tab 2).

Tab 2: Specific indicators of art talent within the process indicator

Specific Indicator of fine art giftedness	Marking specific indicator of fine art giftedness
He/She processes its own ideas, does not need guidance in a free theme	I-2-A
He/She processes one or more themes and constantly improves it (them)	I-2-B
His/Her activities are done with increased attention and interest	I-2-C
He/She also engages in another type of art (Besides fine art at least one) during his activity.	I-2-D

Source: own elaboration

Fig. 2: Evaluation of specific indicators in the context of I-2

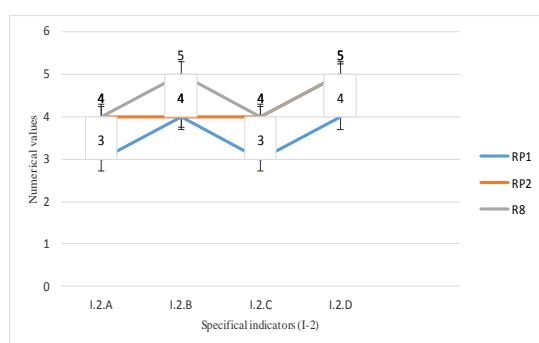


Fig 2 which shows specific indicators which are evaluated by three reviewers, shows in two out of four items a very strong indicator for fine art talent, hence it is necessary to realize the recount and then compare it with Tab. 2. Recipient [R8] excels in two in four indicators (I.2.B, I.2.D). On the basis of the average values, it can be assessed that within indicator I.2 the saturation in the item is a good indicator confirming possible fine art giftedness. It is also desirable to evaluate a specific indicator for given and predetermined topic, to evaluate this indicator.

Production is the third indicator in the triad of indicators and is also non-material in nature. It is referred to as INDICATOR 3 (abbreviated I-3). In coactions and with clarification of this indicator, we will illustratively work with recipient [R8] from previous situations. This indicator is characterized by the fact that the assessment is to be carried out by the assessor with art education, as the content fulfilment of the individual indicators requires it. For this reason, only those who meet the condition become assessors. That is why this indicator is the longest in terms of evaluation.

Fig. 3: Evaluation of specific indicators in the context of I-3

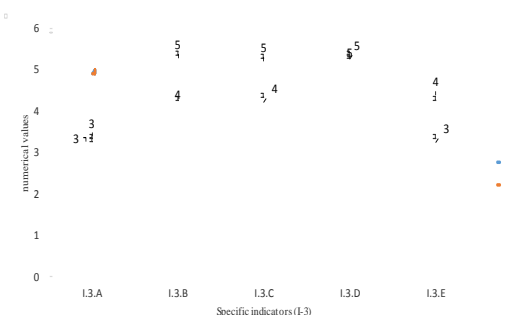


Fig. 3 shows the specific indicators I-3, which, unlike the previous two assessments, are evaluated by two reviewers (selected on the basis of specific conditions). Based on the graphical processing, the range of evaluation is in the polarity of the values 3-5, which generally indicates that art talent is obvious. This must be confirmed by evaluating all the specific indicators in the indicator (I-3). There is no need for other graphical processing in the given situation, as the likelihood of artistic talent in this I-3 is in the mean of more than 65%. In this case, within the framework of the assessment of artistic talent, it is necessary to supplement and re-evaluate the evaluations obtained from the indicators I-1 and I-2, which are part of the triad of artistic talent. In this point, the identification of the creative talent begins with the specific indicators of the individual indicators of the talent triad. Despite the fact that the process is fairly lengthy by the saturation of individual indicators, it is possible to fill the bank, which will be usable as a classification table for faster detection of art talent in children and youth.

### 3 Conclusion

The process of identifying art talent is a challenging process that has not yet received adequate attention. Three main identifiers have been identified in the research that represents the basic structure in the process of identifying the talent of children and youth.

Specifically, we have described the process of identification through the triad of indicators in this paper. Based on their satiety, it is likely to identify a person with artistic talent. The very process of identifying basic and specific indicators within the triad is to uncover the underlying issues in the process of identifying, categorizing, and hierarchizing fine art talent in children and youth.

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**Primary Paper Section: A****Secondary Paper Section: AL, AM**

# RECEPTIVE MULTILINGUALISM IN TERTIARY EDUCATION: ENHANCING READING COMPREHENSION SKILLS AND TRAINING MULTILINGUAL READERS

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**Abstract:** The paper discusses the importance of building up receptive multilingualism in tertiary education on the background of current linguistic and curricular policies, giving space to a wide-spread presence of English as a lingua franca. It puts forward results of comparative research on receptive multilingualism of young Slovak speakers in relation to a genetically related language laying stress on the factor of contextual prediction. Understanding contextualized and uncontextualized items in a written text is measured in correlation to main features of linguistic repertoires of speakers. The study opens up towards metalinguistic and reflexive components of one's communicative competence as well, identifying possible key factors enhancing intercomprehension.

**Keywords:** language, curricula, receptive multilingualism, reading, skill, intercomprehension

## 1 Introduction

Despite a strong presence of English, multilingualism remains a characteristic feature of a large majority of communication contexts in Europe. Facing both historical reality and contemporary truism, multilingual communities are urged to coin strategies to handle plurality. Attempts made on various levels of political, social and cultural existence of our societies have met unequal success. The ideal of a fully multilingual speaker is not yet a practical reality.

The research presented in this paper is based on the key concept of receptive multilingualism. The notion is considered in an interdisciplinary perspective combining a central point of view of contrastive linguistics and, complementarily, a sociolinguistic point of view. Applications of the concept in the field of language acquisition are then taken into consideration.

The need for the mobility and multilingualism arises in the regions and there are used other languages than English (cf. WIDLOK – PETRAVIČ – ORG – ROMCEA, 2010, p. 8). Slovakia is a member of the European Union since 1 May 2004. Multilingualism is one of the EU founding principles. This policy aims at the communication with its citizens in their own languages, protecting European rich linguistic diversity and promoting language learning in Europe.

Furthermore, the principle is anchored in the EU Charter of Fundamental Rights. The citizens of the EU member countries have the right to use any of 24 official languages to contact the EU institutions. The EU institutions are obliged to reply in the same language. Another relevant reason for supporting the plurilingual approach in the Slovak educational system is the Schengen Agreement which creates the European Schengen Area where internal border checks were abolished. Free movement of the residents within the borders of the Schengen Area in Europe is allowed. This leads to the fact that Slovak students should learn also another foreign language besides English. The Barcelona objectives are to be met according to the European Commission. The national governments have to provide their citizens with the possibility of learning at least two foreign languages from early age. The receptive or comprehensive concept in the foreign language learning process is in the foreground: "The European Commission responds to these needs by taking the actions recommended in the proposal for a Council Recommendation on a comprehensive approach to

the teaching and learning of languages, ... etc."<sup>1</sup> English was established the first and only compulsory foreign language in Slovakia in 2011 by the Act No. 245/2008 Coll. on Upbringing and Education. In the part Aims of Upbringing and Education it is stated that the aim is to allow children to "master English language and at least one other foreign language"<sup>2</sup>. The number of lessons per week is adjusted by the obligatory State Educational Programme and Framework Teaching Plans. However, in so-called innovated Framework Teaching Plan from 2015 the second foreign language became optional. It is in contrast to the law and the plurilingual approach is not ensured in foreign languages teaching. Thanks to the interventions of professional associations of foreign languages teachers, there is an effort to enforce two compulsory foreign languages in compliance with the School Act, according to the model of a mother tongue and two foreign languages (the European Commission proposes this model, too). From September 2019, Slovak children will have a possibility to choose their first foreign language (English, German, French, Russian, Spanish or Italian). However, English language will still remain compulsory, i.e. if a pupil chooses another language than English as the first foreign language (during primary education – ISCED 1), they will have to select English as the compulsory second language during lower secondary education (ISCED 2). It is stated in the Amendment to the State Educational Programme and Framework Teaching Plan.<sup>3</sup>

To sum up, English stays compulsory at two language levels after the implementation of this change. There will be no significant changes in the language policy of primary schools unless directors and teachers of foreign languages work purposefully with the opinion of general public. Except for English, other foreign languages (L2) are positioned legislatively as tertiary languages. This ranking is not true for the primary schools where the languages of national minorities are used. For the development of receptive multilingualism, it is important to teach children at least two foreign languages during their primary and lower secondary studies (ISCED 1 and ISCED).

## 2 State of the matter

All over the world English has become a sort of lingua franca in today's society, especially because of its widespread use in the spheres of work, studies, science, research, travelling or entertainment. Therefore the necessity of mastering English emerged at all degrees of studies in the Slovak Republic and for a certain period was imposed by the Slovak legislation to be studied as the compulsory foreign language. Nevertheless, other foreign languages still have had their irreplaceable position within the system of Slovak education. The following studied languages are the most preferred ones as the second foreign language in Slovakia: French, German, Russian, Spanish and Italian.

Technical universities in Slovakia propose up-to-date technical and professional study programmes and their graduates are well-educated professionals in the spheres of technology, engineering, science, research, industry or other areas. In the Slovak Republic, the tradition of technical universities is well established.

The Technical University in Zvolen, Slovakia, provides education at three levels of studies within the European Higher Education and Research Area. At the Technical University in Zvolen, Slovakia, students can study at four faculties: Faculty of Forestry, Faculty of Wood Sciences and Technology, Faculty of

<sup>1</sup> See: [https://ec.europa.eu/education/policies/multilingualism/about-multilingualism-policy\\_en](https://ec.europa.eu/education/policies/multilingualism/about-multilingualism-policy_en)

<sup>2</sup> Act on Upbringing and Education (so-called School Act): <https://www.slov-lex.sk/pravne-predpisy/SK/ZZ/2008/245/20190901.html>

<sup>3</sup> <http://www.minedu.sk/dodatok-c-3-k-svp-%E2%80%999Erup-pre-zs-s-yyucovacim-jazykom-slovenskym%E2%80%999C/>

Ecology and Environmental Sciences and Faculty of Environmental and Manufacturing Technology. All these faculties have their specifically oriented study programmes in which students can obtain quality education in chosen areas. Despite highly technical orientation of studies, students of technical universities understand well the necessity of mastering foreign languages at high level. It is partly due to their studies duties (they need to study a lot of literature, including foreign authors' works, and to use this information e.g. when writing bachelor, master and doctoral theses) and partly due to the requirements of the labour market. Therefore, apart from technical and professional disciplines, the students of technical universities in Slovakia study professional foreign languages, too. Teaching of professional foreign languages at the Technical University in Zvolen is provided by the Institute of Foreign Languages. The students study professional languages closely related to their study specialisations at the specialised seminars. Three languages are proposed to the students: English, German and French. The students can study also Chinese language. However, proposed courses of Chinese are oriented towards the acquisition of only general Chinese, not technical. From the proposed foreign languages, the majority of the students of the Technical University in Zvolen choose English. This language (as the first foreign language for the majority of the Technical University in Zvolen students) is included into the University curricula, however, the number of lessons per week depends on the Faculties. Second foreign languages are poorly presented.

### 3 Needs

Teaching foreign languages including professional aspects (professional vocabulary, phrases, grammatical and syntactical structures etc.) is based on the work with professional (specialised) texts in foreign languages. According to Grabe (1991, p. 375), reading is probably the most important skill for foreign language learners in academic contexts because they must acquire a lot of knowledge which they are supposed to take advantage of and use in their career. Reading is the ability to understand the text, to get meaning from the written, as well as unwritten (reading between the lines), to acquire important information from the text and to benefit in some way from it. As one of four basic language skills, learners of foreign languages deal with it from the beginning of the process of studying foreign language and they develop it gradually all over their life (Veverková, 2018). Reading is also a base for the development of other language skills, e.g. Krashen (2004, p. 17) proposes that more reading brings about better reading comprehension, writing style, vocabulary, spelling, and grammatical development.

Reading comprehension is an active and complex process, during which a reader tries to understand a written text. If the readers want to be successful in reading and to read efficiently, they must master the language at needed level, as well as different skills and strategies necessary for the process (Veverková, 2018). Grabe (1991, pp. 378-379) mentions the following strategies as the ones used by the efficient readers: adjusting the reading speed; skimming ahead; considering titles, headings, pictures and text structure information; anticipating information to come, etc.

Hosenfeld (1977) declares that the efficient reader focuses on the meaning of the text as a whole, anticipates the content and does not pay attention to minor information.

Dudley-Evans and St. John (1998, pp. 96-98) consider the following skills as important and needed to be mastered:

- selecting what is relevant for the current purpose;
- using all the features of the text such as headings, layout, typeface;
- skimming for content and meaning;
- scanning for specifics;
- identifying organisational patterns;
- understanding relations within a sentence and between sentences;
- using cohesive and discourse markers;

- predicting, inferring and guessing;
- identifying main ideas, supporting ideas and examples;
- processing and evaluating the information during reading;
- transferring or using the information while or after reading.

We consider reading a key skill for the learners of professional foreign languages at technical universities in Slovakia. In order to develop the reading competency of the students of the Technical University in Zvolen we have been carrying out the project "Developing the Reading Competency and Teaching Technical Foreign Languages at Technical Universities" since 2017. The project is being carried out in cooperation of two universities, Technical University in Zvolen and Faculty of Arts, Matej Bel University in Banská Bystrica, both in central Slovakia. It is financed by the Cultural and Educational Grant Agency of the Ministry of Education, Science, Research and Sport of the Slovak Republic. This project and its outputs are focused on improving the quality of teaching foreign languages and facilitating the reading competency of students. Its main outputs are going to be published by the end of the year 2019 and will be in the form of electronic course books for six university study programmes with the technological focus, which are taught in Slovakia, as well as in the Czech Republic: Forestry (English and German language), Timber Frame Structures (English language), Fire Protection and Safety (English language), Furniture and Interior Design (English language), Ecology and Environmental Studies (English language) and Mechanical Engineering (English language). Moreover, bilingual glossaries (English – Slovak and German – Slovak) of professional word stock and further supporting electronic materials aimed at developing the reading competency of students will be an important part of the outputs.

During the implementation of the project two scientific conferences have been held at the Technical University in Zvolen. The conferences proposed a place for the exchange of experience and practical observations of the university teachers of foreign languages from the Slovak, as well as Czech Republics. A lot of valuable discussions were involved during which new cooperation between various university workplaces emerged. Another conference is planned to be organised in October 2019.

A series of workshops was held at the Technical University in Zvolen, too, in order to increase proficiency of the project members in the sphere of developing the reading competency of the technical universities students. However, we had an opportunity to attend a very interesting workshop on the use of the statistics as the mathematics discipline in pedagogical and linguistic research.

The members of the project team have published 17 research papers and studies so far, related to the project topic in different journals in Slovakia and abroad. Two proceedings of scientific papers were published, too, and two monographs dealing with the topic of reading comprehension are being prepared for the publication.

We confirmed the importance of developing the reading competency of the students of technical universities in Slovakia also with the analysis of the doctoral students' attitude to reading professional texts in foreign languages. According to the short analysis that we carried out at the Technical University in Zvolen we can sum up that the doctoral students from our sample read professional texts in foreign languages, predominantly in English. Moreover, when studying, preparing for the exams or writing doctoral thesis, 70 % of doctoral students from our research sample prefer and use professional texts in foreign languages to the texts in Slovak language. Nearly 60 % of the questionnaire respondents spend more than 3 hours a week reading these texts. It was also found out that doctoral students are aware of the necessity of mastering foreign languages, because they are a tool to obtain new and useful information in the sphere of science and research. Professional literature written in foreign languages provides them with an important source of knowledge. More than half of them admit

that when doing their research they study mainly scientific and research papers written in foreign languages. Therefore, reading comprehension still deserves full attention of the teachers of foreign languages at the doctoral degree of studies.

Within the project "Developing the Reading Competency and Teaching Technical Foreign Languages at Technical Universities" we did the analysis of the attitude of the students of bachelor degree at the Technical University in Zvolen to reading of professional texts in foreign languages. It follows from the results that even students at the bachelor degree of studies are aware of the importance and usefulness of the professional texts in foreign languages, they found valuable and up-to-date information in them, they are definitely useful for their studies and personal development. The analysis was carried out on the sample of 175 students and nearly 62 % of the respondents declared that professional texts in English or German (they selected these two foreign languages as the languages in which they read foreign texts) are necessary for their studies and that they read them regularly. Therefore mastering the language skill of reading comprehension is crucial for them and the teachers of foreign languages for specific purposes should focus their attention to the development of this skill.

#### 4 Theoretical framework

Receptive multilingualism (cf. Kloss 1929 in Beerkens 2010, p. 27) for receptive competence in West Germanic languages) means making an important step towards handling linguistic pluralities, claiming the importance and the advantage of a "one-way / one-code" information transfer for an adequately efficient communication in some conditions. Receptive multilingualism (in a very close conceptual relation to semicomunication, cf. Haugen 1966, Budovičová 1987) is based on the acceptance of but a partial communicative competence as a prerequisite of efficient information exchange (an implicit renouncement to flawless communicative competence modelled after native speakers) and on the will to preserve the plurality of means of communication. It is one of the issues dealt with within plurilingual approaches to language use and language teaching/learning.

Plurilingual approaches to language acquisition focus on developing plurilingual and pluricultural competence. It can be observed with speakers who master several languages to various extent, have experience with different cultures and are able to take part in intercultural interaction. Plurilingual competence is an asymmetric one:

"Rozlišuje sa, nakoľko jednotlivci jazyky ovláda a nakoľko ich používa. Každá rečová zručnosť môže byť u jednotlivca rozvinutá v inej miere. Veľmi málo bilingválnych a viacjazyčných jednotlivcov má rovnakú znalosť dvoch alebo viacerých jazykov. Jeden jazyk má tendenciu byť silnejší a býva nazývaný dominantným jazykom. Je to kompetencia nestála, dynamická, nerovnomerná alebo evolutívna. Slabší jazyk sa môže stať silnejším. Konfigurácia tejto zručnosti sa totiž vyvíja podľa situácie a komunikačnej trajektórie komunikanta – spoločenského aktéra. Obohacuje sa o nové komponenty, alebo ich dopĺňa, či transformuje, respektíve niektorými inými komponentmi mrhá. Je to vplyvom pracovných, geografických alebo rodinných zmien, ale aj vplyvom rozvoja osobných záujmov." (Bírová – Eliášová, 2014, p. 75)<sup>4</sup>

<sup>4</sup> "There is a difference to what extent a speaker masters languages and to what extent they use them. Each speech ability of a speaker can be developed differently. Only a few of bilingual and multilingual speakers have the same knowledge of two or more languages. One language tends to be stronger and is called dominant language. It is an unstable, dynamic, uneven or evolutionary competence. Weaker language can become stronger. Configuration of this ability is developing according to the situational and communication trajectory of a communicator – social participant. It is enriched by new components or it complements or transforms them; it wastes alternatively other components. It is under the influence of working, geographical or family changes, as well as under the influence of personal interests' development." (translation: authors)

In language acquisition, plurilingual approaches towards languages and cultures imply several linguistic and cultural varieties at once. According to Candelier (2012, p. 6), they include awakening to languages, integrated language teaching, intercomprehension between related languages and the intercultural approach(es). These methodologies are defined in FREPA (Framework of Reference for Pluralistic Approaches) and its accompanying tools, considered as bases for further plurilingual curricula development and innovation. Among six basic principles of plurilingual curricula construction, there are: a. holistic conception of teaching, b. taking into account the sum of learners' linguistic resources; c. focus on learners' linguistic conscience; d. learning strategies development, e. linkages between teaching languages and teaching other disciplines, f. building up intercultural competence.

The language of schooling and the source culture (discussed by Schmitt, 2017, who points out at three of the main functions of the latter: "fonction de proximité", "fonction de mise en valeur du pays de l'apprenant" and "fonction interdisciplinaire") tend to be the gravity centre and the principal beneficiary of integrating processes mentioned above. Candelier (2012, p. 28) claims that innovative aspect of plurilingual approaches has to be seen in the possibility of valorising linguistic codes that occupy peripheral positions in regard to the main language of schooling (eventually, official language or majority language), but hold central "biographical" position, i. e. are important for learners in the perspective of their personal/familial background. These peripheral codes can be absent from the institutional language acquisition process and may remain unknown to the instructor. We speak about the necessary transition from the neglected multilingualism of speakers' linguistic repertoires and those of their communities to an inclusive multilingualism.

#### 5 Research objectives and methodology

The aim of the study is to uncover the potential for mutual intelligibility of languages that are not necessarily bound by a close genetic relation trying to spot factors that may enhance understanding between speakers of these languages. Within the target group of young Slovaks, understanding of French language is tested with a specific focus of distinctions between contextual and non-contextual lexical elements, presuming the necessity, for the latter, to lean on extralinguistic knowledge and/or familiarity with linguistic systems.

The study uses an original methodology of assessment of written reception of an unfamiliar language. The main methodological instrument was a test of reading comprehension. The focus was on reading and understanding a short text in French language (100 words; 613 characters):

*Le volcan Sinabung, sur l'île indonésienne de Sumatra, a craché cette semaine des flammes et une épaisse colonne de cendres brûlantes très haut dans l'atmosphère. Un responsable local estime qu'il s'agit là de la plus grande éruption de l'année. Les dernières images envoyées par les agences sont spectaculaires. Des milliers d'habitants alentour ont été affectés par les rejets de cendres et de fumée, mais personne n'a été sérieusement blessé. La zone de danger avait été évacuée. Le Sinabung, entré dans une longue éruption en 2013 après au moins 400 ans de sommeil, est l'un des 129 volcans actifs en Indonésie.*<sup>5</sup>

The text was written in general standard French and did not comprise any specialised vocabulary (technical terms, slang, jargon etc.). Global understanding of the text and local (detailed) understanding of selected expressions were verified through the identification of semantic equivalents of lexical units in Slovak language. The list of elements used for testing understanding included, on one hand, contextually bound items (selected from the text above) and, on the other hand, lexical units without context (a separate series of isolated words). Both groups

<sup>5</sup> Adapted from: <https://www.parismatch.com/Actu/Environnement/Le-volcan-Sinabung-crache-a-nouveau-des-flammes-et-des-cendres-1428956>

comprised full words; contextualized items included grammatical words as well. In the latter group, items belonged to various parts of speech. However, only nouns and adjectives were presented without context. Contextualized items contained some potentially problematic elements either because of their lower frequency or because of their formal resemblance but semantic difference from Slovak words. Items without context contained some typical „false friends“. It was a choice of 10 words belonging to basic French, familiar to Slovak speakers, but without an easily spottable equivalent for someone who has not been studying French.

Previously conducted studies (Chovancová – Zázrivcová – Křečková, 2015; Chovancová – Zázrivcová – Ráčeková, 2018), measuring the capacity of Slovak native speaker to understand Romance languages, used a similar methodology. Unlike these tests, this study was aimed at mapping metalinguistic representations as well and worked with the concept of bridge words (cf. *mots ponts* in Castagne, 2007), taken from the didactics of intercomprehension. A bridge word is a word from the mother tongue or from a foreign language (in most cases different from the target language to be understood) which, due to its formal and/or semantic relation to the opaque element from the target language helps the speaker understand the meaning of the latter. A bridge word helping an English speaker understand the French word *mer* (Engl. *sea*, Slov. *more*) can be the English adjective *maritime*, formally and semantically identical with the French adjective *maritime*. In a similar way, the Czech word *puntík* could be understandable for various kinds of (native) speakers in association with the German form *punkt* or the English and French form *point*.

As it was indicated above, local comprehension was tested using a series of 20 lexical items. The sub-series A consisted of 10 contextualized lexical items (*volcan, île, flammes, dans, local, dernières, habitants, éruption, ans, est*) selected from the text. The sub-series B consisted of 10 lexical items presented without any context (*âge, national, femme, bourse, forêt, école, difficile, tarte, mémoire, lac*).

The adequacy of Slovak equivalents proposed by speakers was assessed on a 6-grade scale (from 0 to 5) as follows:

- 5 – perfect semantic and formal equivalent (ex. fr. *dernières* [last] – slov. *posledné* [last]),
- 4 – perfect semantic equivalent with different grammatical categories from the original (ex. fr. *flammes* [flames] – slov. *ohň* [fire]),
- 3 – partial semantic equivalent or zero semantic equivalent with an identifiable positive interlinguistic transfer (ex. fr. *est* [is] – slov. *patrí* [belongs to]) or equivalent with a common seme/common semes with the correct equivalent (ex. fr. *âge* [age] – slov. *rok* [year]) or equivalent derived from the expected equivalent (ex. fr. *national* [national] – slov. *národ* [nation]),
- 2 – zero semantic equivalence with a clear negative interlinguistic transfer (ex. fr. *difficile* [difficult] – slov. *rozdielny* [different]),
- 1 – unmotivated zero semantic equivalent (ex. fr. *habitants* [inhabitants] – slov. *vzhľad* [appearance]),
- 0 – equivalent was not proposed.

While testing written receptive skills, the analysis of bivalent and parallel words in synonymic chains were used (cf. Nábělková, 2013). Each of the suggested equivalents was assessed. Its accuracy (A) and frequency (F) were scored. Thus, *plamene* (5;17) are considered as perfect equivalent for *flammes* (accuracy score is 5). This equivalent has been proposed by 17 tested speakers (frequency score is 17).

A specific objective of the study of the Slovaks' receptive competence of written French was to establish the importance of the linguistic context in reception and to check the capacity of speakers to make an active use of the context in predicting meanings. It was supposed that the linguistic context plays a crucial role facilitating reception and is competitive or otherwise

related to other factors, such as the degree of exposure to the target language, typological and genetic characteristics of the mother tongue and the degree of its relation to the target language and, finally, the overall communicative competence in foreign languages. The study aimed at unveiling indices to understand the nature of relations between various factors.

Metalinguistic competence of speakers was activated together with local understanding of contextualized units. For each item, they were asked to reflect on what helped them understand it, stating their preference between a bridge word (consequently, a bridge tongue), the linguistic context, both of these factors or neither of them.

## 6 Target group

The study involved 85 speakers. They were students of the Technical University in Zvolen, specializing in ecology and protection of biodiversity, environmental management, forensic environmental science, landscape protection, environmental engineering, interior and furniture design, economics and management of woodprocessing enterprises, furniture construction, fire security and protection, forestry. Before testing their receptive competence, overall communication competence in foreign languages was questioned. The speakers themselves had to declare their level of competences in various language. The self-assessment results were then confronted with the results of entry language test results.

Levels of competence are indicated according to CEFRL (A1 to C2). Speakers are familiar with this type of (self) assessment, due to its massive use in institutionalized acquisition of foreign language. The majority of speakers (84) declared an advanced level of competence in one foreign language (English). The language in which speakers declared the second highest level of competence, reaching A2 level on the average, was German (53 speakers, 62 %). The third most often mastered foreign language was Russian, between A1 and A2 on the average, in which 18 speakers declared to have a certain competence (21 %). Some speakers declared to have a basic competence reaching A1 level in French (18 %) and between A1 and A2 in Polish (18 %), rarely in Spanish and Italian (A1 on the average for 9 % and 8 % of speakers, respectively). In isolated cases, some knowledge of Hungarian (3 speakers), Romani (1 speaker) and Dutch (1 speaker) was declared. Some considered to declare the knowledge of Czech as a foreign language (11 speakers, 13 %). The mother tongue of speakers was Slovak (83 speakers), eventually Hungarian (2 speakers).

The scope of mapping language competences was to get to know language repertoires (fr. *bagage linguistique*) of speakers, i. e. their linguistics competences as well as, potentially, their knowledge about languages, useful in the search for parallels, contrasts and associations facilitating comprehension. However, the correlation between the number of languages spoken and the sum of levels of competences in these languages, established as an accumulation of scores (A1 – 1 point, A2 – 2 points, ... C2 – 6 points) cannot be established. Speakers with a high cumulative score can have two different types of profiles: a vertical one (less languages spoken, but higher level of competence in these languages) or a horizontal one (more languages spoken, but a lower level of competence in these languages).

Our understanding of the concept of language repertoire is related to the theory of language subconsciousness, language awareness and language consciences, presented by Dolník (2013, pp. 128 – 129) referring to the works of Horecký (1991) and Bühler (1939). Language subconsciousness is a system of linguistic instincts, an innate universal grammar conditioning the process of acquisition of natural languages. Language awareness means unconscious, automatized knowledge of languages acquired in the communication practice. Finally, language consciousness is the sum of knowledge about languages gathered by study or a conscious reflection.

## 7 Results

The test of local understanding showed various levels of intelligibility of discrete contextualized lexical items and uncontextualized lexical items (ordered decreasingly in Tables 2 and 3, respectively). The most transparent contextualized items were *volcan* (3.88), *éruption* (3.55) and *local* (3.12); on the contrary, the less intelligible ones were *île* (0.73), *dernières* (0.86) and *ans* (0.87). Among uncontextualized items, *national* (3.59), *âge* (2.71) and *mémoire* (2.34) were the most understandable; the most opaque ones were *tarte* (0.18), *bourse* (0.47) and *lac* (0.53).

Table 1. Intelligibility of contextualized lexical units.

Pos.	Lexical unit	Aver.	Equivalents
1	<b>volcan</b> (n.)	3.88	<b>sopka</b> <sup>6</sup> (5;47), <b>vulkán</b> (5;20), *vulkan (5;1), Ø (0;19)
2	<b>éruption</b> (n.)	3.55	<b>výbuch</b> (5;13), <b>erupcia</b> (5;44), *erúpcia (5;1), *erupsia (5;1), *érupcia (5;1), európa (1;1), európsky (1;1), Ø (0;23)
3	<b>local</b> (adj.)	3.12	<b>miestny</b> (5;22), miestne (4;5), <b>domáci</b> (5;1), <b>lokálny</b> (5;14), *locálny (5;2), lokálne (4;9), *lokálne (4;1), regionálny (3;3), <b>tunajší</b> (5;1), miesto (4;1), Ø (0;28)
4	<b>habitants</b> (n.)	2.47	<b>obyvatelia</b> (5;32), <b>obyvateľov</b> (5;1), obyvateľstvo (5;1), obyvateľ (4;1), obyvateľi (5;1), človek (3;1), ľudia (3;1), zvyky (2;6), priestory (3;1), biotop (2;1), územie (3;1), vzhľad (1;1), *habitas (1;1), habitat (3;1), Ø (0;35)
5	<b>flammes</b> (n.)	1.72	<b>plamene</b> (5;17), *plameňe (5;2), plameň (4;3), *plamen (4;1), oheň (3;8), ohne (3;4), láva (2;1), zábava (1;1), Ø (0;51)
6	<b>est</b> (v.)	1.40	<b>je</b> (5;20), <b>patrí</b> (3;1), a (2;6), z (1;1), do (1;1), ktorá (1;1), aj (1;1), Ø (0;53)
7	<b>dans</b> (prep.)	0.88	<b>do</b> (5;8), v (5;6), dátum (1;1), výšky (1;1), kanec (1;1), ranec (1;1), dane (1;1), Ø (0;66)
8	<b>ans</b> (n.)	0.87	<b>roky</b> (5;7), rok (4;2), dní (3;1), vek (3;3), metrov (2;1), metre (2;1), od (2;1), nad (1;2), z (1;1), o (1;1), pokoj, Ø (0;62)
9	<b>dernières</b> (adj.)	0.86	<b>posledné</b> (5;7), posledný (4;2), posledná (4;1), <b>najnovšie</b> (5;2), *derniera (2;1), *deliéra (2;1), záver (3;1), naposledy (3;1), posledný (4;2), druhý výstup (2;1), opakovanie (2;1), začiatok (2;1), zverejnené (1;1), zajtra (1;1), Ø (0;64)
10	<b>île</b> (n.)	0.73	<b>ostrov</b> (5;11), povodie (3;1), v (1;1), ako (1;1), nachádzajúca sa (1;1), je (1;1), Ø (0;69)
			<b>1.95</b>

Tables 1 and 2 (see below) show contextualized and uncontextualized units indicating the average degree of their transparency with a complete list of suggested French equivalents for each of them.

Table 2. Intelligibility of uncontextualized lexical units.

Pos.	Lexical unit	Aver.	Equivalents
1	<b>national</b> (adj.)	3.59	<b>národný</b> (5;44), *narodny (5;1), *národný (5;1), *narodný (5;1), národné (5;2), národné (4;2), národnost' (4;7), národ (3;3), <b>nacionálny</b> (5;1), *nationalny (2;1), příroda (2;1), Ø (0;18)
2	<b>âge</b> (n.)	2.71	<b>vek</b> (5;40), rok (3;7), roky (3;4), Ø (0;34)
3	<b>mémoire</b> (n.)	2.34	<b>pamät'</b> (5;11), pamäte (4;1), <b>pamiatka</b> (5;2), <b>spomienka</b> (5;11), spomienky (4;16), pamätat' (3;1), zapamätat' si (3;1), rozum (3;1), memorandum (2;1), Ø (0;39)

<sup>6</sup> Equivalent(s) assessed by the full score (5 points) are considered, in accordance with available lexicographic works, as the most adequate. They are marked in bold in the series of equivalents presented. The sign \* marks items which are written incorrectly from the point of view of the orthographic norm of standard Slovak.

4	<b>femme</b> (n.)	2.18	<b>žena</b> (5;36), známy (1;1), femme fatale (3;1), žensky (3;1), ženský (3;1), Ø (0;44)
5	<b>difficile</b> (adj.)	1.80	<b>ťažký</b> (5;10), *ťažky (5;2), ťažké (5;6), ťažko (4;2), náročný (5;3), zložitý (5;1), zložitý (5;1), obtiažne (5;1), obtiažno (4;1), rozdiel (2;3), rozdielne (2;3), rozdielny (2;3), úbytok (2;1), Ø (0;46)
6	<b>école</b> (n.)	0.89	<b>škola</b> (5;14), ekologický (2;1), príroda blízky (2;1), počúvať (2;1), Ø (0;68)
7	<b>forêt</b> (n.)	0.76	<b>les</b> (5;13), Ø (0;72)
8	<b>lac</b> (n.)	0.53	<b>jazero</b> (5;6), nedostatok (3;1), mlieko (2;2), batoh (2;1), bocian (1;1), lacko (1;1), Ø (0;73)
9	<b>bourse</b> (n.)	0.47	<b>burza</b> (5;8), Ø (0;77)
10	<b>tarte</b> (n.)	0.18	<b>torta</b> (5;2), <b>koláč</b> (5;1), Ø (0;82)
			<b>1.54</b>

The overall average success in local understanding is 34.9 % (in Czech 74.6 %). Average success rate in understanding the contextualized items is 38.96 % (75.4 % in Czech), for the uncontextualized ones 30.9 % (in Czech 73.8 %).

## 8 Discussion

Variability of series of equivalents is expressed as N+1, where N designs the number of suggested equivalents apart from the zero equivalent and the number 1 referring to the presence of the zero equivalent in the series. According to the variability, lexical units range as follows: *habitants*, *dernières* (14+1 each), *difficile* (13+1), *ans*, *national* (11+1), *local* (10+1), *mémoire* (9+1), *flammes* (8+1), *éruption*, *est*, *dans* (7+1), *île*, *lac* (6+1), *femme* (5+), *école* (4+1), *volcan*, *âge* (3+1), *tarte* (2+1), *forêt*, *bourse* (1+1).

The presence of the zero equivalent in each series proves that none of the 20 analysed items was understood by all speakers. The zero equivalent was the most frequent one in 16 series of equivalents out of 20. *Volcan*, *éruption*, *national* and *âge* were the only items for which the zero equivalent was not the dominant one. Two of these items were contextualized, the other two were presented without context. The highest number of speakers suggested correct equivalents for these words: for *volcan*, 47 speakers suggested *sopka*; for *éruption*, 44 speakers suggested *erupcia*; for *national*, 44 speakers suggested *národný* and for *âge*, 40 speakers suggested *vek*. These items can be considered as most intelligible ones. They came in an equal measure from the series of contextualized and uncontextualized words.

Unlike the previous studies (Chovancová, 2018), there was no item for which the most frequently suggested equivalent would have been an incorrect one<sup>7</sup>. The highest number of equivalents was suggested for *habitants* and *dernières* (both of these contextualized items received 14+1 equivalents), then for *difficile* (uncontextualized, 13+1). *Habitants* showed almost perfect split between two most frequently proposed equivalents, i.e. Ø (occurred 35 times) and the perfectly correct equivalent *obyvatelia* (occurred 32 times). However, for *dernières*, the difference in frequency between the most frequent (zero) equivalent (64 times) and the second most frequent equivalent which is the perfectly correct one *posledné* (7 times) is overwhelming. *Difficile* is similar to *dernières* inasmuch as 46 speakers proposed the zero equivalent for this item, 10 of them suggested the perfectly correct equivalent *ťažký*, other equivalents were then proposed by smaller numbers of speakers. The zero equivalent was most frequently suggested for *tarte* (82 times) and *bourse* (77 times). For contextualized items, the zero equivalent was suggested with a slightly lower frequency. It occurred most often with *île* (69 times) and *dans* (66 times). Thus, considering *tarte* and *bourse*, then *île* and *dans* as the most difficult items to be understood, we note a certain tendency to lean on the context. In other words, the linguistic context seems to facilitate, although very slightly, understanding of French

<sup>7</sup> The analysis of reading intercomprehension of Czech by Slovaks confirmed the existence of such cases. This result is interesting, when compared with results presented for intercomprehension of French by Slovaks, given a greater degree of proximity of Slovak and Czech when compared to Slovak and French.

words. Nevertheless, it does not yet prove a positive substantial influence of contextualization of items on their transparency.

To understand better variability of some series of equivalents, a closer look can be taken at some of the items. *Mémoire*, for instance, receives a rather rich series of equivalents (9+1), splitting in two sub-series according to the signification of the word that has been taken into account by the speaker. Some speakers referred to *mémoire* meaning: "schopnosť uchovávať a vybavovať si vnemy", "faculté comparable à un champ mental dans lequel les souvenirs, proches ou lointains, sont enregistrés, conservés et restitués"<sup>8</sup> corresponding to "the ability to remember information, experiences, and people" and they suggested equivalents such as *pamät'* (5;11), *pamätat'* (3;1), *zapamätat'* si (3;1), eventually – with a semantic shift – *rozum* (3;1). Those who took into account *mémoire* as "zásoba vnemov, ktoré sa môžu vybavovať" ("something that you remember from the past"), proposed *spomienka* (5;11) or *spomienky* (4;16) as equivalents. Finally, those who understood *mémoire* as "trvalá, stála spomienka (na istú udalosť, na niekoho vzdialeného alebo zomretého)" (permanent memory of an event, of a distant or a late person), "niečo starobylé, pripomínajúce minulosť, pamätihodnosť" (something ancient reminding of the past) or "vec pripomínajúca niekoho, niečo" (a thing reminding us of something or somebody, a remembrance) suggested *pamiatka* (5;2). Among other equivalents, there were *pamäte* (4;1) corresponding to the English expression *memoirs* and the internationally accepted word *memorandum* (2;1). Both of these, belonging to the category of internationalisms, were probably suggested for their formal similarity with the original French item.

Series of equivalents give track of the presence of contact phenomena, i.e. formal and semantic interlinguistic transfer. The transfer is often – although not always – negative and leads to an unacceptable equivalent. That is the case of words such as *priestory*, *biotop*, *územie*, *habitat* suggested within the series of equivalents of *habitants* (in English *inhabitants*) due to a misleading formal similarity between the original item and a bridge word *habitat*. The same reasoning can be observed for *zvyky*, another unacceptable equivalents suggested for *habitants*, where the bridge word has probably been taken from English (*habits*). The effort to establish a semantic tie based on a formal similarity has led to a mistaken equivalent. More cases of this kind can be observed in the corpus (ex. *európa*, *európsky* as equivalents for *éruption*; *úbytok* /in the sense of *difference*/ as equivalent for *difficile* etc.) As it can be seen above (Tables 1 and 2), series of equivalents are rich in orthographic variations, some of suggested words are not orthographed in a standard way. Typically, diacritic signs are left out or added, e. g. *eripcia*, *erupsia*, *érupcia*; *locálny*, *lokalne*; *ľažky* etc. It may be a result of scriptural habits gained in electronic environments of communication.

The metalinguistic and autoreflexion-oriented component of the test can be assessed only partially. An important part of speakers, according to what was presupposed, did not respond to this part of questions. They may have considered the task too difficult in terms of time, organisation or complexity. They may have felt insufficiently prepared for the intercomprehension test itself and especially for an insight into their own multilingual practices. Still, we can put together a basic quantitative and qualitative assessment focusing on the dominant factors claimed to have a positive influence on understanding French words. The analysis of bridge words will be provided separately.

Among the factors facilitating the process of intercomprehension we have suggested, for contextualized items, there were: A – linguistic context, B – bridge tongue, C – both linguistic context and bridge tongue, D – none of the aforementioned. The speakers were not obliged to identify the helping factor for each

word, they were free to do so when they felt this identification was possible.

In this part of the test, the role of linguistic repertoires of the speakers was clearly shown. In most cases, they were able to realize the influence of a tongue familiar to them on understanding French. They were able to tell which language helped them and they put the finger on bridge words, too. Bridge tongue was dominant for *volcan*, *flammes*, *local*, *habitants* and *éruption*, i. e. for the five most transparent contextualized items. Linguistic context was significant for none of these five. Some speakers were inclined, for instance, to lean on linguistic context in the case of *dans*, still contextual prediction were not of much help to them. We can suppose that the speakers involved in this study, like almost all the student population in Slovakia, are not used to make the most of contextual prediction as a receptive strategy. It can be viewed, indeed, as an occasion to get students acquainted with this specific operation.

## 9 Conclusion

It follows from the results of our research that the students are able to apply knowledge of other languages from their language repertoires for the comprehension of unknown foreign language. They can find interlingual similarities and use them to orientate themselves in the text. This ability should be supported and developed in the learning and teaching processes. On the other hand, it was found out that the context did not always help the students to uncover the meaning of the text. They achieved approximately the same results in comprehension of lexical units in a context and without a context. To sum up, the context did not play a crucial role in the students' decoding the text in unknown language. For this reason, it is important to use the potential of the context in the supporting the language acquisition and learning from the viewpoint of plurilingual approach in foreign languages teaching.

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**Primary Paper Section: A**

**Secondary Paper Section: AI, AM**

# A REVIEW OF THE REPORT ON RELATIONS BETWEEN THE CONTROLLING AND CONTROLLED PARTY AND BETWEEN THE CONTROLLED PARTY AND PARTIES CONTROLLED BY THE SAME CONTROLLING PARTY

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**Abstract:** The identification of relations between legal entities is not always simple. In regard to a controlling and controlled party such a situation can arise in which the controlled party or the third party (a minority owner of the controlled party) suffers injury by a conduct of the controlling party. The aim of this article is to review the report on relations between the controlling and controlled party. The content of the Report on Relations is examined in relation to complying with the legislation under Act No. 89/2012 Sb. the Civil Code and Business Corporations Act No. 90/2012 Sb. Real doubts about a correct identification of controlling and controlled parties together with other slight formal flaws were identified. Neither the infliction of injury on the controlled party, nor on the minor owner was found.

**Keywords:** review, the report on relations, legal entities, group of companies, legislation, the usual price, reasonable consideration.

## 1 Introduction

The legislation governs legal relations between the controlling and controlled party – Business Corporations Act No. 90/2012 Sb., and Act No. 89/2012 Sb., the Civil Code in particular. Provided a review whether these stipulated relations are observed is asked for, there are several methods that can be followed.

What is thereby to be dealt with are relations between legal entities. Act No. 89/2012 refers to legal entities as organized departments that obtain legal nature awarded by law or whose legal nature is recognized by law (Bezouška, Piechowiczová, 2013). Vít (2015) states that a legal entity is a legal fiction which does not actually exist and which can be formed, dissolved or changed only under the law. Pursuant to S. 118 Act No. 89/2012 Sb., the legal entity obtains its legal nature from its formation to its dissolution (Czech Republic, 2012a).

The controlling party refers to a party which actually or legally directly or indirectly decisively influences the administration or operation of the corporation of the controlled party (Ryneš, 2018). Under S. 74 (1) Act No. 90/2012 Sb. the controlled party refers to a business corporation that is controlled by a controlling party (Czech Republic, 2012b). Ryneš (2018) says that if one or more corporations that are subject to uniform administration are to be dealt with, these are referred to as a group of companies.

A legal relationship refers to a corporate relationship of more subjects that have mutual rights and obligations. Legal relationships are bilateral or multilateral. We distinguish two legal relationships: relative (correlative relationships on the part of both – the entitled and the obligated party) and absolute (one subject has absolute rights or obligations and this right applies to the obligation of non-specified number of subjects) (Knapp, 1995).

The injury to the controlled party or another involved party may be caused by the conduct of the controlling party. The injury may be financial or non-financial. For example, financial injury may be caused by inadequate financial performance for contracted services. The controlled corporation then suffers non-financial injury such as damage to its reputation even in the event of unintentional fault of the controlling party.

## 2 Literary research

It is a report on relations that must be annually submitted by all controlling parties. The report contains information on relations

between the controlling party and controlled party or parties. Its wording and elements are regulated pursuant to S. 82 Act No. 90/2012 Sb (Czech Republic, 2012b).

Under S. 82 (1) Act No. 90/2012 BCA the report must be produced within three months after the deadline of the accounting period. The report of relations is drawn up in order to inform partners of the group of companies. Under Sec 84 (1) Act No. 90/2012 Sb. controlled parties are entitled to get acquainted with the report on relations within same time limit and under same conditions as they were with the financial statement at the most recent session of the supreme body (Czech Republic, 2012b). In the event of discrepancies or incompleteness of the report on relations, the partner whose contributions are not less than 10% of the registered capital (S. 187 (1) Act No. 90/2012 Sb.) or shareholder whose share is no less than 3% of the registered capital that exceeds 100 Mil. CZK with a share no less than 5% of the registered capital that is no less than 100 Mil. CZK may arrange for the court to review this report; in the event that the registered capital of the corporation exceeds 500 Mil. CZK, it is necessary to own no less than 1% of shares (S. 365 Act No. 90/2012 Sb.). Each of these partners may suggest an expert who will be authorized to review the report on relations. However, these suggestions are not binding on the court (S. 86 (1) Act No. 90/2012 Sb.) (Czech Republic, 2012b). Reviews of the report on relations may be carried out only by experts appointed by court (Hejda et al., 2013). The expert refers to a person trained and experienced in performing actions that cannot be performed by an ordinary man without the knowledge that the expert has acquired (Liern et al., 2015). Experts have considerable experience and hold opinions and know facts that must be applied in the assigned task. The task results in the expert's opinion (Bolger, 1994).

Leal (2007) considers the expert's opinion as a reliable source of information for relevant analytic modelling where no relevant data are available. The report on relations must contain these elements: the structure of relations between the controlling and all controlled parties, the role of the controlling party in the group, the manner and means of controlling, the overview of sessions that were summoned by or in the interest of the controlling or other parties (provided this session discussed assets exceeding 10% of the equity of the controlled party; that 10% must be recognized from the last financial statement) that took place within the last accounting period, the overview of contracts between the controlled party, controlling or controlled parties and, last but not least, the opinion on whether the controlled party incurred injury or, alternatively, the opinion on the compensation for the injury under S. 71 and S. 72 Act No. 90/2012 Sb. (Skálová et al., 2017). However, what was said above does not apply if it was proved that the expert could have reasonably and in good faith anticipated that he consciously had acted in behalf of the influenced party (S. 71 (1) Act No. 90/2012 Sb.) (Czech Republic, 2012b).

Wang et al. (2010) analyzed financial statements of a bankrupt corporation and used these statements to identify which circumstances led to its insolvency and whether this insolvency was caused by arising injury. Badriyah et al. (2018) argues that in the event of financial distress of the controlled party, which the party subsequently alleviates by a monetary loan, it is possible for the controlling party to become its guarantor. In such a case the controlling party would have an interest that the controlled party should be able to pay its debts; otherwise, the controlling party itself would be at risk of insolvency (Klieštík et al., 2018). According to Ficbauer and Řezňáková (2014) the improvement of the management of financial resources of the controlling party plays an important role in the relationship between the controlling and controlled party. They also argue that in the event of necessity, the controlling party can be a

creditor to the controlled party. It means that both parties would avoid external financial resources.

The individual levels of the influence of controlling corporations are the influence, controlling and group of companies. The influential party refers to each party that significantly influences the conduct of the business corporation by its decision-making. The influential party is according to S. 74 (1) Act No. 90/2012 Sb. a party that may exercise a direct or indirect crucial influence in the specific business corporation. The highest level is the group of companies. The English literature often terms this level as 'holding' (Fialová, Fiala, 2011). It refers to a group of legal entities with one or more controlling parties (holding corporations) and several controlled parties (Selleng, 2018). Moghaddam et al. (2011) argues that holding corporations are one of the most important structures of legal entities which meet requirements for the stable economic growth. On the other hand, Cho (1998) declares that the ownership structure influences investments within corporations and thereby influences their total value.

Pursuant to S. 79 (3) Act No. 90/2012 Sb. the group of companies shall publish its existence on the internet websites. Together with this, a report on the compensation for potential injury to the controlled party within the group of companies must be published. In the event of injury, BCA allows compensation not only in the form of financial compensation, but also in the form of any other consideration including demonstrable benefits arising from the membership in the group of companies (Korotvička, 2013).

According to S. 75 (2) Act No. 90/2012 Sb. the controlling party must have no less than 40% of all votes in the business corporations (Czech Republic, 2012b). Under S. 75 (4) Act No. 90/2012 Sb. it is stipulated that the controlling party may also become a party that alone or together with parties acting in its behalf disposes of no less than 30% of rights to vote; in addition, this proportion represented more than 50% of rights to vote of the parties present at the sessions of the supreme body in the last 3 consecutive years.

S. 151 – S. 167 of Act No. 89/2012 Sb. stipulates a legal definition of legal entities. It further imposes conditions that legal entities shall observe in order to become a member of legal entity body or to represent another legal entity within this body (Czech Republic, 2012a).

The issue of the review of the report on relations between controlling and controlled parties is the subject-matter of the following case study.

### 3 Materials and methods

The model case describes selected groups of legal entities that entered into specific contracts and whose legal relations in the issue of the controlling and controlled party are regulated under Act No. 90/2012 Sb.; firstly, the model case will demonstrate the identification of the controlling and controlled party from the report on relations drawn up by the controlling party within the specific accounting period.

The analysis of documents will thereby be carried out. The analysis of documents is a set of methodological procedures used for gaining information from documentary sources in the study of social phenomena and processes to explore specific research issues in order to deal with specific research issues. It is a highly practical method of analyzing that was devised for data collection when carrying out a research in which documents can be used as primary or secondary source of information. It is assumed that the documents are or can be considered as reliable evidence of phenomena that occur in the real world. This is closely connected with official documents, yet it can also relate to unofficial ones. Nevertheless, when carrying out a research, all documents that were used in the research should be subject to critical consideration.

What also needs to be observed is the legislation that governs rights and obligations of controlling and controlled parties. It is in particular S. 71 – S. 86 Act No. 90/2012 Sb. and related regulations that need to be complied with. In No. 89/2012 Sb., it is S. 151– S. 167, where rights and obligations of legal entities and individuals that represent them are stipulated, that will be used as a relevant material for the review (Czech Republic, 2012a).

The key goal of the article is to decide whether injury was inflicted on the controlling party or other members of the group of companies according to S. 71 and S. 72 Act No. 90/2012 Sb., and to decide whether the report on relations complies with formal rules under S. 82 Act No. 90/2012 Sb.

The model case demonstrated a high assumed probability of injury inflicted on the controlled party in the form of inadequate financial performance under contracts made between the controlling and controlled party. All the same, by this conduct, injury can be also inflicted on a party involved, in this case TC (Transport Corporation), which is the minority owner.

The review of prices charged by contracts of lease made between the controlling and controlled party will be carried out by comparative methods after the usual prices have been identified. What will also be carried out is the inspection of payments of these contractual prices according to financial statements of the legal entities concerned. The integral part of the review of contracts that were made will be also other types of contracts that were issued within the group of companies. What will be compared is the adequacy of the required and performed consideration. At the same time, it will be reviewed whether obligations arising from the contracts are duly performed.

Furthermore, we will focus on the analysis of issued and received invoices of the controlled party XYZ. What will be further drawn up is the list of all contracts received or issued by the controlled party XYZ. Based on the Report on relations all issued and received invoices for which a financial consideration was performed will be calculated. The subsequent structure of issued and received invoices will refer to financial relations between the controlling, controlled and other involved parties. In this way it is easier to decide whether injury was inflicted on one of the parties.

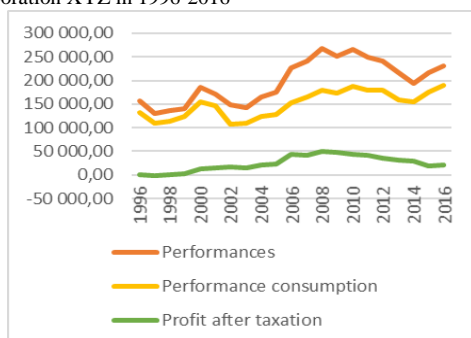
Based on scientific observations a qualitative and quantitative research will be conducted in both areas of the analysis of the Report on relations and the list of issued and received invoices by the controlled party XYZ.

#### 3.1 Structure of relations between parties

In the event of considering legal relations between corporations it is always necessary to correctly identify controlling and controlled parties. According to the available information regarding these legal relations between the controlling and controlled party, corporation ABC is considered to be the controlling one. Corporation ABC holds 70% of shares of controlled corporation XYZ which means that corporation ABC is the majority owner of XYZ and thereby meets the requirements for exercising the right of the controlling party according to S. 75 (2) Act No. 90/2012 Sb. (Czech Republic, 2012b). It is in particular the value of 2,100,000 CZK from the total registered capital of XYZ Corporation, which equals to 3,000,000 CZK. However, the structure of the corporations has yet to be completed. ABC Corporation is controlled by another corporation which is corporation DEF with a residence abroad. Corporation XYZ is a member of international group DEF dealing mainly with outdoor advertising. The next significant shareholder and, at the same time, the minority owner of corporation XYZ is an unnamed transport corporation (hereinafter 'TC') which holds 28% of shares which equals to 840,000 CZK. Pursuant to S. 75 (2) Act No. 90/2012 Sb. TC is not therefore the controlling party. However, there is another minority shareholder (hereinafter 'Z') who owns 2% of shares

from the registered capital of XYZ Corporation (Czech Republic, 2012b). This shareholder thereby fails to meet requirements under S. 365 (2) Act No. 90/2012 Sb. for exerting the decisive influence in the controlled corporation XYZ. Concerning this issue, BCA stipulates that to exert the decisive influence of the shareholder, it is necessary (under S. 365 (2) No. 90/2012 Sb.) to own no less than 5% of the registered capital of the corporation which equals to 60,000 CZK in this particular case (Czech Republic, 2012b). In 201X, shareholder Z was in a very specific position since he was a minority shareholder of corporations XYZ although, at the same time, this person was the Chairman of the Board on behalf of the controlled corporation and, simultaneously, held a position of the corporate agent of corporation ABC on behalf of the controlling party. Throughout the examined period, though, marked fluctuations in the number of shares held by individual shareholders occurred. At a specific moment, shareholder Z owned only 1.3333% of shares (namely 40,000 CZK); however, at the end of the period, he again had 2% of shares. Shareholder Z and corporation ABC saw the fluctuation of 0.667% of shares (namely 40,000 CZK) that occurred between them. When examining the whole network of the corporation including their contracting partners, mutual contracts between seven corporations engaged in different activities are to be dealt with. The remaining corporations will be marked as X1 – X4. Nevertheless, activities of all these corporations can be combined. The provision of advertising areas by XYZ Corporation for remuneration from DEF Advertising Corporation may be given as an example.

Fig. 1. The development of selected economic ratios of corporation XYZ in 1996-2016

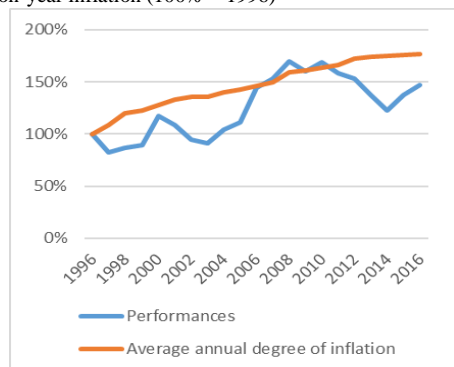


Source: www.justice.cz; Public register and the Collection of documents.

The development in Fig. 1 demonstrates the fluctuation in both – performances and performance consumption of corporation XYZ. The profit began to plunge after taxation after the economic crisis in 2008.

For a more careful consideration of the development of the situation of corporation XYZ, we can compare its performances with an average annual degree of inflation which is depicted in Fig. 2.

Fig 2. The comparison of performances of corporation XYZ and year-on-year inflation (100% = 1996)

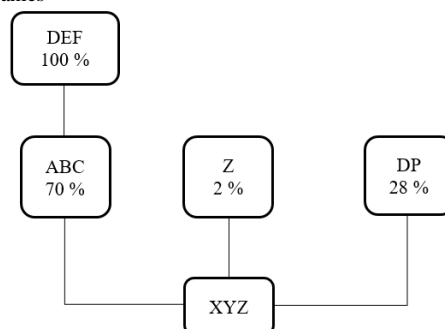


Source: www.justice.cz; Public register and the Collection of documents, Czech Statistical Office.

In case a corporation flourishes, its performances should annually increase by no less than the degree of inflation in the specific year. The corporation responds to the inflation increase by pushing up prices of its products and services (Irima, Stancu, 2013). Fig. 2 shows that performances of the corporation began to plunge since 2010 and began to increase no less than 4 years later.

Fig. 3 illustrates individual relations between the controlling and controlled party and other minority owners.

Fig. 3. Relations between the members of the group of companies



Source: Author's own graphic interpretation.

#### 4 Results

Having conducted the research, there was a certain deficiency in the Report on relations for this particular model case. It is an inaccurate identification of legal entities as (parties) controlling and controlled. This is directly contrary to Act No. 90/2012 Sb. The controlled corporation XYZ is controlled on the basis of majority ownership of its shares by the ABC Corporation. According to another research, it may be stated that s. 82 (2) (b - d) Act No. 90/2012 Sb. has always been formally and correctly fulfilled by XYZ. Only a different degree of accuracy may be noted. In the period under review, there were minor fluctuations in the number of held shares of the controlled corporation XYZ between the controlling ABC Corporation and the minority shareholder Z. Content deficiencies of the Report on relations to be reproached involve a list of contracts. The list of contracts does not include all contracts made between the controlling party and the controlled party. For this reason, it is necessary to remark that s. 82 (2) (e) of Act No. 90/2012 Sb. was not properly fulfilled.

Yet, according to the information available, it may be claimed that s. 82 (2) (a) Act No. 90/2012 Sb. was not sufficiently fulfilled either, but it was not such a serious error that would cause any injury to the controlled party or other member of the group of companies. Act No. 90/2012 Sb. does not clearly regulate the way in which the structure of controlling and controlled parties is to be expressed in reports on relations. In this case, however, the Report on relations contained a combination of graphical and textual representation, with the former being depicted as the first. Not all shareholders were included in the graphical representation though as they were only listed in the textual section below the graphical representation. Judging from experience, it may be argued that on viewing the graphical representation, shareholders can easily be omitted in the textual part.

Further formal shortcoming was found while examining the list of all contracts included in the Report on relations. It encompassed two contracts that were classified as oral by the controlling company and were not listed in the contracts. Specifically, it was the rental of advertising space and of office space. However, receivables from them were normally invoiced to the controlled company. It was also found that several contracts made in writing were not included in the Report on relations. Apart from that, the existence of the contracts is supported by accounting transactions of performance whose

claim arose from the contracts' subject-matter. The controlled corporation XYZ had an agreement with the controlling company ABC on the provision of advertising and other cooperation in the field of advertising. Then, there were five other contracts signed with the foreign group DEF. They comprised a contract for work, a contract for ordering advertising space, a contract for sublease and provision of services, a contract for providing accounting services, and a contract for the use of hardware and software.

The minority owner (TC) of XYZ believed that the performance, based on issued invoices for the services of the controlling party ABC, was disproportionately high, hence resulting in an intentional decrease in profit of controlled party XYZ in order to reduce dividends to be paid by TC as the minority owner of the corporation XYZ. According to the authors' findings in this area, there was no invoicing of higher valuable consideration for the services provided by the controlling party to the controlled party. The consideration charged for invoiced services was reasonable in the period under review and was in line with the current market situation.

At the instigation of TC as the minority owner of the company XYZ, a possibility that TC was not harmed by the controlling party's conduct would also be reviewed.

In the matter of harm according to s. 71 and s. 72 of Act No. 90/2012 Sb. (being the subject to s. 82 (2) (f) Act No. 90/2012 Sb.), the controlled party (XYZ) was paid all issued and received invoices based on cash flows between individual companies. However, uneven invoicing intervals were identified here. This undoubtedly violated contractual terms between the parties. Some contracts were violated in the manner that that the intervals were random, whereas other contracts were being violated from their start. For instance, the accounting service contract, where quarterly invoicing had been negotiated, was actually invoiced on a monthly basis. However, there was no harm to TC as a result of higher invoicing frequency and reimbursement.

Moreover, particular inaccuracies in the invoicing process between ABC and XYZ were identified as well. They result from a specific part of the contract dealing with a manner of invoicing. Non-compliance with the invoicing procedure did not cause any injury to the controlled corporation XYZ, since it was only to simplify the entire invoicing system between the above-mentioned parties. In relation to the finding, it may be stated that no injury was inflicted on XYZ or TC in this respect.

An interesting finding is also the structure of invoices issued by XYZ to other members of the business group. While researching, XYZ was found to be a 100% owner of the corporation X2 which is a 50% owner of the corporation X3. The controlling corporation ABC is a 100% owner of the corporation X1. And the foreign corporation DEF is a 100% owner of X4.

Table 1 shows a particular volume of invoices issued by XYZ to ABC and X1 – X4 in 201X excluding VAT.

Tab. 1. Invoices issued by XYZ in 201X (excluding VAT)

Company	Amount [CZK]
ABC	169,427,982.8
X1	129,560.0
X2	7,347,479.6
X3	308,907.0
X4	11,351,544.9
Total	188,565,474.3

Source: Documents provided by XYZ.

As may be gathered from Table 1, XYZ invoiced most of the receivables of controlling corporation ABC. Overall, it represents 89.6% of the total invoiced receivables.

A different standpoint is provided in Table 2 which lists invoiced receivables of X1, ABC and DEF towards XYZ without VAT.

Tab. 2. Invoices received by XYZ (excluding VAT)

Company	Amount [CZK]
X1	3,077,642.0
ABC	750,063.6
DEF	13,504,690.5
Total	17,332,396.1

Source: Documents provided by XYZ.

Table 2 clearly shows that the foreign company DEF had the largest receivables in relation to the controlled company XYZ in 201X. This was 77.9% of the total invoiced liabilities.

In total, XYZ issued invoices for labor costs, rental of advertising equipment, rental of advertising space, costs of the selected period and other rental. From its business partners, XYZ received invoices for construction, IT services, marketing, labor costs from X1 and X4, landline and other charges, and costs over invoice.

## 5 Conclusion

The Report on relations, drawn up by ABC as the controlling party, was researched in the area of formal requirements placed on it and assessed regarding possible occurrence of injury to the controlled party XYZ and TC as the minority owner by the controlling party ABC for a certain period. Considering the violation of s. 71 and s. 72 Act No. 90/2012 Sb., no faults were found in the controlling party's conduct. The same conclusion was also reached with regard to s. 82 (2) (a – d) Act No. 90/2012 Sb. In relation to s. 82 (2) (e) Act No. 90/2012 Sb., incompleteness was found in the list of all contracts made between the controlling party and the controlled party.

There are also several inaccuracies, or minor faults, regarding compliance with contracts on providing individual services. However, these minor inaccuracies did not cause any injury to the controlled party XYZ or its minority owner. The main issue was the amount of negotiated and subsequently invoiced prices for services provided and the lease to the controlled party by the controlling party.

Thus, the agreed performance was verified. Owing to the nature of the contract's subject, the verification was performed by comparing usual rents in the given location. The authors determined a rent of non-residential premises and concluded that the claimed performance broadly corresponds to the usual rent. Also, the agreed monetary rewards for each service provided were always commensurate with the regular prices for this type of services in the reporting period.

Also, the adequacy of contractual performance on other concluded contracts was examined. However, a specific nature of the contract's subject must always be taken into account. The authors succeeded in verifying performance of the contracts for advertising and other cooperation in advertising, the contract for work, for ordering advertising space, accounting service contracts and contracts for the use of hardware and software, concluding that in all of the above contracts the consideration agreed was proportionate to the nature of the contracts' subject and the current state of the market.

As regards the formal correctness of the Report on relations, it should be noted that the Report did not give a clear indication of the actual relationship between individual parties, and it was not clear enough as to who in the group was in the position of controlling party and controlled party. Given the complexity of the whole structure, more attention should have been drawn to this section.

In conclusion, it may be reported that the controlling parties did not cause any injury to the controlled party or the minority owner. This statement is based on all the findings made throughout the research while finding answers to all the above questions. Considering the scope of information available from

the Report on relations, the paper's objective was therefore satisfactorily met and its contribution is clear.

Other companies with similar legal relations should in the future ensure compliance with the aforementioned legal requirements. However, it should be noted that not only a breach of this legislation may cause injury to the controlled party by the controlling party. In addition, certain injury may be caused either intentionally or unintentionally to other owners.

Both contracting parties should pay meticulous attention particularly to contracts in the area of legal and advisory services, where verification of their adequacy is considerably complicated, as is verification of the actual provision of the contract's subject-matter, as well as their timely payment and entry in the accounts. It is also necessary to point out that an irregularity in invoicing between the parties may cause injury to one of the members of the group of companies. Yet, this did not occur in the model case presented as invoices were issued and paid at shorter intervals than previously agreed. Thus, there was no injury related to the minority owner. Assiduous attention should also be paid by all companies to unusual invoices for items not regularly invoiced to them in order to avoid any errors in financial statements or cash flow. Examples of such invoices may include bump advertising or necessary needs of corporations depending on surrounding influences.

Reviewing the Report on relations should consist of two parts, one of which is verification of formalities required by the legislation, the other being occurrence of the actual injury itself. In the above case, the occurrence of injury, theoretically resulting from the inadequate performance provided, was addressed. If the inadequate performance was provided without proper justification, it could be demonstrably classified as deliberate injury to the controlled corporation and the minority owner.

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#### Primary Paper Section: A

#### Secondary Paper Section: AE, AH

## ECONOMIC CONVERGENCE OF CZECH REGIONS IN TERMS OF GDP AND UNEMPLOYMENT RATE IN RESPONSE TO FDI FLOWS: DO BUSINESSES AND REGIONS FLOURISH?

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**Abstract:** The convergence analysis of regions of the Czech Republic is performed in the period 2000–2017. Two convergence concepts are methodologically described and applied: 1) the regional variability of real gross domestic product per capita is examined by the  $\sigma$ -convergence method; 2) the tendency of poorer regions to grow faster than the richer is assessed by the concept of  $\beta$ -convergence. The analysis results do not manifest any palpable tendency of the Czech regions to converge. Furthermore, a role of foreign direct investment flows (FDI) as a catalyst that should contribute to the convergence of the Czech regions in terms of unemployment is assessed based on the relationship between the cumulative regional FDI flows per capita and regional unemployment development in period 2005–2017. The assumption that the FDI flows create new jobs and thereby contributing to the reduction of unemployment is studied by means of the statistical apparatus, regression and correlation analysis. No positive impact of regional FDI flows on regional unemployment was proven.

**Keywords:** Convergence, unemployment rate, gross domestic product, foreign direct investment, subsidy and enterprise.

### 1 Introduction: the concept of economic convergence and the role of foreign direct investments in economy

The notion of convergence, in the economical context, means that the difference of the monitored criterion among the examined economies over time decreases and becomes negligible, i.e., converges to zero. The convergence of economic performance is measured, as a rule, by comparing of the development of the gross domestic product (GDP) per capita (Barro & Sala-i-Martin, 1992).

Foreign investments are considered to be one of the most important aspects of globalization. Within the classical theories they are assumed to play an important role in the economic development of backward economies due to the property of high capital mobility. Therefore, foreign investments are considered to be a catalyst contributing to the convergence of the poorer economies to the economically advanced countries (Gorynia & Blanke-Lawniczak, 2009).

Modern theories such as „New economic geography” and “Endogenous growth theory” are more *cautious* when considering the impact of foreign capital on the convergence; their assessments are based on conditions in which the convergence process should occur (Barry et al., 2003).

The significance of foreign investments has been magnified in economies that lack investment capital, which was the case of the transition economies of post-communist countries of Central and Eastern Europe (Bevan & Estrin, 2004). The demand for foreign investments was here associated with a lack of domestic savings needed to start the process of market economy, with a need for new production technologies and sophisticated procedures in order to facilitate easier access to more mature markets.

In the Czech Republic the important milestone for the inflow of foreign direct investments (FDI) was the year 1990, in which the transformation process of transition from a centrally planned economy to a market system began, and in which liberalization of capital flows was carried out (Mandel & Tomšík, 2006).

Despite the fact that FDI benefits can be verified with difficulty, it is considered that they stand largely behind the growth of Czech industry, export growth and the improving state of the Czech economy. As pointed out in Zamrazilová (2007), a massive influx of FDI can also have negative consequences. Concerns relating to the risk of FDI are based on the fact that foreign-owned enterprises thrive better than domestic companies. This may ultimately lead to the destruction of domestic competition. Another negative impact of FDI was empirically confirmed in the study of Zemplinerová (2006). It revealed that foreign-owned enterprises in the manufacturing industry were generally very demanding regarding the need for physical capital and labor saving. At the same time it showed that the labor and capital productivity of companies with foreign participation was significantly above average; this gave the companies a head start in market competition.

In contrast to this analysis, the defenders of FDI commonly argue for an increasing pressure on improvement of the competitive environment, growth of new employment opportunities, the involvement of domestic enterprises in international trade, rising labor and capital productivity and the influx of new knowledge and technologies (Mitic & Ivić, 2016).

A foreign investors’ decision on entering the market of a host country is influenced by many factors, analyzed e.g., in Bruno & Cipollina, (2018), one of the most significant of which is the amount and type of support offered by the host country. Nevertheless, there is no consensus on the effectiveness of investment incentives. In this regard, many studies have proved that from a long-term point of view the FDI showed a negligible or no even impact on the decrease of unemployment. The reason is attributed to dislodging the existing firms from the market and/or the introduction of capital-intensive production to the detriment of production employing human factors (Dinga & Münich, 2010). From this perspective FDI have not fulfilled their purpose and incentive costs can be regarded as a waste of public funds.

The positives of FDI incentives are associated with the production of positive externalities in the host countries in terms of growth-beneficence; in terms of this, positive impact can be considered if unemployed workforce is involved in the work process and/or if technological possibilities of the economy get advanced (Strat et al., 2015).

The below processed macroeconomic analysis contributes to the topic from two perspectives. The first perspective focuses on convergence assessment of the Czech regions during the period 2000–2017. We examine whether the disparity among heterogeneous regions in terms of real gross domestic product per economically active capita was reduced. Namely,  $\sigma$ -convergence method enables us to evaluate whether variability of product per economically active capita among the Czech regions has decreased. Furthermore, within the concept of  $\beta$ -convergence it is assessed whether the poorer regions grow faster than the richer.

The second perspective examines the relationship between the cumulative regional FDI inflows per capita and unemployment development in the Czech regions. The assumption that the FDI create new jobs, and thereby, according to FDI proponents, contribute to the reduction of unemployment will be assessed by means of the regression and correlation analysis.

The following text will be structured as follows: in section 2, the methodologic approaches are given. Section 3 presents the data from which analysis draws. Section 4 concentrates on the convergence analysis of the Czech regions in the period 2000–2017. Section 5 enables to look into the relationship between the cumulative regional FDI inflows and unemployment rate (UR) development in the Czech regions. Results of both the sections 4

and 5 are discussed within their parts. Finally, the section 6 summarizes the main points of the topic and presents the original results of the analyses.

## 2 Methodology applied

The methodological approach utilizes two concepts of convergence that lean on neoclassical model of growth,  $\beta$ -convergence and  $\sigma$ -convergence (Barro & Sala-i-Martin, 1992; Sala-i-Martin, 1996). The convergence criterion is the real gross domestic product expressed per capita ( $Y$ ).  $\beta$ -convergence concept is defined as a situation in which poorer regions (i.e., regions with lower income per capita) grow faster than richer regions. In a simplified way the actual course of  $\beta$ -convergence for the period  $T$  can be quantified by means of (1) using the regression function:

$$(1) \quad Y_{i,T} - Y_{i,0} = \alpha_1 - \beta_1 \cdot Y_{i,0} + \varepsilon_i,$$

where  $i$  refers to the region, 0 and  $T$  refers to two time instants.  $\beta$ -convergence assumes a positive value of regression parameter  $\beta_1$ ; the regression function enables to analyze how the convergence has been achieved over the monitored years  $t = 0, 1, 2, \dots, T$ . If all regions are at the same steady state,  $\alpha_1$  and the period is long enough to enable the regions to converge to this steady state, the parameter  $\beta_1$  will be equal to 1, which is an ideal case. The parameter  $\beta_1$  reflects what difference was eliminated *on average* to the steady state. This formula also assumes a steady state with zero growth per capita. In the context of empirical  $\beta$ -convergence examination, the modified regression (2) can be utilized:

$$(2) \quad \gamma_i(T) = \frac{1}{T} \cdot \log\left(\frac{Y_{i,T}}{Y_{i,0}}\right) = \alpha + \beta \cdot \log Y_{i,0} + \varepsilon_i,$$

in which the left side represents the average growth of log-product per capita over the period  $t = 0 \dots T$  dependent on the initial economic level  $Y_{i,0}$ .  $T$  is the total number of years of the monitored period,  $\alpha$  is a constant,  $\beta$  is the regression coefficient,  $\varepsilon_i$  is a random component. This formula implicitly assumes identical steady states in the surveyed regions (Slavík, 2007).

If the regression coefficient is significant and negative, and the coefficient of determination  $R^2$  is high (i.e., straight lines well capture the variability of the variable), it can be assumed that the poorer regions grow on average faster than richer regions. However, it does not mean, that the dispersion of  $Y$  among regions reduces.

The decreasing variability of  $Y$  can be captured by the  $\sigma$ -convergence. It consists in reducing the variance, or respectively the standard deviation of  $Y$  among regions, which occurs if inequality (3) is true:

$$(3) \quad \sigma_t^2 \geq \sigma_T^2$$

where  $t < T$ ,  $\sigma_t^2$ ,  $\sigma_T^2$  are variances of  $Y$  at times (years)  $t$ ,  $T$ , respectively.

$\sigma$ -convergence is identical with an intuitive understanding of convergence in the sense of reduction disparities among regions;  $\beta$ -convergence is in the case of large differences in the initial levels among regions necessary but not sufficient condition for the existence of  $\sigma$ -convergence (Rapacki & Próchniak, 2009).

The question of the contribution of FDI in terms of their impact on the unemployment development in the Czech regions, further on referred as UR or unemployment rate, will be evaluated based on regression and correlation analysis. This procedure is commonly used in the analyses of FDI impacts on economy as shown e.g., in Novák et al. (2016) or Schmerer (2014).

## 3 Data description

The analysis is based on regional data available from public databases of the Czech National Bank (CNB, 2019) and the

Czech Statistical Office (CSU, 2019). The convergence analysis uses the data from the period 2000-2017. The analysis covering the FDI data is based on cumulated regional FDI flows in the period 1999-2015, with the UR and GDP per capita delayed by one year, i.e., in period 2000-2016. The monitored regions correspond to territorial division described by NUTS 2.

Figure 1 shows the development of the three studied indicators, GDP per capita, cumulated FDI per capita and UR, in the Czech Republic.

The development of unemployment in the monitored period was significantly affected by its cyclical component due to the outbreak of the global financial crisis in 2008, which negatively affected all Czech regions (the greatest impact of the crisis on regional unemployment growth can be observed between 2009-2013). Simultaneously, the crisis led to decrease in GDP. This period is accompanied by slowdown in the FDI flows. The considered period contains several short-time economic cycles; therefore, it provides an opportunity to compare relations of analysed indicators under non-homogeneous conditions.

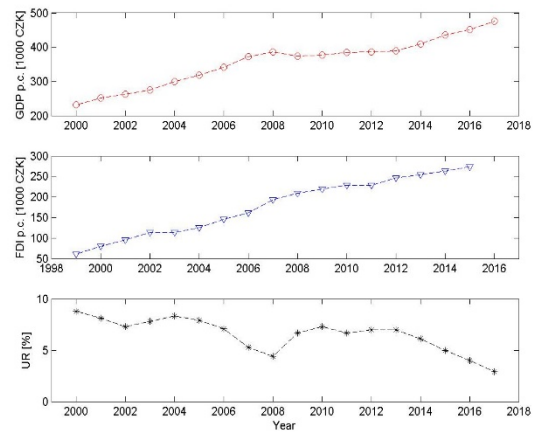


Figure 1: Development of the GDP (the upper graph), the development of cumulated FDI (the middle graph), both expressed in 1000 CZK per capita, and the development of UR (the lower graph) in the Czech Republic. Source: own processing, based on the data of CSU (2019) and CNB (2019)

In terms of the FDI distribution among the Czech regions, the capital Prague markedly differs from the other regions, hence it is not included in further analysis. In the subsequent parts, 13 regions are considered for analyses, namely: Central Bohemia (SC), South Bohemia (JC), Plzen region (PL), Karlovy Vary (KV), Usti (US), Liberec (LI), Hradec Kralove (HK), Pardubice (PA), Vysocina (VY), Olomouc (OL), South Moravia (JM), Zlin (ZL), Moravian-Silesian region (MS).

## 4 Results of analysis of $\beta$ -convergence and $\sigma$ -convergence of regions in the Czech Republic

Results of  $\beta$ -convergence of the Czech regions based on relation (2) are shown in Figure 2. The horizontal axis represents the natural logarithm  $Y$  (= GDP per capita) in the initial year  $t_0 = 2000$ , the vertical axis represents the average annual growth of product in accordance with the left side of relation (2) for a given period  $T = 17$ , namely

$$(4) \quad \gamma(17) = \frac{1}{17} \ln\left(\frac{Y(2017)}{Y(2000)}\right)$$

The data in Figure 2 are interleaved with a regression line by means of the least squares. Both the estimated regression ( $\beta$ ) and correlation coefficient ( $\rho$ ) are negative, but non-significant with  $\beta = -0.0194$ ,  $\rho = -0.2711$ , with  $p$ -value 0.3704 of the corresponding  $t$ -test. The regression model captured in Figure 2 is based on data summarized in Tab. 1.

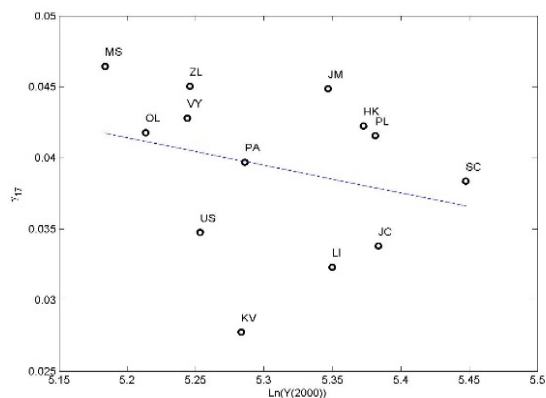


Figure 2: Cross-regional analysis of  $\beta$ -convergence of the Czech regions in 2000-2017. Source: own processing

Table 1: GDP per capita  $Y$  in 2000 (in thousands CZK) and average productivity growth rate  $\gamma$  for the period  $T = 17$  in the regions of the Czech Republic

Region	SC	JC	PL	KV	US	LI	HK
$Y(2000)$	232,182	217,824	217,352	197,046	191,193	210,562	215,488
$\gamma(17)$	0,0384	0,0338	0,0416	0,0227	0,0348	0,0323	0,0423
Region	PA	VY	JM	OL	ZL	MS	
$Y(2000)$	197,531	189,362	209,902	183,677	189,743	178,346	
$\gamma(17)$	0,0397	0,0428	0,0449	0,0418	0,0450	0,0464	

Source: own processing

The development of the  $Y$  = GDP per capita variability in years 2000-2017 among regions used for the analysis of  $\sigma$ -convergence according to (3) is summarized in Tab. 2 with estimated standard deviations  $\sigma$  shown in the 2<sup>nd</sup> row.

Table 2: Variability of product per capita  $Y$  expressed by means of population standard deviation  $\sigma$  (in thousands CZK, period 2000-2017)

Year	2000	2001	2002	2003	2004	2005	2006	2007	2008
Sdev $Y$	69,6	79,7	85,8	93,7	102,7	111,4	120,5	135,4	141,7
Mean $Y$	220,4	238,4	249,0	259,8	281,5	298,6	319,5	345,4	355,4
Year	2009	2010	2011	2012	2013	2014	2015	2016	2017
Sdev $Y$	134,5	135,9	133,1	132,0	133,0	134,8	152,0	156,3	165,6
Mean $Y$	346,7	348,2	356,0	357,2	361,1	380,0	401,8	415,7	438,8

Source: own processing

### Discussion of results

The results of the analysis indicate that GDP development in the Czech regions does not fulfill any of considered criteria of convergence, i.e., neither in terms of (2) nor (3) convergence trend was showed; on the contrary, as we can see from Tab. 2 the dispersion among the regions increased, particularly in the periods of economic growth.

Tab. 1 enables us to identify two groups of regions according to their initial  $Y$  in the year 2000, namely, with  $Y < 200$  thousands of CZK (KV, PA, US, ZL, VY, MS, OL), and the rest with  $Y > 200$  thousands of CZK.

Analogically, the regions can be separated into two groups according to  $\gamma$  as follows: the group of regions with  $\gamma < 0,035$  (KV, US, LI, JC) and the group with  $\gamma > 0,035$ .

As we can see from Fig. 2, five out of seven regions with lower initial  $Y$  reached the group of the larger  $\gamma$ ; in contrast, some regions included in the richer group according to  $Y$  achieved

worse results of  $\gamma$ . This indicates that there is at least certain tendency for initially poorer regions to grow *on average* faster than the richer ones. However, the variability among regions is so large that it does not enable us to formulate a definite conclusion.

As regards to the analysis of the variance across regions, it can be seen from Tab. 2 that the variability of  $Y$  across regions has not increased systematically; at the crisis outbreak in 2008-2009 it decreased and then stabilized until 2014. Nevertheless, the present period of economic growth leads to further growth of regional disparity.

### 5 Results of analysis of trend in UR development and its correlation with FDI

The trend in development of UR in the Czech regions is examined by means of the regression model based on equation (1) that captures the relation between UR in the initial year 2000 with the change in UR from 2000 to 2017 (see Fig. 3) and enables to compare regional UR development in the considered period.

The correlation between the analyzed variables is negative and significant ( $\rho = -0,977$ , slope parameter of regression line  $\beta = -0,8502$  with  $p$ -value  $\sim 10^{-8}$  computed from corresponding  $t$ -distribution). As we can see from Fig.3, the strongest contribution to the resulting relationship was due to the regions US, MS and OL characterized by the highest UR in 2000 and, simultaneously, by its highest decrease between 2000-2017.

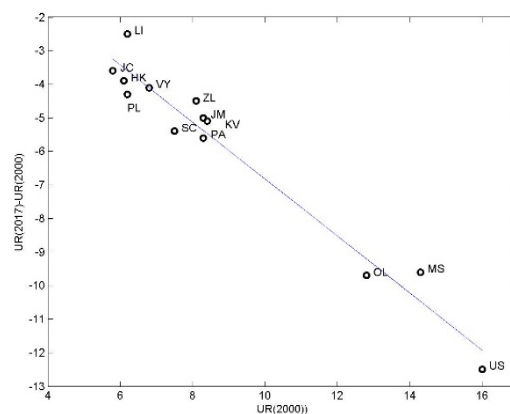


Figure 3: Relation between the UR in 2000 and the UR change between the period 2000-2017. Source: own processing

The question arises whether any positive influence of regional FDI flows to the regional UR development can be proven. Graphically the dependence between these variables is captured in Fig. 4, where cumulated regional FDI flows per capita in 2000-2015 are plotted on the horizontal axis and the UR change between 2000 and 2016 is shown on the vertical axis. In the case of an explicit impact of FDI on UR, we expect a negative dependence in the sense that larger regional FDI flows lead to a more significant decrease in UR. The data, however, do not support such a conjecture. The dependence is positive, though not significant statistically ( $\rho = 0,2678$ , slope  $\beta = 0,0168$ ,  $p$ -value in the corresponding  $t$ -test is 0,3764).

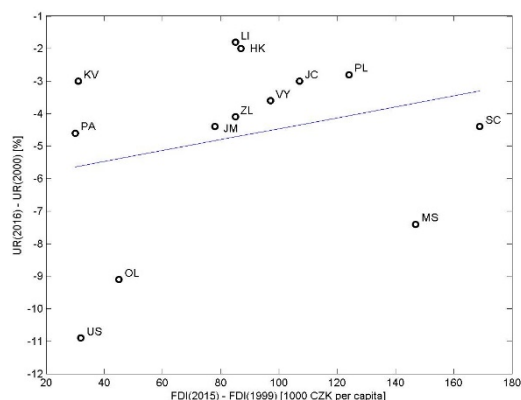


Figure 4: Cumulated FDI flows (in thousands of CZK per capita) over the period 1999-2015 versus differences in UR between 2016 and 2000. Source: own processing

### Discussion of results

Regarding the FDI flows the regions can be separated to three groups: rather low FDI recipient (KV, PA, US, OL), high FDI recipient (MS and SC) and middle recipient (HK, LI, JM, ZL, VY, JC, PL), (see Fig. 4). However, the response values of the UR change are rather scattered, which means that the development of UR in regions in the same group was quite different. Hence, the results do not support the assumption of the positive impact of regional FDI flows on the regional UR development.

To obtain more details about individual regions (for instance on MS region experiencing a positive contribution of FDI to UR change due a massive investment to the Hyundai factory, among others) the micro-economic analysis of the particular FDI impacts on UR should be performed.

These results can be attributed to the fact that the basic characteristics of the regions (economic, population, geographical, historical, cultural, etc.) are given so strongly that the FDI flows could not systematically affect the UR development over considered time. Another reason may follow from the FDI state support policy, which in practise manifests itself by the decrease of overall costs of the supported firms giving them competitive advantage. Simultaneously, the inflow of FDI is often connected with the technology modernization and more efficient production processes, which can lead to the substitution of labour factor for capital resulting in the UR increase.

### 6 Conclusion

The issue of the convergence of the Czech regions in 2000-2017 and its relation with the foreign direct investments was discussed and analysed by means of empirical data. Any significant trend in convergence was not proven. Nevertheless, in the examined period, the internal and external temporary factors seem to influence the regional GDP potential in terms of temporary convergence; this applies to the GDP variability reduction as well as unemployment reduction in the poorer regions. As an external temporary factor, the financial crisis 2008 can be regarded, internal temporary factors cover diverse forms of regional growth supports, including the FDI inflows.

Moreover, a question was arisen whether any positive influence of regional FDI flows to the UR development could be revealed. The performed analysis excluded this hypothesis. This may have resulted from the existence of basic and strong characteristics of the regions (economic, population, geographical, historical, cultural, etc.), which did not allow the FDI flows to affect systematically the UR development over the considered time. Another reason could arise from the FDI state support policy. This allows us to conclude that the insensitivity of

unemployment rate to the FDI inflows indicates ineffectiveness of active employment policy, in particular regarding the FDI as one of the instruments of the unemployment reduction.

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Primary Paper Section: A

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## DETERMINING THE MARKET RENT OF A MEDICAL FACILITY ON A SPECIFIC EXAMPLE

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**Abstract:** The aim of this paper is to determine the value of market rent and to assess the differences in valuation of the healthcare business just mentioned. For the purposes of this paper, a gynecological clinic is used as a medical facility, using the complete documentation of the facility. The property method is used for valuation purposes. However, given that the method chosen does not take sufficient account of the benefits of the reputation of the gynecological clinic, goodwill, the intangible asset component, is valued at the interest rate level of the average profit corrected for past periods. Corrected earnings are expressed for all available periods. Thus, the monthly rent is fixed, the value of the goodwill is determined separately. A generally applicable methodology for the valuation of intangible assets for any medical facility is presented.

**Keywords:** company valuation, goodwill, market rent, medical facility

### 1 Introduction

Healthcare facilities can be considered a so-called specific economy. It is an enterprise that differs, for example, from an industrial, construction or transport enterprise. In addition to the legal form of a trading company, it can also be operated by a natural person doing business on a non-trade license basis. Medicine is often not regarded as a profession but rather as a mission. This is logically related to the specific behavior of the healthcare provider and the customers, patients. Equally specific is the determination of the value of such an enterprise. Its tangible assets are not large (Shalowitz, 2017). However, the business is built on patient confidence. The key asset will be intangible assets in the form of goodwill, medical facilities, physicians (Hourd and Williams, 2008).

A general prerequisite for determining the value of an evaluated ambulance is the assessment of the assumption of continued continuity of practice. Krejčíř and Bradáč (2004) states that it is in essence that, in the current setting of the business model, the practice is in the long term able to meet its obligations. In the long run, the practice must be able not only to maintain solvency but also to cover its opportunity costs for its operator, which is the cost of missed opportunities that the operator sacrifices by undertaking ambulance operations instead of other actions.

If the asset is actively and regularly traded, there are no more serious problems determining its value. Current transactions provide a clear indication of its value (Machová and Rowland, 2018). However, if there is no stabilized market where the asset is traded on a regular basis, the following methodological procedures or a combination thereof are used to determine the value estimate (Machová and Vrbka, 2018). It is always necessary to assess the applicability of the relevant method depending on the purpose of the valuation and the nature of the subject being assessed (Vochozka et al., 2016).

Due to the underdeveloped market in leases of medical facilities with a similar property structure, it is not possible to use the market comparison method.

In order to assess the amount of rent for the gynecological clinic and its equipment it is possible to use essentially two basic methods: economic rent based on yield methods and economic rent on the basis of an estimate of the value of individual property components of the subject of the lease relationship.

#### 1.1 Economic rent based on revenue methods

Using this method, future cash flows from the operation of a gynecological clinic are estimated. Subsequently, these cash flows are translated to their present value and the reasonable

rates of earnings of the lessor are set in the form of interest rates. The rate is derived using the Capital Asset Pricing Model (CAPM), i.e. the risk free value (i.e. interest on 10-year government bonds) and the proportional rate of systematic risk and risk premium (Krulický and Horák, 2019). Alternatively, an analogy method can be used in the knowledge of a similar situation. This method estimates the potential of the whole subject of the lease relationship (Klieštík et al., 2014).

The value of the gynecological clinic does not depend on the number of cards in the card index but on the so-called free cash flow that results from the activity of the ambulance to its owner or operator. This variable has to be calculated on the basis of a professional financial plan, its volatility, riskiness and, last but not least, the timewill of goodwill (Rowland and Vrbka, 2016) must be analysed.

#### 1.2 Economic rent on the basis of an estimate of the value of the individual property components of the subject of the rental relationship

This method estimates the approximate value of individual asset components of the leased property, its useful life and its ability to perform its function in the future (Kislingerová, 1999). Even when applying this property method, it is necessary to set a reasonable rate of earnings of the lessor in the form of an interest rate. The rate is derived using the Capital Asset Pricing Model (CAPM), i.e. the risk free value (i.e. interest on 10-year government bonds) and the proportional rate of systematic risk and risk premium. Alternatively, an analogy method can be used in the knowledge of a similar situation (Mařík, 2011).

The aim of this paper is to determine the value of market rent and to assess the differences in the valuation of a healthcare company.

### 2 Data and methods

#### 2.1 Data

Within this paper a health facility will be evaluated, specifically a gynecological clinic. It is an enterprise of a natural person doing business on a non-business license in Sokolov in the Czech Republic. The decisive date for the award is December 31, 2015.

The gynecological clinic equipment will be evaluated according to Table 1.

Tab. 1. Gymnastic outpatient equipment

1.	Ultrasound Philips HD7 L CORE, VASCULAR SW APPLICATION, GENERAL IMAGING APPLICATION, OB/GYN APPLICATION, C5-2 TRANSDUCER, L12-3 TRANSDUCER, C8-4V TRANSDUCER, CARTRIDGE CONNECTOR, BLANKING PANEL, CZECH MANUAL, B/W PRINTER
2.	Colposcope BTL-KAPS model KP 3000
3.	Adjustable examination bed BTL incl. accessories
4.	Examination gynecological chair GRACIE + tool table
5.	PC setup + printer
6.	Furniture in the surgery

Source: Authors.

The vehicle fleet will also be listed in Table 2.

Tab. 2. Vehicle fleet

Car	Subaru LEGACY OUTBACK 2.5 I	Subaru OUTBACK 3.6 R
Registration number	XXXX	XXXX

Date of first registration	2008-08-01	2012-07-19
Technical license number	XXXX	XXXX
Vehicle ID number	XXXX	XXXX
Engine volume	2,457 cm <sup>3</sup>	3,630 cm <sup>3</sup>
Mileage	150,800	90,700
Purchase price incl. VAT	799,900 CZK	1,098,011 CZK

Source: Authors.

Part of the value of the healthcare facility will be the value of its goodwill.

The following documents will be used for the valuation:

1. Background material from tax records:

- Accounting by type of pre-contract 2015 (1st-11th month).
- Income and Expense Report for 2015 as of December 4, 2015.
- Accounting by type of pre-contract 2014.
- Accounting by type of pre-contract 2013.
- Accounting by type of pre-contract 2012.
- Accounting by type of pre-contract 2011.

2. A copy of the tax return from the income tax of a natural person:

- For the taxable period of 2014,
- For the taxable period of 2013,
- For the taxable period of 2012.

3. A list of movable items that are subject to valuation.

4. Copy of the vehicle registration certificate Part II:

- No. UC 567987 of vehicle Subaru LEGACY OUTBACK,
- No. UE 807791 of vehicle SUBARU OUTBACK.

5. Tax documents - invoices:

- Tax document – Colposcope acquisition - BTL-KAPS model KP 3000.
- Tax document – purchase of a tool table.
- Tax document – acquisition of the examination gynecological chair GRACIE.
- Tax document – acquisition of a PC setup.
- Tax document – acquisition of a printer.
- Tax document – acquisition of an examination chair - BTL incl. accessories.

6. Price offer for GRACIE examination gynecological chair from 24/11/2015.

7. Purchase contract - purchase of "HD7 L CORE Ultrasound Philips" incl. accessories.

8. Contract for the sale of gynecological ambulance equipment from "2011-02-30".

9. Photographic documentation of gynecological ambulances and passenger cars.

10. Documents of an expert body from an on-site investigation.

## 2.2 Methodology

Due to the fact that the hospital facility itself can not generate income and therefore profits without a qualified physician, it is more appropriate to choose property for valuation of the rental method. In this case, the procedure for tangible assets is as follows (Krabec, 2015):

1. List of individual property items of the subject of the lease including the determination of the acquisition cost of the property - the value of the curtailment from the submitted accounting documents.
2. Assessment of the period of use of individual components of tangible assets.
3. Assessment of the lifetime, or estimation of the time of possible further use of individual components of tangible assets.
4. Calculation of actual value of tangible assets – ambulance equipment, which is given by:

$$SH_{pv} = \frac{P_c * (D_z - S_m)}{D_z} \quad (1)$$

where:

- SH<sub>pv</sub> actual current value of equipment in CZK,  
P<sub>c</sub> purchase cost of the asset in CZK,  
D<sub>z</sub> lifetime of property in years,  
S<sub>m</sub> the age of the property on the valuation date in years.

5. Calculation of the actual present value of the tangible assets – passenger cars, that is, the vehicle's time value, is given by:

$$SH_v = P_{cv} * (1 - \frac{ZAD + ZAP}{2}) \quad (2)$$

where:

- SH<sub>v</sub> actual current value of the vehicle in CZK,  
P<sub>cv</sub> purchase price in CZK,  
ZAD amortization for the period of operation according to expert standard I / 2005 in %,  
ZAP amortization for the number of kilometers according to expert standard I / 2005 in %.

6. Calculation of average wear and tear of tangible assets per year according to the relation:

$$OHM = \frac{SH_{pv} (SH_v)}{t} \quad (3)$$

where:

- OHM wear of tangible assets in CZK,  
SH<sub>pv</sub> (SH<sub>v</sub>) the current value of the equipment (alternatively the present value of the vehicle in CZK),  
t remaining lifetime of the property in years.

7. Calculation of a reasonable profit in the value of rent in the form of an interest rate according to the formula:

$$\bar{R}_i = r_f + \beta * r_{pod} \quad (4)$$

where:

- (R<sub>i</sub>)<sup>-</sup> represents the alternative cost of equity or the proportion of reasonable profit in the rental price in %,  
r<sub>f</sub> the value of interest on 10-year government bonds (taken from the pages of the Czech National Bank as the value of the German government bond) in % (Czech National Bank, 2019),  
β systematic risk (taken from prof. Damodaran: <http://pages.stern.nyu.edu/~adamodar/>),  
r<sub>pod</sub> risk premium for business risk (taken from the Ministry of Industry and Trade of the Czech Republic, 2015) in %.

8. The calculation of the annual rent for each item of tangible assets is the product of the average wear and tear of tangible assets per year and the alternative cost of equity increased by one according to the relationship:

$$RN = OHN * (1 + R_i) \quad (5)$$

where:

- RN annual rent in CZK,  
OHM wear of tangible assets in CZK,

$(R_i)^{-}$  represents the alternative cost of equity or the proportion of reasonable profit in the rental price in %.

9. Calculation of monthly rent for tangible property according to the relation:

$$MN = \frac{RN}{12} \quad (6)$$

where:

MN monthly rent in CZK,  
RN annual rent in CZK.

Given that the method chosen does not take sufficient account of the benefits deriving from the reputation of the gynecological clinic in place, goodwill, the intangible asset component, will be valued at the interest rate level on the average of the corrected profit for the past periods. For the purposes of determining the annual and then the monthly rental rates, it is assumed that the lessor waives the economic income resulting from the practice and expects the asset to be redeemed. In this case, the rate of interest derived from the CAPM method will be used.

Corrected profit is generally the basic measure of the success of the business strategy of the gynecological clinic and is calculated according to the following formula:

$$KZ = OP - OV - IIN - ON \quad (7)$$

where:

KZ corrected profit,  
OP operating income,  
OV operating expenses,  
IIN implicit investment intensity,  
ON opportunity expenses.

All income derived directly from the performance of a gynecological clinic that is valued should be included in operating income, and it is highly likely that it will be achievable for any successor (Brabec, 2015). For the purposes of this appraisal, the following items are included in operating income (abbreviated as "Accounting by Type of Pre-Contingency"):

- 602000P,
- 602001P,
- 602020,
- 602030P.

Operating expenses include only expenses that are directly related to the operation of the ambulance and in some cases it is necessary to correct them at the usual time and place. For the purposes of this appraisal, the following items are included in operating expenditure (abbreviated as "Posting by Type of Pre-Contingency"):

- 504010V,
- 501000 / 501099V,
- 501001V,
- 501010V,
- 501030V,
- 502000,
- 511000 / 511011,
- 518010V,
- 342000V (increased by OSSZ, VZP payments),
- 521000V (increased by OSSZ, VZP payments),
- 518030V,
- 538000,
- 548000,
- 548010,
- 568000V.

Operating expenses are partly linked to tax depreciation, which, unfortunately, does not reflect the actual wear and tear of the property concerned and therefore their amount is not considered in operating expenditure. Instead, imputed implicit investment

intensity will be expressed, which estimates the implicit amount that will be required to periodically spend periodically on maintenance of the office equipment.

Opportunity expenses will be considered at a rate corresponding to the usual wage of a doctor, taking into account the shortened ordination period of the gynecological clinic within 24 hours / week, which show the average monthly wages of employees of private health care facilities; data for 2014 and 2015 are not available and will therefore be considered as a salary in 2013 (IHIS 2011; IHIS, 2012, IHIS, 2013).

The office in question began operations in 2011. Corrected profits will be expressed for all available periods.

### 3 Results

#### 3.1 Determination of the value of market rentals for tangible assets

The property components forming the subject of the rental relationship, including the cost of the property and the estimated time of use of the components, are given in Table 3. This table also shows the actual present value of the ambulance equipment and the actual current value of the passenger cars.

In determining the actual present value of tangible fixed assets – passenger cars, amortization for vehicle operating time (ZAD) and amortization for the number of kilometers travelled (ZAP) was determined using the I / 2005 Expert Standard as follows:

- Subaru LEGACY OUTBACK 2.5 I,  
ZAD – 70.00%,  
ZAP – 59.96%.
- Subaru OUTBACK 3.6 R,  
ZAD – 50.00%.  
ZAP – 40.13%.

For the purpose of calculating a reasonable profit in the value of rent, the  $r_f$  of 0.5% was considered, coefficient  $\beta$  was 1.26 and  $r_{pod}$  was 8.54%.

Tab. 3. Calculation of monthly rent for tangible property

Item	Date of acquisition	Purchase price incl. VAT (Pc)	Age of property in years (Sm)	End of life of assets in years (l)	Actual asset usage time in total	Actual Present Value of Assets (SH <sub>pr</sub> / SH <sub>0</sub> )	Value of wear and tear for one year of use (OHM)	Annual rent (RN)	Monthly rent (MN)
Philips ultrasound	2010-11-01	215,446 CZK	5.17	2.83	8	76,214 CZK	26,931 CZK	29,963 CZK	2,497 CZK
Colposcope BTL-KAPS model KP 3000	2011-06-28	122,799 CZK	4.51	15.49	20	95,107 CZK	6,140 CZK	6,831 CZK	569 CZK
BTL Adjustable Examination Bed with Accessories	2010-11-04	24,719 CZK	5.16	14.84	20	18,341 CZK	1,236 CZK	1,375 CZK	115 CZK
Examination gynecological chair GRACIE + tool table	2015-12-15	73,810 CZK	0.04	19.96	20	73,662 CZK	3,691 CZK	4,106 CZK	342 CZK
PC setup + printer	2011-03-31	21,709 CZK	4.76	5.24	20	11,376 CZK	2,171 CZK	2,415 CZK	201 CZK
Passenger vehicle Subaru LEGACY OUTBACK 2.5 I; SPZ 2K5 3777	2008-08-01	799,900 CZK	7.42	2.58	10	280,109 CZK	108,569 CZK	120,792 CZK	10,066 CZK
Passenger vehicle Subaru OUTBACK 3.6 R; SPZ 3K2 6111	2008-08-01	1,098,011 CZK	3.45	6.55	10	603,187 CZK	92,090 CZK	102,457 CZK	8,538 CZK
Furniture in surgery	2010-03-01	50,000 CZK	5.84	14.16	20	35,400 CZK	2,500 CZK	2,781 CZK	232 CZK
<b>TOTAL FOR MOVABLE PROPERTY</b>								270,720 CZK	22,560 CZK

Source: Authors

### 3.2 Determining the value of market rentals for intangible assets

As already stated, the market value of the rental for intangible assets was determined taking into account the adjusted profit achieved in each period. Due to the fact that the gynecological clinic has a relatively short history of its operation, one value of the adjusted profit was set as the arithmetic mean of the adjusted profits achieved in 2013, 2014 and 2015. The results of the 2011 and 2012 financial years were negatively affected by the beginning practice and were therefore not calculated.

Corrected earnings were determined for operating income and expenses. An important element for determining the adjusted earnings is implied implicit investment intensity. For the purpose of determining this quantity, a market survey was carried out in order to determine the usual purchase price of the office equipment and passenger cars, taking into account the usual life of the individual components.

Tab. 4. Imputed investment intensity

Asset item	Amount of investment	Life expectancy in years	Investment demand / month
Ultrasound Philips HD7 L CORE	790,000 CZK	15	4,389 CZK
Colposcope BTL –KAPS model KP 3000	125,000 CZK	20	521 CZK
Examination bed	25,000 CZK	20	104 CZK
Examination gynecological chair GRACIE	255,000 CZK	20	1,063 CZK
Surgery furniture	50,000 CZK	20	208 CZK
Passenger vehicle Subaru LEGACY	800,000 CZK	15	4,444 CZK
Passenger vehicle Subaru OUTBACK	1,100,000 CZK	15	6,111 CZK
<b>TOTAL</b>	<b>3,095,000 CZK</b>		<b>16,840 CZK</b>
Imputed investment cost of the ambulance per calendar year			<b>202,083 CZK</b>

Source: Authors

The figures in Table 4 do not imply the necessary investments in the gynecological clinic, but it is a calculation of the real expected cash flow.

Another, no less important item of the adjusted earnings calculation is the opportunity costs that will be considered at the rate corresponding to the usual wage of the doctor. With regard to the office hours of the existing ambulance, the wages of the doctor will be reduced by the ratio of 24/40. For the calculation of the adjusted profit, the average monthly salary of a doctor in private health care facilities of 58,153 CZK (IHIS, 2013) which was increased by the employer's statutory payments for employees (health insurance and social security contributions). Total annual cost of opportunity is 561,060 CZK (calculation procedure:  $(58,153 * 12 * 1.34) * 24/40$ ).

Corrected earnings for individual years were calculated, with operational revenues and expenditures from the relevant calendar year (overview included in the appendix), imputed investment cost and opportunity costs being considered for the same period for all periods.

For the next calculation, the average adjusted earnings for 2013-2015, i.e. 587,317 CZK, were used.

The annual rent from intangible assets ( $RN_{nehm}$ ) corresponds to the alternative cost of equity, respectively. the rate of reasonable profit from the average corrected profit:

$$RN_{nehm} = (0.5\% + 1.26 * 8.53761665690777\%) * 587,317 \text{ CZK} \quad (8)$$

$$RN_{nehm} \cong 66,120 \text{ CZK}$$

Monthly rental from intangible assets ( $MN_{nehm}$ ) then corresponds to one twelfth of  $RN_{nehm}$ .

$$MN_{nehm} = \frac{66,120 \text{ CZK}}{12} \quad (9)$$

$$MN_{nehm} = 5,510 \text{ CZK}$$

### 3.3 Overall recapitulation

The total recapitulation of the valuation and, subsequently, the rental rates are given in Table 5.

Tab. 5. Table 5 Recapitulation of results

Item	Amount
Annual rent for tangible assets	270,720 CZK incl. VAT
Annual rent for intangible assets	66,120 CZK incl. VAT
Annual rental total after rounding up	336,840 CZK incl. VAT
Monthly rent for tangible assets	22,560 CZK incl. VAT
Monthly rent for intangible assets	5,510 CZK incl. VAT
Monthly rental total after rounding up	28,070 CZK incl. VAT

Source: Authors

The value of the market rent of a private gynecological clinic is determined with respect to the current material and technical background, to 28,070 CZK including value added tax. The value was determined with the assumption that the lessee will bear the costs of securing the normal operation of individual items of tangible property.

### 4 Conclusion

The aim of the paper was to determine the value of market rent and to assess differences in the valuation of a healthcare company.

The goal of the paper was met.

The monthly rent was determined on the basis of the valuation of the tangible and intangible assets of a person doing business under a non-trade license in the amount of 28,070 CZK. The value of goodwill is 5,510 CZK per month.

The greatest benefit of the paper can without doubt be considered the methodology of leading the valuation of intangible assets, namely goodwill. The methodology is applicable as standard for any medical device. The advantage is the possibility to standardize the process and not only to appreciate this asset component, but also the possibility to compare individual healthcare facilities (and probably regardless of their specialization). On the other hand, we need to realize that the value of goodwill was set at 31 December 2015. It is thus a question of whether the value of goodwill will remain the same for an indefinite period of time or will change over time. The question is whether it will grow or the value will fall. At the same time, it is necessary to say whether the future value of goodwill will always be based on its present value. However, this is the topic for any further follow-up.

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#### Primary Paper Section: A

#### Secondary Paper Section: AE, AH

#### Annex

Tab. 6: Overview of Operating Income and Expenses

	Abbrev.	Name	yr. 2013	yr. 2014	yr. 2015
Operating income	602000	Sale of products and services	2,453,138	2,468,503	2,157,701
	602001P	Medical services		36,000	7,527
	602020	Regulatory fees	27,960		
	602030P	sale of services-others		18,000	21,818
Operating expenses	504010V	Goods	39,000		
	501001V	Medical supplies		155,088	167,411
	501030V	Minor assets		75,094	70,450
	342000V	Advances for employees incl. levies	36,019	41,728	41,728
	521000V	Employee wages incl. levies	436,840	321,600	321,600
	501000	Other overhead costs	340,199	22,843	15,801
	501010	Office supplies	10,041	9,869	5,877
	502000	Power consumption	6,595	6,476	7,440
	511011	repairs, small TZ DM		65,799	47,007
	511000	Repairs	97,124		
	518010	Phone fees	31,536	53,249	56,997
	518030	Rent	140,096	148,239	134,265
	538000	Taxes and fees	937	9,400	10,255
	538000	Insurance	69,406	85,999	47,050
	548010	Legal employee insurance	957	948	1,034
	568000V	Bank fees	2,349	2,351	2,569
Total operating income in CZK			2,481,098	2,522,503	2,187,046
Total operating expenses in CZK			1,211,100	998,682	929,484
Opportunity expenses in CZK			561,060	561,060	561,060
Imputed implicit investment intensity in CZK			202,083	202,083	202,083
<b>Corrected profit in individual years in CZK</b>			<b>506,855</b>	<b>760,678</b>	<b>494,419</b>

Source: Authors



## **D EARTH SCIENCES**

DA	HYDROLOGY AND LIMNOLOGY
DB	GEOLOGY AND MINERALOGY
DC	SEISMOLOGY, VOLCANOLOGY AND EARTH STRUCTURE
DD	GEOCHEMISTRY
DE	EARTH MAGNETISM, GEODESY, GEOGRAPHY
DF	PEDOLOGY
DG	ATMOSPHERIC SCIENCES, METEOROLOGY
DH	MINING INDUSTRY INCLUDING COAL MINING AND PROCESSING
DI	POLLUTION AND AIR CONTROL
DJ	POLLUTION AND WATER CONTROL
DK	CONTAMINATION AND DECONTAMINATION OF SOIL INCLUDING PESTICIDES
DL	NUCLEAR WASTE, RADIOACTIVE POLLUTION AND CONTROL
DM	SOLID WASTE AND ITS CONTROL, RECYCLING
DN	ENVIRONMENTAL IMPACT ON HEALTH
DO	PROTECTION OF LANDSCAPE

# BALNEOLOGICAL CLASSIFICATION OF THERMOMINERAL, THERMAL AND MINERAL WATERS AT THE REGION OF ILIDZA- SARAJEVO AND ITS IMPACT ON TOURISM

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**Abstract:** The primary purpose of this study was to identify and evaluate the thermomineral, thermal and mineral water sources in the region Ilidza- Sarajevo, Bosnia and Herzegovina that are used in balneology. The objectives of this study were to: 1) analyze specific geographic and tourism features of Sarajevo and the region of Ilidza; 2) present the genesis of thermomineral, thermal and mineral waters in the region; 3) analyse the content- physical and chemical characteristics of the observed waters; 4) classify medicinal waters according 2 basic balneological indicators: TDS and temperature using the contemporary models; 5) identify the hotels with health spa centres and balneology indications. The study found that Ilidza region is wealth with thermal, thermomineral and mineral waters, while the most valuable is Terma, the highly thermal spring; it's also the hottest spot of thermal water at the national level. Thermal waters have been exploited since Roman period in Bosnia and they are nowadays used within the luxury and superior hotels with spa programs for the health tourism. This study provided balneological and tourism value of thermal, thermomineral and mineral waters and their impact on the destination development.

**Keywords:** thermomineral, thermal and mineral waters, the content, balneological indicators, health tourism, destination development.

## 1 Introduction

Thermal, thermomineral and mineral waters of Sarajevo have been used in balneology since Roman period in Bosnia and Herzegovina (I cent.). The waters were found at the hydrogeothermal region of Ilidza, which is located at southwest of Sarajevo destination. Sarajevo as a tourism destination can be presented as the area of 5 urban municipalities (Stari Grad, Centar, Novo Sarajevo, Novi Grad, Ilidza) with the majority of tourist infrastructure. The region of Ilidza is famous because of the thermomineral water with the highest temperature in the country. Therefore, Ilidza consist many luxurious and superior hotels with spa program and medical spa centre specialized in balneology. Vukajlija (1980) defines balneology (lat. balneum) as the science of mineral waters that are used for the health program- drink and bath. Balneology is the study of medicinal springs and the therapeutic effects of bathing in them (Oxford). Cvorovic (1976) stated that balneological tourism is one of the oldest in the world. Bathing at thermal and thermomineral water, drinking it or inhaling with its vapour on their sources is the therapeutic method old same as the human civilization. Using the thermomineral water for bathing existing since Roman period in Bosnia and Herzegovina and it resulted in building the first settlement known as "Aqua S" at the region of Ilidza (turkish "iladz": spa, cure), Sarajevo (II cent.). The first medical spa centre (Terma) was created during Ottoman period in Bosnia (XVII cent.); the first written sources of spa centre Ilidza come from 1626 year) and it was renovated during Austro-Hungarian period (XIX-XX cent.) when the balneological tourism was blooming, while it was obstructed during the war (1992-1995), but since 2004 it works with full capacity. Therefore, it was necessary to apply the contemporary models of classification medicinal waters and to present physical and chemical characteristics of specific/ observed waters at Ilidza, as well as its balneological indications. This region is mostly recognized by sulphurous thermomineral waters which smell and vapour give a specific note to the environment. The positive trend in tourism of Sarajevo over the last decade was followed with increased interest in spa hotels, while the region of Ilidza was preceded in the number of arrivals and overnight.

## 2 Methodology

There was used a several classificational models to identify and categorize thermomineral, thermal and mineral waters as medicinal waters used in balneology or the health tourism. Models were mostly based on the physical and chemical indicators: total mineralisation, dominant anion or cation, and the temperature (°C), as well as the contemporary standards for

balneological use and treatment. The criteria of mineralisation and temperature enabled division of underground waters at 4 sections: thermomineral, mineral, thermal and fresh waters (Skopljak, 2006), while the first 3 was the subject of matter. There were applied 3 different criteria for classification of medicinal waters based on their chemical characteristics: a) chemical- physiological (Komatina, 2004), b) total mineralisation (TDS), and c) mineral content (Jonker, 2016) to identify the type of sources at the observed region. For the classification medicinal waters based on their physical characteristics- temperature, 5 criteria of different authors were introduced and applied (Vintras, 1883; Djerovic, 1971; Komatina, 2004; Spahic, 2005; Karagüle, 2014) to identify and valorise balneological value of thermomineral waters. The terrain (Ilidza) was visited to observe the existence of tourism capacities and to identify hotels with the spa program, while the informal interview was conducted between the tourists who had their outdoor activities but they generally stayed at some of the Ilidza hotels, while there were also helpful the previous related findings of corresponding author (Žunić, 2018). The tourism development of Ilidza was measured thru the statistical indicators (growth of the number of arrivals and overnight stays), while the analysis of the hotel's program and the Ilidza municipality tourism offer resulted in presenting the correlation of tourist interest and health spa centres.

Table 1: Water classification according to Skopljak (2006)

	Mineralisation (TDS mg/l)	Temperature (°C)
Thermomineral water	>1000	>12
Thermal water	<1000	>12
Mineral water	>1000	<12
Fresh water	<1000	<12

(Source: Skopljak, 2006)

Table 2: Chemical classification of medicine waters based on their physiological properties according to Komatina (2004)

Type	Mineralisation (g/l)	Use
Waters elevated mineralisation	1-5 g/l	Consumed drinking
Waters medium mineralisation	5-15 g/l	Suitable for balneology Take in as medicine
Waters high mineralisation	15-35 g/l	Exclusively for bathing purpose
Brines	35-150 g/l	Exclusively for bathing purpose

(Source: Komatina, 2004)

Table 3: Classification of medicinal waters total mineralization according to Jonker (2016)

Type of water	Total dissolved solids (TDS)
Akrato/ Simple thermal water	<1000 mg/l
Oligo-metalliques	700-1000 mg/l
Highly mineral waters	>1000 mg/l

(Source: Jonker, 2016)

Table 4: Classification of medicinal waters mineral content according to Jonker (2016)

Type	Calculated as	Criteria
Alkaline (Na-K-bicarbonated) waters	Concentration g/l	≥ 1 g/l total dissolved solid, dominant anion: HCO <sub>3</sub>
Alkaline (Ca-Mg-bicarbonated) waters	Concentration g/l	≥ 1 g/l total dissolved solid, dominant cations: Ca, Mg

Carbonate waters	Concentration CO <sub>2</sub> g/l	dominant anion: HCO <sub>3</sub> Containing total carbonate in excess of 300 mg/l (0.3 g/l) Water containing more than 14 g/l sodium chloride
Chloridated, Saline	Concentration NaCl g/l	(hypertonic) ≥ 1 g/l total dissolved solid, dominant cation: Na dominant anion: Cl ≥ 1 g/l total dissolved solid, dominant anion: SO <sub>4</sub>
Sulphurous waters	Concentration SO <sub>4</sub> g/l	Mg- an equivalent contribution of at least 20%
Waters containing Mg	Contribution %	> 1 mg/l iodine
Waters containing I	Concentration mg/l	> 2 mg/l fluoride
Waters containing F	Concentration mg/l	≥ 5 mg/l bromine
Waters containing Br	Concentration mg/l	more than 10 mg/l iron
Waters containing Fe	Concentration mg/l	70 mg/l H <sub>2</sub> SiO <sub>3</sub>
Waters containing Si	Concentration mg/l	0.7 mg/l As
Waters containing As	Concentration mg/l	

(Source: Jonker, 2016)

Table 5: Classification of temperature thermal and thermomineral waters (°C) according to 5 different authors from the earlier to the contemporary models

1. Vintras, 1883	2. Djerkovic, 1971	3. Komatina, 2004	4. Spahić, 2005	5. Karagić, 2014
a) Cold <18 b) Warm 18-28 c) Hot 28-36 d) Very hot >36	a) Cold <20 b) Warm 20-35 c) Hot 35-42 d) Very hot >42	a) Cold <20 b) Warm 20-37 c) Thermal 37-42 d) Highly thermal 42-100 e) Super heated >100	a) Hypothermal 20-34 b) Homeothermal 34-38 c) Hyperthermal >38	a) Cold <25 b) Tepid 25- 34 c) Warm 34- 42 d) Hot >42

(Jonker, 2016; Zunic, 2015. Prepared by Authors)

### 3 Results and Discussion

#### 3.1 Geographical and Tourism features of Sarajevo and its region of Ilidza

Thermal, thermomineral and mineral waters are important resources of Sarajevo, the capital of Bosnia and Herzegovina. Sarajevo is located on the southwest of "Sarajevo-Zenica" tectonic basin. This basin is presented with 2 geomorphologic environments: a) internal flat with the Sarajevo field, and b) the mountain surroundings (Trebević, Jahorina, Igman, Bjelašnica, Treskavica and Romanija- Olympic mountains of Sarajevo which belong to Dinaric Alps Mountain range in Europe). Skopljak (2006) stated that thermomineral waters are found only in the hydrogeologic unit of Sarajevo field which belongs to the Ilidza region near Sarajevo. This terrain is located on the southwest of Sarajevo, between the rivers Zeljeznica and Presjenica (SE) and Lepenica (NW). The border on the southwest is presented with mountain Igman up to contact with

Bjelašnica, and it contains area from the source of Presjenica, over the Ravna vala up to the mouth of Krupa- Zujevina, which makes the border on the northwest. The border on the northeast is the river Zeljeznica up to Vojkovići, Stup and Rajlovac. It contains also the area of Butila, Rakovica and Buhotina when it joins the boundary on the northwest. Total area is 250 square km (Skopljak, 2006). Regional tectonic predisposition participated in the genesis of Sarajevo field, while the Busovaca is the fault of central importance. Mineral, thermal and thermomineral waters of Sarajevo are found along the tectonic faults with 2 directions: Sarajevo-Kiseljak-Busovaca and Knezina-Olovo-Orlje. Geological terrain is mostly composed of sediments and volcanic formations, as well as the mesozoic flysch sediments, and the lake sediments and various kenozoic accumulations. Terrain elevation is presented with the height range from 500 m at Sarajevo field up to 1647 m on the ridge of mt. Igman. The wider area is fluvially shaped with majority of denudational landforms and the possible presence of karst phenomena (e.g. caves, springs), while the central area of the field is typical by fluvial relief (stream channels, floodplains, alluvial fans, or even the specific forms such as "bigar"- tuff from the thermal waters). Sarajevo has a humid climate with warm summer (Köpen: Cfb), and an average temperature is 9.5°C and 932 mm precipitation per year. Sarajevo field is located in the upper Bosnia river basin with its tributaries Zujevina, Zeljeznica, Dobrinja and Miljacka, and it belongs to the Black sea at the higher level of drainage. Djug et al. (2008) stated that majority of water territory belongs to the river Bosnia system, and it has combined a moderate pluvial-nival river regime. The mountain area belongs to the ecosystem of Fagetum and Abies, while the field area contains hygrophile ecosystems of Alnus, Populus and Salix, as well as the mezophille forests of Quercus and Carpinus (Djug et al., 2008). Sarajevo, as the capital, has a favourable geographic, traffic and tourism position, and it's well connected with Europe and the rest of the World, while it's also the part of a very important European tourism corridor which connects the continental Middle Europe and the Mediterranean Europe. Sarajevo has a positive tourist growth over the last decade, but it's still counted as a "city break destination" because of the shorter overnight stay (less than 3 days). The region of Ilidza is extremely important as the geotrafical nucleus and terminal, while it's also of a great tourism importance because of the rational exploitation of thermomineral waters for the tourist and resident's purpose, and its general natural and cultural attractiveness. There were built a popular hotels and recreative-rehab centres, some of them kept authentic style from Austria-Hungarian period in Bosnia and Herzegovina (e.g. lux hotels Austria and Bosnia). Ilidza is one of 5 urban municipalities of Sarajevo, and it has progressive tourism development over the last decade with the preceding participation in the overall tourism growth of Sarajevo.

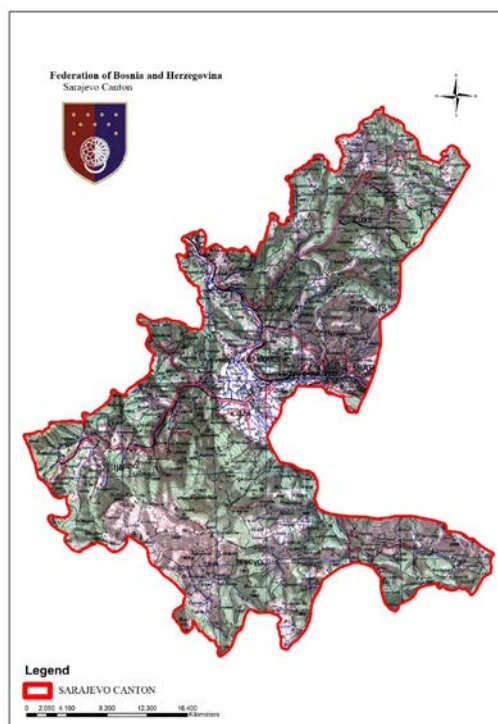


Figure 1: Physical map of Sarajevo Canton  
(Source: L. Zunic- ArcGIS)

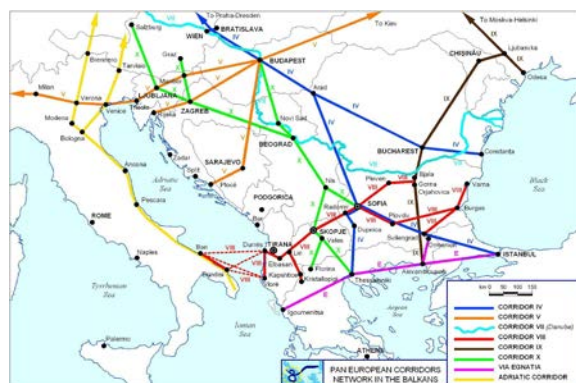


Figure 2: Location of Sarajevo and its connections with Europe via corridor V  
(Source: Strategies of the Pan-European Transport Corridors and Transport Areas, 2002)

Table 6: Tourist arrivals in the Sarajevo Canton over the last decade 2007-2017

Municipality:	2007 year	2012 year	2017 year
Stari Grad	24682	55193	123211
Centar/ Centre	41531	28800	99361
Novo Sarajevo	21651	40646	40044
Novi Grad	8158	16945	27072
Ilidza	57075	114947	173105
Vogosca	8225	6878	13503
Hadzici		1575	561
Ilijas			
Trnovo	5871	3516	5637
Total	167193	318032	482494

(Source: Institute for planning development of Sarajevo Canton. Prepared by Authors)

Table 7: Tourist overnight stays in Sarajevo Canton from 2007 to 2017 year

Municipality:	2007 year	2012 year	2017 year
Stari Grad	51143	116826	276346
Centar/ Centre	81940	55917	206368

Novo Sarajevo	38587	69052	81952
Novi Grad	16090	28443	40384
Ilidza	105950	206383	320148
Vogosca	21902	20627	26750
Hadzici		3619	1834
Ilijas			
Trnovo	16110	10890	13590
Total	331772	511757	967372

(Source: Institute for planning development of Sarajevo Canton. Prepared by Authors)

According to the governmental statistics (table 6 and 7), Sarajevo destination has a positive tourism growth over the last decade (2007-2017). There was evident a threefold increase in the number of arrivals from 167193 in 2012 year to 482494 in 2017 year, and in the number of overnight stays as well- from 331772 (2012) to 967372 (2017). Municipality Ilidza, which is also the main hydrogeothermal region at Sarajevo and Bosnia and Herzegovina, has the dominant participation in a tourism growth. Ilidza had also an increase in tourist arrivals and overnight stays by three times, while its share in both categories reaches 33.1-35.9%. International make 89.3% of total overnight stays in the destination. According to the Tourism Association of Sarajevo Canton, Sarajevo had more than 1 million overnight stays in the last year (2018: 1.021.452), while the majority of tourists came from Turkey, Croatia, China, U.A.E., Slovenia, Saudi Arabia, Germany, Serbia, USA and Italy. Ilidza, right after the Stari Grad (21.8%), has the highest growth rate in accommodation (number of beds) 19.9% (Tourism of the Sarajevo Canton, Institute for planning development, 2018). The study of Sarajevo tourism (Zunic, 2018) showed that Ilidza experiences a tourist blooming particularly because of the superior and luxurious hotels with spa programs based on thermal waters, but for the other tourism attractiveness of that area as well. Ilidza is a specific region of Sarajevo wealth in ancient culture (e.g. Butmir neolit culture from the 5-th millennium BC), while the first organized settlement "Aqua S." origins from Roman period (II cent.) in Bosnia and Herzegovina was found in this region. Since then the thermal water have been used for balneology purpose and it is nowadays one of the main reason that many arrivals choose this location for their stay. During informal interview, majority of tourists in Ilidza expressed they preferred hotels there because of the spa and medical program.

Table 8: Hotels with the Spa & Wellness Program at the region of Ilidza-Sarajevo

Hotel, Spa Centre	Category (Stars)	Facilities, Balneological offer
1. Hotel Spa Terme	4	Hydrotherapy and physical therapy (electro therapy, magnetic therapy, volcanic mud therapy, laser therapy, kinesis therapy, lymph drainage), wellness, two indoor swimming pools, fitness, saunas, massage salons, beauty salons, thermal baths, solarium, parking
2. Hotel Austria and Bosnia	5	Wellness and Spa center; two indoor swimming pool, modern fitness center, sauna, solarium, hot tubs with natural thermal sulphurous water; medical treatments
3. Hotel Crystal Deluxe	4	Wellness & Spa in the hotel Terme
4. Hotel Herzegovina	4	Wellness & Spa in the hotel Terme

5. Hotel Oaza Resort	4	Wellness & Spa in the hotel Terme
6. Hotel „Hollywood“	4	Jetted tub, Saunas (Finnish, infrared, infragreen and steam), Turkish hammam, Relax room, Salt room, Water massage, Therapeutic massage
7. Hotel „Hills“-Thermal Riviera	4	Outdoor and indoor pools, fast flowing river, massage seats, jet massage, whirlpools, water slides, trampoline; the wave pool
8. Hotel Malak Regency	5	Spa, fitness and warm swimming pool, Turkish hammam, sauna, spacious pool and massages

(Source: Strategy of the Ilidza development in 2014-2020; Website of the hotels; Author's terrain observations & data collected at the area of Ilidza)

The table above shows the identified hotels at the region of Ilidza with the spa and wellness program which is based on the thermal waters. All the hotels are private property. The first 5 hotels belong to the same group- Hotels Ilidza (Austria & Bosnia, Spa Terme, Crystal Deluxe, Hercegovina, Oaza Resort-Villas & Apartments), while the other hotels group is presented with 2 hotels, Hollywood and Hills (the hotels groups are under the same management). Some of the hotels were created during Austria-Hungarian period in Bosnia and they are renovated in 2018. For example, hotel Austria & Bosnia- Hotels Ilidza is designed by Czech architect F. Blazek in 1892 and it was also a residential hotel of Austro-Hungarian archduke Franz Ferdinand. Since May 2018 Austria & Bosna Hotel represents an ultimate 5-star luxury hotel with the spa offer in Sarajevo. However, the oldest balneological- medical centre is the part of the hotel Terme, and it's known since Ottoman period as the "Banja Terme Ilidza" (Spa Terme Ilidza). Results from the earlier study (Zunic, 2018) showed that hotels of Ilidza has a positive tourism trend followed by the annual growth rate in overnight stays 10-15%. The longest extended-stay guests at the hotels are arrivals from Arab countries (U.A.E., Kuwait, Saudi Arabia, Oman, etc.), some of them stay up to the expiring date of their tourist visa (3 months), while the most often guests at this hotels are arrivals from Turkey and then from the region of SE Europe mostly the neighbouring countries (e.g. Croatia, Slovenia) because the competitive price of Bosnian spa centres (qualitative product for the affordable price between the cheapest in the region of SE Europe). Marketing workers from the hotels of Ilidza confirmed that people fly thousand and thousand kilometres to reach the sulphurous water of Sarajevo, while the tour guides in charge for the group of Arab tourists stated they prefer a health spa program and the green surroundings of Ilidza.

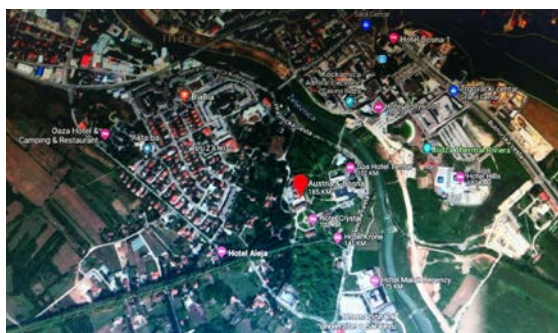


Figure 3: Spatial distribution of spa hotels at Ilidza- Sarajevo (Source: Google Earth Maps, Ortophoto ILIDZA, Satellite Imagery)

### 3.2 Genesis of thermal, thermomineral and mineral waters at the region of Ilidza, Sarajevo

Genesis of thermomineral waters in the Sarajevo field is related with areas composed of Triassic carbonate close to the topographic surface or they are covered with thin quaternary deposits. Thermomineral waters at Ilidza are found in carbonates, mostly dolomitic carbonate, dolomite and carbonate from Midd and Upper Triass. It is assumed they were caused by lateral facies changes, or this structure could be the result of complex tectonic followed by differential motion in the zone of Busovaca fault. Triassic carbonates are covered with the gravel layer which has an average thickness of 3-15 m. The northeast area of Sarajevo field, between rivers Bosna and Zujevina, is composed of alluvium 2-10 m, while the area of Blazuj, Mostarsko raskrsce and Rakovica has an Upper Creta flysch layer. The area of Butmir, on the profile of Ilidza-Plandiste up to the mouth of river Miljacka into the Bosna and the Rajlovac surroundings, is composed of lake sediments from the Upper Miocene with visible discordant position. The results of isotopic research thermomineral waters in the area of Blazuj, by the German firm "Hydroisotop GmbH", indicated water occurs from the carbonate aquifer with direct or indirect influx of volcanic CO<sub>2</sub>, the groundwater system was formed in the Pleistocene 10.000 years ago, there was also found young waters at the age of 40, sulphate of mineral waters comes from gypsum-bearing and anhydrite bedrock, while the low radon content indicates that ground waters don't have a direct contact with deposits enriched with uranium (Heidinger, 2000). The fault of Busovaca and its transversal and diagonal geostructures had the key role for the genesis of thermomineral waters. Descending terrain along this fault resulted in forming the horst structure with Sarajevo-Zenica basin. The fault on the southwest separates Igman from Bjelasnica, while the fault of Spring of Bosna- Krupac, on the northeast of Igman, caused the Sarajevo field elevation downfall of 1.000 m. Thermomineral water temperatures are the result of deep infiltration atmospheric waters and geothermal gradient, static pressure in the lenses of permotrias deposits caused by differential motions in the zone of Busovaca fault and the following dynamic factors and ascension of thermomineral waters thru the porous rocks on the long distance under the extremely high pressure. Suphurous spring (Terma) at Ilidza was discovered in May 1893, while in August 1894 Professor E. Ludwig from Vienna researched the balenological parameters of water (chemical content, temperature 56.8-57.5°C and stability of water mineralisation). He stated that the water is good not only for bath but for drink as well, because it contains some hydrogen sulphide and a lot of glauber's salt, chloride, bicarbonate calcium and magnesium. Thermomineral waters were also found in recent wells at Ilidza (PP-1, B-3a, IB-1, IB-2, B-10a, IB-10) and Blazuj (P-1, P-2, B-1, F-1, Mratnjevac, Aqua Vitae- Plandiste). Those waters are similar physicochemical characteristics as Terma and Slana Bara.

Thermal waters were found at wells in Triassic carbonates of Sarajevo field and Hadzici-Rakovica, and their genesis is similar with thermomineral's.

Mineral water sources were found in the area between Vlahovici, Han Ploce and Buhotina, on the northwest slopes of Igman. This terrain is dissected by Lepenica which flows from the southwest to the northeast in its upper area, then the river meanderings and change her direction to the northwest. Furthermore, Busovaca fault follows the course of this river which gets a several streams (tributaries) flowing from the area of Buhotina, Boljkovici and Azapovici. A several sources of mineral water with the lower yield occur in the terrain composed of layers from lower triass covered with alluvium (Boljkovici, Azapovici) or pliocene deposits (Buhotina) (Skopljak, 2006).

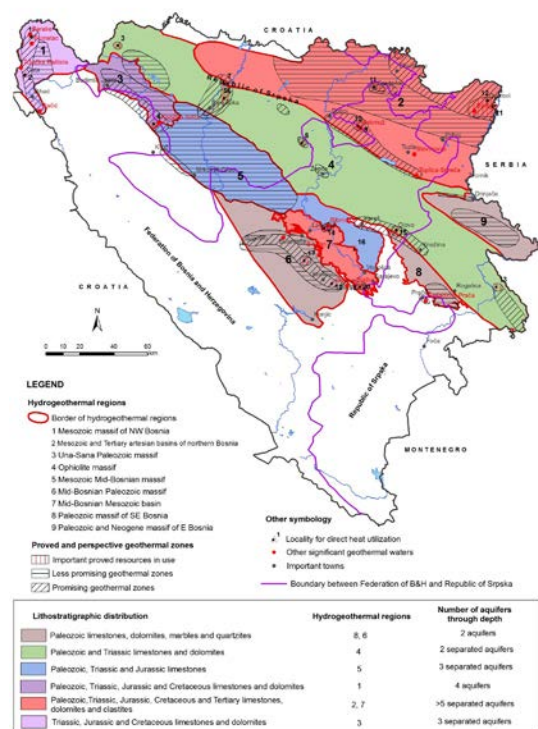


Figure 4: Litostratigraphic distribution of aquifers along depth, hydrogeothermal regions and perspective geothermal zones of Bosnia and Herzegovina

(Source: Miosic, Samardzic and Hrvatic, 2015)

### 3.3 Identification and classification of thermomineral, thermal and mineral waters at the region of Ilidza- Sarajevo

According to the criteria of underground water classification (table 1), the following tables (9, 10, 11) show division of identified waters at the region Ilidza-Sarajevo into 3 basic groups: thermomineral, thermal and mineral waters whether they're found as springs, sources or wells. Tables also summarize the physical and chemical characteristics of the presented waters.

Table 9: Physico-chemical characteristics of thermomineral sources/ springs in the Sarajevo field: *Terma- Ilidza* and *Slana Bara- Blazuj* according to Cervenjak 1984-1985

Spring:	Na	K	Ca	Mg	HCO <sub>3</sub>	SO <sub>4</sub>	Cl	TDS (mg/l)	t (°C)
Terma	260	14	470	79.3	1342	500	320	3057	57.5
Slana bara	110.7	8.5	370	140	1433	385	124	2596	24

(Source: Skopljak, 2006. Prepared by authors)

Table 10: Physico-chemical characteristics of thermal waters in the Sarajevo field: IB-7 Butmir, IB-4 Sokolovic kolonija, SG-1 Rakovica, "CC Well" Hadzići according to Geoengineering institute of Bosnia and Herzegovina 1987 and Fresenius Germany, 2003

Well:	Na	K	Ca	Mg	HCO <sub>3</sub>	SO <sub>4</sub>	Cl	TDS (mg/l)	t (°C)
IB-7	1.29	1.35	57.6	9.73	170.8	24.69	14.2	294.9	22
IB-4	3.01	-	72.1	23.2	268.8	51	6	424.2	14
CC Well	1.7	0.6	58.2	28	308	4.8	1.3	407	17.5
SG-1	1.3	1.7	68	30.2	346	2.8	2.5	461	13.4

(Source: Skopljak, 2006. Prepared by authors)

Table 11: Physico-chemical characteristics of mineral waters in the Sarajevo field: sources Boljkovici, Azapovici and Buhotina according to Health institute of Sarajevo 1976-1977

Source:	Na	Ca	Mg	HCO <sub>3</sub>	SO <sub>4</sub>	Cl	TDS (mg/l)	t (°C)
Buhotina	25.7	225	121	1295.3	13.4	16.6	1697	10
Boljkovici	2.2	658	144	539.8	1725	10.6	3083	11.5
Azapovici	2.9	622	78.4	586.6	1332	9.40	2639	11

(Source: Skopljak, 2006. Prepared by authors)

According to the classificational model of medicinal waters suitable for treatment by drinking or bathing (table 2), all thermal, thermomineral and mineral waters at Ilidza-Sarajevo are

identified as the water elevated mineralization (total mineralisation 1-5 g/l), while their temperature gives them features of balneological waters (as it's mostly above 18°C).

However, Jonker (2016) stated that curative waters are classified according to total mineralization into 3 groups: aktrato/ simple, oligo-metallique and highly mineralized. According to the Jonker's classificational model (table 3) which is current generally accepted mineralization standards use in balneology, the identified sources (whether it's springs or wells) at Ilidza-Sarajevo can be divided into 2 basic groups, while there is no oligo-metallique type of medicinal waters:

- Highly mineral waters: Terma, Slana Bara; Buhotina, Boljkovici, Azapovici
- Akrato/ Simple thermal waters: IB-7, IB-4, CC Well, SG-1

According to the classificational of medicinal waters mineral content (table 4), waters from the section of "highly mineral waters" (2 thermomineral springs and 3 mineral sources) at Ilidza-Sarajevo can be classified as it follows:

- Alkaline waters: Terma, Slana Bara; Buhotina; this responds to Skopljak (2006) determination of "hydrocarbonated-sulphur-calcic-chloridic" type of thermomineral water (Terma) and "hydrocarbonated-sulphur-calcic-magnesium" type of thermomineral water (Slana Bara), and alkaline waters (Ca-Mg type) which is equivalent to "hydrocarbonated-calcic" type of mineral water (Buhotina)
- Sulphurous waters: Boljkovici, Azapovici; this match with Skopljak (2006) identification of "sulphur-hydrocarbonated-calcic-magnesium" type of mineral water (Boljkovici) and "sulphur-hydrocarbonated-calcic" type of mineral water (Azapovici)

Respecting the classificational model based on the temperature of thermal and thermomineral waters (table 5), all sources of thermomineral, thermal and mineral waters at the region Ilidza-Sarajevo can be classified as it follows:

- According to the criteria of Vintras (1883), Djerkovic (1971) and Komatina (2004), there are 2 different types of thermal waters at Ilidza-Sarajevo:
  - Warm (Slana Bara and IB-7)
  - Very hot (Terma)
  - Cold waters (IB-4, CC Well, SG-1, Buhotina, Boljkovici, Azapovici)
- According to the criteria of Spahic (2005), there are 2 types of thermal and thermomineral waters in this region:
  - hypothermal (source of Slana Bara and water from well IB-7), and
  - hyperthermal (spring of Terma).
- But, compared to the contemporary criteria of Karagülle (2014), almost all determined springs at the region belong to the cold waters, while the only exception is Terma which is recognized as the main source- hot/ highly thermal spring. This is nowadays counted as the basic balneological classification for medicinal waters (Karagülle & Karagülle, 2014). Jonker (2016) stated that the indicative water temperature for balneology is 50°C. Zunic (2015) stated that thermomineral waters with temperature above 58°C in Sarajevo are used for the balneology and other purposes. Miosic, Samardzic and Hrvatic (2015) stated the spring with the highest temperature (58°C) in Bosnia and Herzegovina is in Ilidza - Sarajevo with total power of all the wells of this deposit of 50 MWt. It proves the Terma's undeniable geothermal capacity and balneological value at the same time.

### 3.4 Valorisation and balneological indications of Ilidza waters

Thermomineral waters at Ilidza carrying a huge geothermal potential (Miosic and Hrvatic, 1999). Valorisation of this waters resulted in a wide application (warming of objects, balneological- spa centres, heating pumps, conservatories,

aquaculture, industry, melting the snow, drying fruits and vegetables, etc.). Thermomineral waters at Blazuj has a balneological use as health waters weather for inhaling or the pools or even a drinking waters. Exploitation reserves of thermomineral waters at Blazuj are used for the production of bottled mineral water under the industrial company "Ilidzanski dijamant/ Ilidza Diamond", and this water supply not only domestic but also foreign market (it's exporting good). Thermal waters of Sarajevo field are used for the water supply, bottling and recreation. Thermal water from IB-4 is used for the pools of Ilidza. According to Lund's natatorium design conditions, the water temperature of a different type of pools (recreational, therapeutic, competition, diving, whirlpool/ spa) have a range from 24 to 40°C (Lund, 1996), which means that thermomineral waters at Ilidza (Terma and Slana bara) have a suitable application for any type of indoor pools, while recently found thermal waters (e.g. IB-7 and CC Well) could be used with a simple adaptation by rational heating. Water from CC-Well can be used in a food or water industry or for some other technological process. Mineral waters are mostly used as drinking waters, while the water from the source of Buhotina has the best quality for that purpose. Thermomineral waters with temperature above 58°C in Sarajevo are used for the electricity production, warming, balneology, agriculture, recreation, etc. (Zunic, 2015). Balneological, chemical and physiotherapeutic research showed that thermomineral sulphurous waters from Ilidza are mostly used to the following balenological indications:

- Rheumatic diseases (inflammatory rheumatic disease, rheumatoid arthritis, ankylosing spondylitis (Bechterew's disease and Marie-Strümpell disease), juvenile arthritis, degenerative rheumatism, osteoarthritis, spondylosis, polyarthrose, gonarthrosis, osteoporosis).
- Neurological disease (a condition after stroke, multiple sclerosis, cerebral palsy, neuralgia, painful syndromes of the neck and back, polyradiculopathies, polyneuropathy, disk herniation, sciatic neuralgia).
- Orthopaedic diseases (conditions after illness, injury and surgery of the locomotor system, the postoperative state on the spinal column, the situation after the operation – installing hip and knee arthroplasty, meniscus surgery).
- Dermatological diseases (psoriasis, eczema, seborrhoea, dermatitis and others, allergies, acne).
- Urological disease (urogenital diseases, prostate).
- Gynaecological diseases (sterility and non-specific inflammatory diseases of the urogenital tract).
- Metabolic diseases (diabetes, uric acid (gout), metabolic syndrome (obesity).

Program of physical therapy of prevention, treatment and rehabilitation according to the findings, and program recommended by physiatrist:

- Treatment with sulphuric thermal mineral water and mud (mud wraps, pearl bath, medical bath, underwater massage in a mineral water, galvanic bath, Hubbard bath).
- A wide selection of traditional and modern physiotherapeutic procedures (thermal, electro, helium, sono-thermal, magnets, hydro).

Balneo-physical program include underwater massage in sulphur water, etc. (Program of Treatment and Rehabilitation, Health Spa Terme, Ilidza, Sarajevo)

### 3.4.1 The Spa Park of Ilidza- Sarajevo

The spa park and architectonic monuments with the luxurious hotels concentrated around the thermomineral sources are representative health spa complex at the region of Ilidza. It is located at the left bank of the Zeljeznica river with its total area of 14 ha. The perifer area consist the remains of the Roman settlement "Aqua S.", while its central area is represented with the marble fountain surrounded with promenades and grasslands decorated with seasonal flowers. The horticultural conception was made in the neobarok geometric style with the visual effect of the "green carpets" around the fountain and in the front of the

hotels. The spa park of Ilidza is the part of the national protected area- Natural Monument of Vrela Bosne/ Springs of Bosnia (Category III of IUCN categorization of protected areas) and it represents its II buffer zone (Hadzidervisagic, 2014). The springs occurs It's connected to it via Velika aleja/ Big Tree Alley of Platanus and Aesculus/ The Great Avenue (3.5 km), which is also an attractive content of the same buffer zone. This site is located in the distance of only 2 km from Sarajevo International Airport and 8 km from the centre. It reflects a touristically liveliness, but it's also one of the favourite recreational area for the residents.



Figure 5: The Spa Park Ilidza/ Spa Resort Ilidza- Sarajevo, Bosnia and Herzegovina (Web Gallery of Hotels Ilidza, Sarajevo)



Figure 6: The luxury spa hotel Austria at Ilidza existing more than a century- since 1892 and it was renovated in 2018; the background is presented with a beautiful mountain surrounding of Igman (L. Zunic's Private collection)



Figure 7: The Great Avenue is an attractive promenade of endemic platanus which connecting the Spa Park Ilidza with the Springs of Bosnia (L. Zunic's Private collection)

## 4 Conclusion

The results of research reveal balneological classification of thermomineral, thermal and mineral waters at the region of Ilidza- Sarajevo and its impact on the tourism development. Ilidza waters at the contemporary balneological models according their physical and chemical characteristics particularly the temperature and the mineral content and total mineralisation, are recognized as water elevated mineralisation with balneological features, while the most valuable is highly

mineralised, alkaline and highly thermal spring- Terma. The study explores balneological indications of presented medicine waters and their valorisation through the identified spa hotels at Ilidza which is the competitive product of the Sarajevo destination (health & spa tourism). The genesis of thermal, thermomineral and mineral waters showed their occurrence at the surface as springs or sources, while others were recently found at wells mostly along the tectonic fault of Busovaca, reflecting the undeniable geothermal potential of this region. Majority of waters is enriched with sulphur so the site itself behaves like the spa environment with natural inhalation. This paper will help spatial planners to understand contemporary processes at Sarajevo destination that are related to the tourism impact of balneological waters at Ilidza. Balneological use of thermomineral, thermal and mineral waters particularly by the organized form through the luxurious spa hotels contributes a lot in the tourism development of Sarajevo which was confirmed by the preceding number of visitors and overnight stays at the area of Ilidza, as well as by the empirical (terrain) findings. The author's informal interaction with the guests/ tourists explored their huge interest in the spa programs and such accommodation. The future studies could focus on finding new sources of thermomineral water and its balneological- tourism exploitation, or how to valorise the water from recent wells for this purpose? The paper presented the Spa park of Ilidza as the basic balneological site in Sarajevo that could be a popular health tourism destination in Europe because of existing "medicine" waters and the competitive spa offer. Besides, Sarajevo is gaining more attention day by day not only because of the thermomineral resources but its unique attractiveness as the "European Jerusalem". The Sarajevo as a European tourism destination is interesting because of its unique natural and cultural heritage, while the spa centres with an attractive environment near to the city centre present an invaluable tourist treasure. Therefore, the study should initialize interest of foreign investors for the region of Ilidza. The research should also stimulate new ideas of thermomineral water valorisation in the health tourism through the creating a wide specter of spa products as the wellness (which is the part of the health tourism concept) present the new mode of tourism. It's very important to improve and promote the health and spa programs at the highest level because the therapeutic and rehab programs affect longer overnight stays than the simple/ or usual tourist stay in destination. Up to now, Sarajevo has mostly based its tourism product on the multicultural complexity and the mountain surroundings, but it is still counted as a "city break destination", while by the highlighting the health and spa products we could potentially extend the tourist stay. This paper should awake the new tips for the marketing of Sarajevo as a European health tourism destination. Therefore, the balneological site of Ilidza could become the potential spa European site of tourist gathering.

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#### Primary Paper Section: D

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# I INFORMATICS

IN INFORMATICS

## SYSTEMATIC LITERATURE REVIEW: PROGRAMMING OF MICRO-ROBOTS ON THE BASIS OF ARDUINO

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**Abstract:** Modern technology is developing at a high speed and is being practically implemented in all areas of our lives. At the same time, the requirements of employers are growing, in order to keep pace with the time; students need to study diligently, to develop themselves, especially in the field of computer science and engineering. Over the past few years, in training in engineering areas most universities in the world are actively using Arduino platform to motivate students to learn, develop skills of teamwork and the application of knowledge in practice. In this paper, the state of research in this subject has been analyzed, and a literature review has been conducted. This work is a theoretical and methodological basis for further research.

**Keywords:** programming, Arduino, micro-robots, robotics, board, software products.

### 1 Introduction

Currently, there are many microcontrollers and platforms for the management of physical processes in relation to microprocessor systems. Most of these devices combine disparate programming information into an easy-to-use assembly. The Arduino Company (Italy), in turn, also simplifies the process of working with microcontrollers, but provides a number of advantages over other devices because of the simple and understandable programming environment, low price and a variety of expansion boards. For teachers, students, and amateurs, the Arduino platform can be a key element for research and problem solving in the fields of mechatronics and robotics.

Arduino is a tool for designing electronic devices that interact more tightly with the physical environment than ordinary personal computers, which do not actually go beyond virtuality. It is a platform designed to manage physical processes using an ECM with opensource code, built on a simple PCB with a modern environment for writing software. Arduino boards are built on the basis of Atmel microcontrollers, as well as binding elements for programming and integration with other circuits (Table 1). Linear voltage regulator +5V or +3.3 V is located on the board. Timing is carried out at frequencies of 8, 16 or 87 MHz by crystal oscillator. The microcontroller is pre-flashed with boot loader, so that an external programmer is not needed.

At the conceptual level, the weight of a board is programmed through A5-232. The Arduino integrated development environment is a cross-platform Java application that includes a code editor, a compiler, and a firmware transfer module to the board. The development environment is based on the programming language Processing and is designed for programming by beginners who are not familiar with software development. Strictly speaking, it is a C++ language, supplemented by some libraries. The programs are processed using a pre-processor and then copied using AVR-GCC. The advantages of Arduino family boards:

1. A large number of available options in the line of Arduino with the ability to select the most suitable ready-made controller from a large list of devices that have a wide range of variable parameters.
2. The presence of expansion boards designed to increase the functionality and perform specific technical tasks without the need for self-design of additional peripherals (motor control board s, sensor board s, wireless interfaces, displays, input devices) - several dozen types, more than 300 versions.

3. The programming environment that is fully adapted for the end user and is suitable for the entire line of Arduino board s and their clones, including software for programming controllers for Android.
4. The free license for devices and software.
5. There is a full Russian translation of the Arduino language, designed to overcome the language barrier in the distribution of the platform in Russia.

Arduino Uno is a controller built on ATmega328. The platform has 14 digital in/out (6 of which can be used as PWM outputs), 6 analog inputs, 16 MHz crystal oscillator, a USB connector, a power connector, an ICSP connector and a reset button. For the work it is necessary to connect the platform to a computer via a USB cable or power it with adapter AC/DC or batteries.

Because of the technical equipment, the Arduino platform is ideally suited for the educational process of designing various mechatronic systems and robots (1) due to the clear programming environment and the ability to observe physical processes in real time. More powerful Arduino boards (Due) are applicable for solving complex technical problems related to the development of large projects and their complex automation (2).

When power is supplied to the Arduino controller, execution of the program that was downloaded into it automatically begins, and if the program is missing or written incorrectly, a failure occurs, which either stops the execution of commands or causes the program hang-up. The number of the on-going program is stored in a special memory cell, which is called the command counter.

The programming language used in Arduino projects is based on C++. It is one of the most widely used programming languages, which supports both low-level commands and the construction of complex objects (3).

Electronic components, their operation, connection and programming are studied on the Arduino platform. Programming is carried out in the Arduino IDE in C++ (with some modifications). Having received basic knowledge of electronic components management, trainees implement creative projects, the complexity and functionality of which are limited only by the imagination of the author.

Arduino allows students to get acquainted with the world of electronics, to understand the principles of electronic components, to see many different sensors and devices unusual for them. Projects created on this platform can be used at home for the purpose intended (for example, automation of household appliances), which is an additional motivation to study. Classes in robotics based on Arduino contribute to the development of polytechnic competencies that are necessary in modern professional activities in the area of automation and IT (4).

Using this platform for educational institutions allows developing the programming skills in practice, as well as learns the basics of circuitry engineering (5).

A systematic review of the literature on this topic revealed the strengths of the use of Arduino as an auxiliary tool in the training of students of engineering profile of special disciplines in the design of micro-robots.

The effectiveness of teaching the basics of robotics depends on the organization of classes conducted using the following methods: Explanatory and illustrative presentation of information in various ways (explanation, narration, conversation, instruction, demonstration, work with technological maps, etc.); Heuristic method of creative activity (formation of creative models, etc.) Problem method is the formulation of the problem and the independent search for its solution by students; Programmed method is a set of operations

that need to be performed in the course of practical work (computer workshop, project activities); Reproductive method is a reproduction of knowledge and methods of activity (collection of models and designs on the model, conversation, exercises on the analog), Partly-search method is a solution of problem tasks with the help of a teacher; search method – individual problem solving; method of problem presentation – statement of the problem to teachers, the solution of the problem by teacher, the participation of students in solving process (6).

The subject of robotics is the creation and use of robots and other robotics tools for various purposes. Having emerged on the basis of cybernetics and mechanics, robotics, in turn, gave rise to new directions of development of these sciences. For cybernetics it is primarily due to intelligent control, which is required for the robots, and for the mechanics it is due to multi-chain-type mechanisms and manipulators.

A robot can be defined as a universal machine for performing mechanical actions, such as those produced by a person performing physical work (7). From the creation the first robots and up to now the model for them are the physical capacities of man. It is the desire to replace a man in hard work that gave rise to the first idea of the robot, then the first attempts to implement it (in the middle ages) and finally led to the emergence and development of modern robotics and robotics industry.

The versatility of robots implies the possibility of performing targeted actions that require certain intellectual abilities. This opens up wide opportunities for the use of robots as the main technological equipment (in such types of work as assembly, welding operations, paint coating, etc.), as well as the auxiliary equipment – to replace workers that are engaged in the maintenance of such equipment.

As already noted, the objective reason for the emergence and development of robotics was the historical need for modern production of flexible automation with the elimination of man from direct participation in machine production and the lack of traditional means of automation for this purpose. Therefore, the task of robotics, along with the creation of the actual means of robotics is the development of systems and complexes based on them for various purposes. Systems and complexes automated with robots are called robotic (7).

When developing models of the implementation of robotics in the educational process, it is necessary to take into account the main factors:

- 1) The need for practical training of teachers;
- 2) Choice of textbooks for students and guidelines for teachers;
- 3) Compliance with the continuity of curricula at different levels of education;
- 4) Taking into account interdisciplinary connections and coordination of subject programs of education in physics, computer science, mathematics, technology;
- 5) The need for a differentiated approach to learning, identification of gifted students, their support in the framework of individual development programs;
- 6) The connection of the content of subject training with the competition and competition activities dedicated to robotics. Robotics, as an applied science, is based on such disciplines as electronics, mechanics, and programming (20).

Accordingly, the school robotics can be integrated with such subjects as mathematics, physics, computer science (8).

In the national education system, robotics (RT) has become one of the most popular areas of additional polytechnic training of students. This is due to the need to focus of the most capable part of the student youth on choice in the future engineering professions, as well as the importance of early education of children in the field of robotic design. In this regard, the school robotics support system is actively developing. The special popularity of Tajikistan is provided by the high level of interest

of young people in this sphere of technical activity. Educational opportunities of robotics as a direction of technical innovation are extremely high. However, at the present time competitive robotics and project robotics creativity in the system of additional education are mainly developing. Methods and technologies of robotics application in subject teaching have not yet become the subject of targeted pedagogical research. Directions and methods of application of robotics in the subject educational block are not quite obvious. Its introduction into the educational process is a new direction of the theory and methodology of Polytechnic education, integrating the knowledge and experience of teaching a number of school subjects. Its development should take into account the specifics of robotic systems as a new and significant in terms of its scope of the object of technological environment, the possibility of different areas of subject knowledge in its study, as well as the features of school education of different levels and profiles.

### 1.1 The robot as an object of study

The robot in the educational process is, first of all, an interdisciplinary technical object, the device and the principle of operation of which is the area of application of knowledge of a whole complex of Sciences. The study of specific robotic systems as objects of modern technological environment should be accompanied by a consistent presentation of special educational information to students. They should get information on the history of robotics and modern prospects of robotics. It is necessary to demonstrate to the students the place and role of robotic systems in the modern technological environment. It is necessary to present it in an accessible form of the elements of the methodology of robotics (general, special): to explain the essence of the concept of "robot, to demonstrate its distinctive features; to acquaint with the types of robots and justify the need to create robots of different types, to give an idea of the basic laws of robotics and the basic approaches to the design of robotic systems (9).

Robotics in school is a great way to prepare children for a modern life full of high technology. It is necessary, because our life is abundant of various high-tech equipment. Knowledge of it opens up a lot of opportunities for the younger generation and will make further development of technologies faster.

Back in 1980, Seymour Papert, who is the founder of the programming language, in his book suggested using the computers to teach children. In his suggestion, Papert grounded in the child's natural curiosity and the tools to meet it. After all, every child is an architect, building the structure of his own intelligence, and as you may have guessed, any architect needs a material with which everything is built. And it is the environment that is the material for this purpose. And the more the child has these materials, the more he will be able to achieve (10, 19).

Training in applied programming is one of the basic courses in the process of training students from various educational institutions, entering into the disciplines of the variable part, mathematical and natural-scientific cycle. The purpose of the study is to create necessary ideas about modern software products, development environments and programming languages, as well as the application of knowledge, skills acquired in the learning process, in practice.

The best result of the practical application of knowledge, skills and abilities is achieved by solving problems that carry a payload. This requirement can perform the use of Arduino in education

The programming part of Arduino consists of an open program shell (IDE) for writing programs, compiling them, and programming the hardware. The hardware part is a set of printed circuit boards, sold as an official manufacturer, and third-party manufacturers. Fully open system architecture allows freely copying or adding to the line of products Arduino (11).

Having a basic knowledge of the basics of programming in the environment of Turbo Pascal can provide an optimal transition to the study of high-level languages. The benefits of using Arduino in teaching applied programming are expressed by the following factors: Economic availability is represented by several models:

Arduino Uno, Arduino Mega, Arduino Leonardo, Arduino Nano, Arduino Mini.

Easy to learn development environment is an intuitive interface that allows you to quickly master the development environment. The Arduino platform supports a very large range of peripheral devices. Use in software development programming language based on C++, a high-level language. The technological essence of the device development process consists in the presence of sequential execution of instructions. This issue is devoted sufficient quantity of professional literature and electronic resources. The Department of information systems and technologies has the following development, namely laboratory course "development of interactive devices on the hardware-software platform Arduino" and "Electronic devices on the hardware-software platform Arduino".

Based on the above factors, it can be concluded that the use of Arduino in training on applied programming will provide students the opportunity to apply the knowledge, skills acquired in the learning process, on the hardware, which will motivate them to further training and consolidate the theoretical part of the training by doing (12).

Any program written for a robot is an algorithm, i. e. a sequence of its actions. The robot itself is nothing more than an algorithm executor. Making the algorithm of robot's actions, students check its work experimentally, seeing the action of mathematical laws not in textbooks or notebooks, but in the surrounding real world. Checking the algorithm in practice allows the revealing of the correctness of its compilation. The compiled program is downloaded into the robot's memory, and its verification is carried out – the robot performs the actions of a given algorithm, which are evaluated, and then the defects in the program are eliminated if they are detected. The robot's actions will be clearly visible at what step of the algorithm the error was made. Thus, students have the opportunity to link theoretical knowledge with the real world, based on the experience of their activities (13).

The content component of training primary school teachers to implementation of educational robotics, are: the teacher's acquisition of basic theoretical knowledge and practical skills in the field of models design from educational sets, the acquisition of the basics of programming in graphic environments, acquisition of methodology of teaching the basics of educational robotics to younger students in curricular and extracurricular activities (14). Specifics of teaching programming in universities, training centers require sufficient and strong acquisition of basic knowledge. At present, training in programming is faced with a lack of training time, poor training and high demands in the labor market. The way to solve the problem is the formation of sufficient motivation among students (15).

The students metatechnical knowledge forming is one of the most important goals of the implementation of the principle of polytechnical education in its modern interpretation. Metatechnical knowledge (MTK) means a system of knowledge about the technosphere: its elements and their interrelation, peculiarities of functioning, factors and regularities of development, methodology of scientific and technical research. MTK is the basis for the formation of students' ideas about the modern technical picture of the world - the picture of the "second nature", determines the development of their technical thinking of a new type and serves as a regulator of their life in the techno sphere (16, 18).

Future bachelors need to have the skills of work with modern software. The study of new information environments gives the

future specialist the opportunity to identify the advantages and disadvantages of these programs and thus determine the degree of effectiveness of their use in practice, which will allow maximization of the use of these programs in professional activities. In today's competitive environment, professionals often have to change the job, i.e. change the scope of their knowledge, skills. Each professional regularly receives new tasks, new projects for their development and implementation, he knows that to solve the problem, a comprehensive view of the problem is necessary (17).

## 2 Materials and Methods

During the study, we conducted a systematic review of literature (18) from available articles published over the past five years. Systematic review is a search methodology that limits systematic error in the collection, critical evaluation, and synthesis of a study on a particular topic. It plays an important role in choice of the most effective treatment and preventive and diagnostic means (19, 20).

The meta-analysis technique, which appeared in the late of 80s, today belongs to one of the most popular and rapidly developing methods of system integration of the results of individual scientific research. For example, up to 50% of all treatment methods of diseases of the internal organs currently used in the UK are based on the results of randomized and controlled trials (RCT) as well as on related meta-analyses (21) characterizes meta-analysis as a method of "the results combination of various studies that formed from the qualitative component (for example, the use of pre-defined criteria for inclusion in the analysis, such as data completeness, the lack of obvious deficiency in the organization of the study, etc.) and the quantitative component (statistical processing of the available data)." In the famous monograph of I. Chalmers and D. G. Antman "Systematic reviews" meta-analysis is defined as "a quantitative systematic review of the literature or quantitative synthesis of primary data in order to obtain summary statistical measures" (22).

### 2.1 What is meta-analysis for?

About 2 000 000 scientific medical articles are published annually currently in the world, not excluding the materials from numerous national and international conferences, books, etc. In this situation, the obvious need to synthesize the information presented in the form of a literature review on a particular issue. The present descriptive approach to the synthesis of such information has the main disadvantage — the lacks of systematicity, in descriptive (non-systematic or qualitative) reviews strictly scientific methods are not used, whereas in the presentation of research data they are usually used. As a result, such literature reviews are difficult to reproduce and often reflect only the subjective opinion of their authors. The distinct advantages of meta-analysis include the possibility of increasing the statistical power of the study, and therefore, the accuracy of assessment of the effect from the analyzed intervention (this allows more accurately than in the analysis of each single small clinical study, to determine the categories of patients for whom the results are applicable), as well as the relatively low cost and efficiency of its conducting. Correctly conducted meta-analysis involves the use of strictly scientific principles (including testing of any scientific hypothesis, a detailed and clear statement of the methods used in meta-analysis, including statistical methods, a fairly detailed presentation and discussion of the results of the analysis, as well as its conclusions) to reduce the likelihood of random and systematic errors. This approach ensures the reproducibility and objectivity of the obtained results.

The results of constantly updated meta-analyses can be widely used in both practical and scientific terms. First, they allow the doctor to obtain the most objective information about the results of research in areas of interest, including a generalized assessment of the effectiveness of a method of exposure (therapeutic, diagnostic or preventive). Secondly, meta-analyses help scientists to:

- To formulate and justify a research hypothesis (there are many examples of using the results of meta-analysis to establish not only the effectiveness of a therapeutic effect, but also cause-effect relationships between disease and risk factors, as well as to determine the generalized indicators of morbidity and mortality, the effectiveness of diagnosis);
- To justify the scale of the planned clinical study (meta-analysis allows obtaining reliable data to assess the expected effect of a particular treatment method for its subsequent verification in the planned research Institute);
- To determine the important side effects of the studied therapeutic drug, as well as to establish predictive valuable factors of the development of a particular disease outcome;
- To avoid mistakes made in previous studies (for example, in the organization of the planned study).

Third, the results of the meta-analysis help health professionals and experts in the development of recommendations and legislation about the use of certain diagnostic and treatment methods. In this regard, regularly updated recommendations are

a good example of the American Association of board biologists for the management of patients with cerebra-vascular and board bio-vascular diseases (23).

The plan of implementation of the review consists of three important phases (Figure 1). At the planning stage, we define the main objectives of the research, sources of research, and develop a protocol of systematic review. The works selection, data extraction, process monitoring and data synthesis will be performed in the second stage. The last stage will be the arrangement of our work as a report, thesis or article in scientific journals.

## 2.2 Planning process

The protocol consists of several components (31):

- 1) Research questions;
- 2) Search strategy;
- 3) Criteria for exclusion of scientific papers;

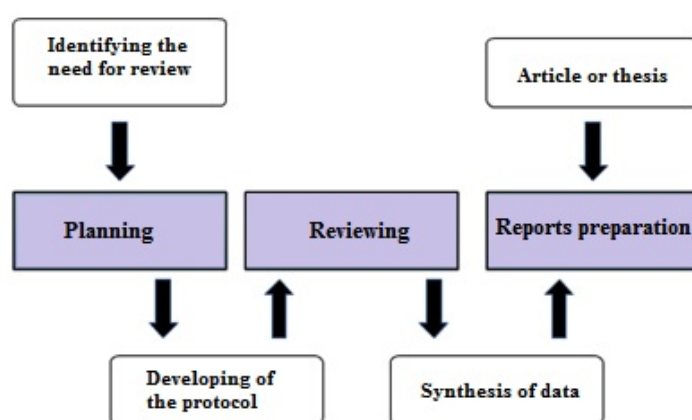


Figure 1. A systematic review of literature (24)

- 4) Data extraction strategy;
- 5) Synthesis strategy.

In this study, we should get answers to the following questions:

- In which subject areas is the Arduino platform used?
- What teaching methods are used alongside this platform?

Search for scientific articles will be carried out in international bibliographic databases (Table 1), by the following keywords: "Arduino OR Arduino in education OR microcontrollers OR microcontrollers in education OR education robotics OR raspberry Pi OR beagle bone black OR raspberry Pi in education".

Table 1. Databases

No.	Bibliographic database	Database URL
1	Web of Science	<a href="https://apps.webofknowledge.com">https://apps.webofknowledge.com</a>
2	Scopus	<a href="http://www.scopus.com">http://www.scopus.com</a>
3	Springer Link	<a href="http://springer.com">http://springer.com</a>
4	IEEE Xplore	<a href="http://ieeexplore.ieee.org/Xplore">http://ieeexplore.ieee.org/Xplore</a>
5	ACM Digital Library	<a href="http://dl.acm.org">http://dl.acm.org</a>

## 2.3 Data extraction strategy

The 9 data units were identified and will be used for the analysis of selected scientific works:

1. Article's title;
2. Number of publications;
3. Year of publications;
4. Number of participants;
5. Platform;
6. The subjects that are taught with the use of the platform;
7. Skills acquired through the use of platforms;

8. Applied teaching methods in research;
9. Justification for the application of this technique.

Synthesis strategy: the synthesis is based on the analysis of data from selected publications to obtain answers to our main questions.

## 3. Results and Discussion

In the course of the research we have considered more than 50 scientific works in this area from different sources (Figure 2).

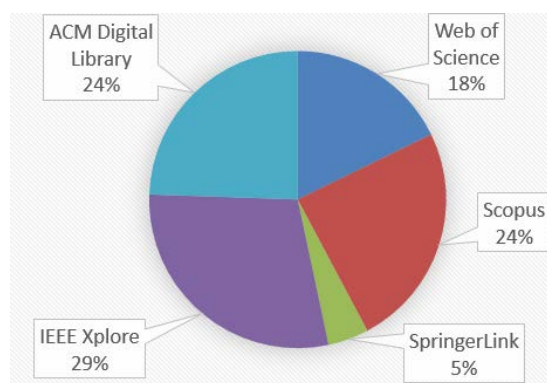


Figure 2. Search Sources

About 30% of these research papers were selected from the IEEE Xplore Digital Library of the Institute of Electrical and Electronics Engineers (IEEE). Next are the digital library of the professional Association in the field of computer science ACM Digital Library (24%) and bibliographic and abstract database Scopus (24%). Scientific works were selected on the basis of the

keywords mentioned above. It should be noted that some works are placed in several scientific bases. Most of the works were presented in international conferences. Below we have listed the major scientific journals (Table 2) where the articles in our direction were published:

Table 2. List of main scientific journals

No.	The name of the scientific journal	Terms of publication (average)
1	Computers & Education	9 months
2	International Journal of Education and Information Technologies	10 months
3	Computer Applications in Engineering Education	5 months
4	International Journal of Engineering Pedagogy	4 months
5	European Journal of Engineering Education	3 months

The 15 publications were selected out of 50 scientific papers using exclusion criteria (Table 3). The basic information on these works is systematized by the name of the source, year of

publication, the number of participants in the experiment and the platform used by researchers (Table 3).

Table 3. Scientific papers

No.	Article title / Year of publication	Number of students	Platform
1	Increasing Students' Interest by Encouraging them to Create Original Lab Projects, 2017	26	Arduino
2	Closing the Gender Gap in an Introductory Programming Course, 2015	76	Arduino
3	Project-Based Learning in Basic Course of Technical Physics: Computer-Controlled Experiments and Agros 2D Modeling, 2017	-	Arduino
4	Influence of Arduino on the Development of Advanced Microcontrollers Courses, 2017	-	Arduino
5	The Arduino Platform Connected to Education Process, 2017	124	Arduino
6	Using Arduino to Enhance Computer Programming Courses in Science and Engineering, 2013	-	Arduino
7	"From Making to Learning": Introducing Dev Camps as an Educational Paradigm for Re-inventing Problem-Based Learning, 2017	25	Arduino & hardware devices
8	Teaching Undergraduate Introductory Course to Mechatronics in the Mechanical Engineering Curriculum Using Arduino, 2013	26	Arduino
9	15-Year Educational Experience on Autonomous Electronic Information Devices by Flipped Classroom and Try-By-Yourself Methods, 2017	125	Arduino, Raspberry Pi, Black
10	Reprint of 'First Exposure to Arduino Through Peer-Coaching: Impact on Students' Attitudes Towards Programming, 2018	44	Arduino
11	Design of a Low Cost Remote Electronic Laboratory Suitable for Low Bandwidth Connection, 2017	36	Arduino
12	Using Assembler for Microcontroller Study on Arduino-Based Platform, 2017	49	Arduino
13	More Missing the Boat - Arduino, Raspberry Pi, and Small Prototyping Boards and Engineering Education Needs Them, 2015	-	Arduino, Raspberry Pi, Bblack
14	A Competition-Based Approach for Undergraduate Mechatronics Education Using the Arduino Platform, 2014	30	Arduino
15	Implementation of Embedded System Design in Student's Final Year Project Using Problem Based Learning Approach, 2017	-	Arduino

### 3.1 In what subject areas is the Arduino platform used?

Analyzing the extracted data, it should be noted that the use of robotic platforms in training are focused on two main points: the study of the subject and the development of certain skills.

As we can see in figure 3, in many cases (40%) the Arduino platform is applied as an auxiliary tool in programming courses. For example, the use of Arduino Board has helped to increase students' interest in programming and largely students worked with great enthusiasm (25). Demonstration of various physical

examples enhances understanding of students. They used melodies to represent the theme "arrays". This approach helped students to understand in detail the process of concatenation of arrays, the difference between the position and the value of the array element (26). Moreover, the simplicity of programming and the variety of Arduino-compatible devices make them useful for all levels of ICT students, and for those who are trained in other engineering areas (27).

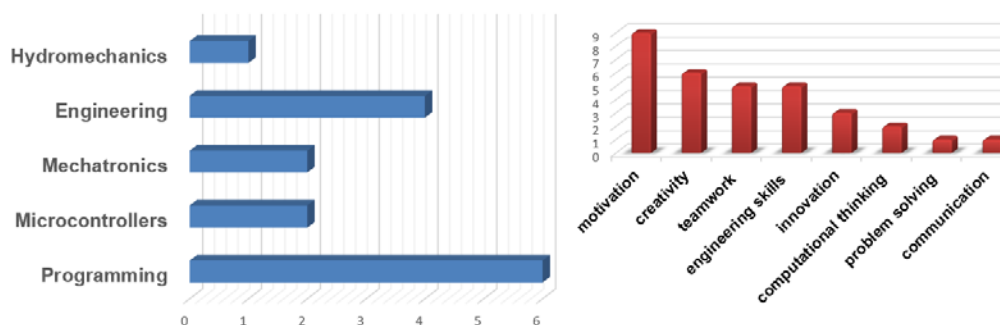


Figure 3. Subject area and objectives of the platform

The analysis of the works shows that this tool was used mainly to increase the motivation of students, development of creative skills and ability to work in a team (28, 29).

### 3.2 What teaching methods are used alongside this platform?

Due to the specificity of the tools under consideration, the use of project-oriented methods of training prevails (73%). This allowed approving the relevance of the study of project-oriented methods of teaching to programming the micro-robots.

Figure 4 presents an analysis of the characteristics of the above-mentioned methods of teaching programming the micro-robots in accordance with the specifics of the platform.

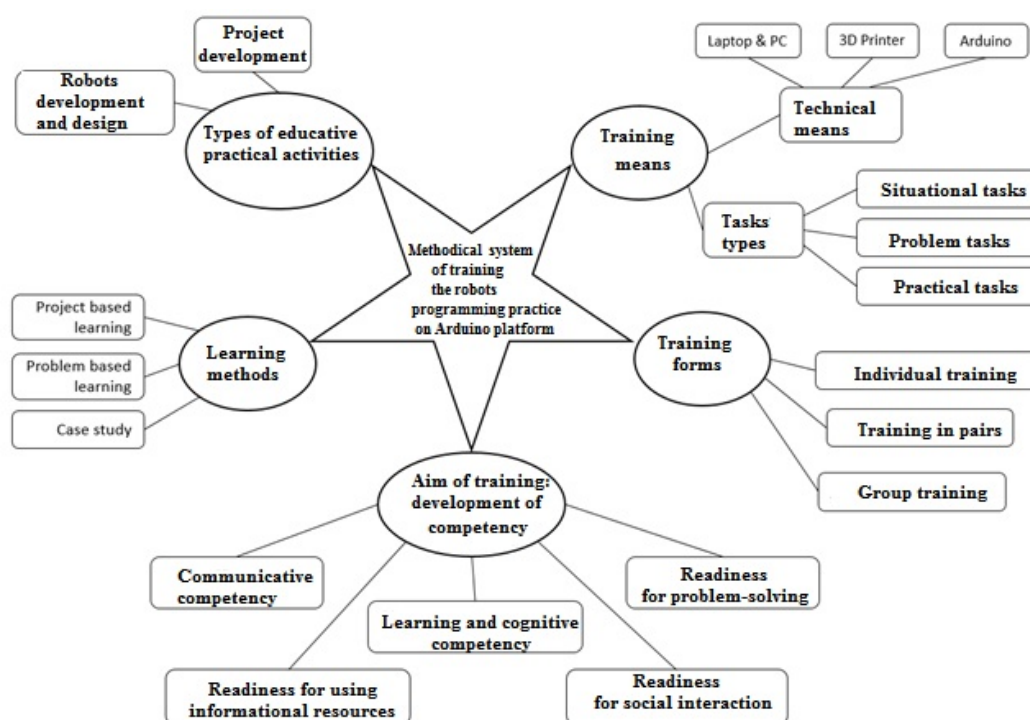


Figure 4. Characteristics of teaching methods for programming the micro-robots

The formation of the above-mentioned competencies of a student is very important and it is the level of formation of these

competencies upon which depends how valuable will be a student's attitude to the subject and the process of education in

general. Every practicing teacher knows that it is the educational competence that motivates students and develops their creativity (30).

#### 4 Conclusion

In this work, we have considered fifteen selected articles on this topic, in particular the use of robots as auxiliary tools in higher education. The potential benefits of these scientific papers were analyzed. It was noted that robots are an effective tool to support such subjects as programming, engineering, mechatronics, microcontrollers and other areas of natural science. This type of training significantly increases the students' motivation, develops creative and computational thinking skills and forms key competences.

It is revealed that project training is the best method when using the Arduino platform, as the work takes place in a team and each participant is responsible for the performance of its functions. In the process of such work, the study of a certain area is systematic; moreover, students receive as a result of their efforts – the finished product.

A promising research is the systematization of methodological and technical means of project-oriented training and the development of an educational environment for teaching programming the micro-robots.

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#### Primary Paper Section: I

#### Secondary Paper Section: IN



## J INDUSTRY

JA	ELECTRONICS AND OPTOELECTRONICS
JB	SENSORS, DETECTING ELEMENTS, MEASUREMENT AND REGULATION
JC	COMPUTER HARDWARE AND SOFTWARE
JD	USE OF COMPUTERS, ROBOTICS AND ITS APPLICATION
JE	NON-NUCLEAR POWER ENGINEERING, ENERGY CONSUMPTION AND UTILIZATION
JF	NUCLEAR ENERGY
JG	METALLURGY, METAL MATERIALS
JH	CERAMICS, FIRE-PROOF MATERIALS AND GLASS
JI	COMPOSITE MATERIALS
JJ	OTHER MATERIALS
JK	CORROSION AND MATERIAL SURFACES
JL	FATIGUE AND FRACTURE MECHANICS
JM	STRUCTURAL ENGINEERING
JN	CIVIL ENGINEERING
JO	LAND TRANSPORT SYSTEMS AND EQUIPMENT
JP	INDUSTRIAL PROCESSES AND PROCESSING
JQ	MACHINERY AND TOOLS
JR	OTHER MACHINERY INDUSTRY
JS	RELIABILITY AND QUALITY MANAGEMENT, INDUSTRIAL TESTING
JT	PROPULSION, ENGINES AND FUELS
JU	AERONAUTICS, AERODYNAMICS, AEROPLANES
JV	COSMIC TECHNOLOGIES
JW	NAVIGATION, CONNECTION, DETECTION AND COUNTERMEASURE
JY	FIREARMS, AMMUNITION, EXPLOSIVES, COMBAT VEHICLES

## DEVELOPMENT OF SMALL AND MEDIUM-SIZED ENTREPRENEURIAL BUSINESSES IN THE ENERGY SECTOR: FEATURES OF HIGHLY INTELLIGENT PROJECTS' EVOLUTION

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**Abstract:** One of the main conditions for sustainable development of the economy is a sufficient amount of resources necessary for its running. The scientific and technological development constantly stimulates increase in the energy efficiency that is especially important for small and medium-sized enterprises. The article discusses the development opportunities and prospects of small and medium-sized entrepreneurial businesses in the energy sector through the project development based on the synthesis of Smart Grid and Green Economy.

**Keywords:** renewable energy source, green economy, intelligent networks, small and medium-sized entrepreneurial businesses, power industry, energy saving, energy efficiency, smart grid.

### 1 Introduction

Economic growth largely depends on the development level of country's energy industry, which represents the basis for all economic sectors' functioning, i.e. contributes to the formation of a significant portion of GDP, as well as meets the needs of the population in household electrical energy. The most effective ways to solve this problem include:

- 1) improving the energy efficiency of the economy so that to reduce the energy costs by reducing the amount of energy consumed;
- 2) developing alternative energy.

Small and medium-sized businesses, especially in the agricultural sector, often have sufficient capacity to produce their own energy through the use of solar, wind, water, land, and biomass; and thus they can become independent from a single-source energy provider. In addition, to gain a competitive advantage, these businesses may be interested in implementing ISO energy standards.

Thus, small and medium-sized enterprises (SMEs) are particularly interesting research objects in the context of energy saving and energy efficiency, since, on the one hand, they are significant consumers of fuel and energy resources, and on the other hand, they are one of the main implementers of energy saving and energy efficiency policies, and can provide energy services, energy management services, energy audit, as well as carry out design and construction works, etc.

Based on the generalization of pioneer theoretical models of energy consumption (the doctrines of the differentiated limited growth of M. Mesarovich and E. Pestel; World-1, World-2, and World-3 models of J. Forrester and D. Meadows; V. Leontief and D. Ford models of static intersectoral ecological-economic interaction, etc.), it can be concluded that each of these models serves a constructive tool for analyzing the types and forms of attracting energy resources in public production. At the same time, in the context of exhaustion of the industrial potential of social progress and reduction of traditional resources of economic growth, the theory of the third industrial revolution proposed by Rifkin [1] is the most adequate explanation of modern transformational changes in the energy paradigm of global economic development. According to this theory, today

there is a transition from the second industrial revolution, which was based on hydrocarbon energy, atomic and nuclear energy, to the third industrial revolution, whose core is the generation, storage, accumulation, and distribution of energy through the so-called Smart Grids.

The use of highly intelligent networks, such as Self Monitoring Analysis and Reporting Technology (SMART Grid), which is a technology that provides its own monitoring and the ability to transfer monitoring results to the network management center, is a promising trend to improve managerial efficiency in the energy sector.

The most large-scale programs and projects based on the application of the Smart Grid concept are developed and successfully implemented in the USA, Canada, European Union, China, India, Japan, Australia, South Korea, and in fact are the state policy in technological development of the electric power industry of the future [2, 3].

In addition, climate change makes the seventh goal of the Sustainable Development Goals of the UN relevant worldwide. This goal concerns the promotion of environmentally friendly energy operating based on renewable energy sources. According to S. Vento, CEO of the Climate Bonds Initiative, by 2050, the world economy will have to invest 350 trillion USD in alternative power generation to stop climate change on the planet.

At this stage of building a Smart Grid, it is necessary to highlight the possibility of synthesis of Smart Grid and Green Economy. The global trend of the green economy is to increase energy efficiency and reduce the use of resources for products manufactured by reducing the production cost and raw materials' processing. The main goal of the green economy is reducing the impact on the environment through the use of highly efficient mechanisms to manage economic processes [4, 5].

At that, this is related to the strengthening of vertical integration of the industry sector: an increase in the number of SMEs, as well as hierarchical levels of management and the amount of processed information, the need to manage large organizational amounts of information within a single business process, strengthening centralized control both on the part of the power supply companies' management and the state.

### 2 The Relevance of the Highly Intelligent Projects' Development in the Energy Sector and their Relation to the Energy Strategy of the Russian Federation

The relevance of the development of highly intelligent energy projects in the Russian Federation is determined by the Energy Strategy for the period up to 2030 [6], as well as by a number of other regulations.

In particular, the priority areas of scientific-and-technological advance in the energy sector defined by the Energy Strategy of Russia include "the formation of integrated intelligent system-forming and distribution electric networks of a new generation (high-intelligence Smart Grids), the implementation of automated metering and demand management systems for energy, the widespread use of alternative energy and projects based on renewable energy sources (RES)" [6].

The need for the development and implementation of mentioned areas is caused by a number of problems arising in this field. First of all, this is due to the continued depreciation of the main equipment of existing power plants and networks, where the proportion of obsolete equipment exceeds 40%, an increase in electric energy losses in electrical networks is more than 1.5 times, and an increase in the specific number of personnel - more

than 2.5 times. In addition, a reduction in the commissioning of generating capacity was noted.

Among the main reasons for the decline in the economic efficiency of the electric power industry are the lack of an optimal industry managerial system in the context of numerous owners of electric power facilities, as well as a sharp decline in the scientific and technical potential of the industry sector.

In this regard, it is planned to develop intelligent systems in the electric energy transmission and distribution systems. It is

planned to create demonstration and pilot plants, as well as use of standard RES-based projects. There is also a direct dependence of the electric power industry development on the advanced development of the power engineering industry.

Energy from renewable sources can be used for electric energy production, heating, and hot water supply, as well as fuel and energy resources, that is, in all areas where traditional energy products are used (Table 1).

Table 1. Use of alternative energy: the advantages and disadvantages

Kind of energy Utilization	Solar	Wind	Hydro	Bio	Geothermal
Electric energy production	+	+	+	+	+
Heat production	+			+	+
Transport sector	+			+	
Accessibility, renewability, ecological compatibility					
Advantages	The durability of power units	Occupy relatively little space	Power regulation, ease of operation, cheapness	Waste recycling	High heat transfer
Disadvantages	High cost, dependence on climate, need for territory	Noise pollution, dependence on climate, need for territory	Dependence on climate, flooding of the territory	The need to use generated heat near the source of energy production	

Solar cell panels are used for heating and ventilation of buildings, as well as electric energy production. Wind power has recently been increasingly used to generate electric energy. Hydropower is aimed at generating electric energy, as well as is an integrated water management system which solves the problems of water supply to the population and industry, water transport, irrigation, fisheries, recreation, etc. Bioenergy products are used as fuel in all aggregate states to generate heat and electric energy aimed at meeting industrial and domestic needs in energy, as well as used in internal combustion engines of vehicles. Geothermal energy can be used for power generation, hot water supply, and heating of premises.

The use of alternative energy in the transport sector should be singled out because it accounts for a significant proportion of fuel and energy consumption, as well as since the operation of vehicles has significant impact on the environment.

Among the outcomes that may result from implementation of projects based on the Smart Grid and Green Economy synthesis, it is necessary to distinguish the reduction of peak loads and energy losses in electrical networks, improving the reliability of power systems and energy utilization efficiency, reducing the adverse impact of energy facilities on the environment, and the like.

The business processes' management in the industry is an integral part of the proper functioning of the intelligence network. These trends include the expansion of the territorial location of energy facilities, improving the quality and efficiency of services, reducing the cost of enterprises, ensuring modern energy efficiency requirements, and the transition to new energy industry functioning models.

The rapid development of innovative information technologies also has important impact. This concerns constantly increasing computing power, growing bandwidth and quality of communication channels, rising importance of mobile devices, using automated information and measurement systems of commercial energy accounting, emerging software solutions that enable to meet modern requirements and improve efficiency, the quality of analytics and accuracy of accounting, integrating information systems horizontally and vertically, emerging possibilities of rapid cooperation with adjacent systems, growing speed and amount of information processing, as well as ensuring its protection.

Thus, there is no doubt that improving the efficiency of small and medium-sized entrepreneurship in the energy sector can be carried out using high-performance smart systems of information processing and energy process control.

### 3 Review of Global Trends in the Energy Projects' Development Based on RES and Smart Grid

In recent years, the proportion of alternative energy in the world is constantly increasing. As of early 2018, almost a third of all electric energy is generated by RES. However, most of it, about 18-20%, accounts for hydropower plants of various capacities. In 2017, the amount of electric energy generated from RES in Europe exceeded the energy generation by coal-fired thermal power plants. In 2017, more than 100 GW of solar power plants were put into operation for the first time ever, while, according to forecasts, in 2018 this figure will amount to 106 GW. According to Bloomberg New Energy Finance, already in 20 years, more than half of the electric energy will be produced using renewable sources. At that, the proportion of solar and wind energy will be about 34% [7].

Due to the impossibility of further economic development along resource-intensive trajectories, as well as under the pressure of the global energy and environmental crisis, today, the leading countries of the world have already actually moved to the implementation of an energy-saving model of economic development, which is the basis of the resource-saving type of social reproduction. This is evidenced, in particular, by the annual turnover of the green economy, which reaches more than 300 billion Euros in the European Union (3% of GDP), employing about 3.4 mln people; while 25% of total investment capital is invested in the development of clean technologies.

China is the undisputed world leader in the use of renewable energy. China produces 50% of all solar panels in the world. In 2017, China commissioned solar power plants with the total capacity of 46.7 GW. Now the proportion of renewable energy in China has exceeded 25% taking into account hydroelectric power plants. During the year renewable energy facilities have generated 1.7 trillion kWh of electric energy.

Germany is one of the undisputed leaders of alternative energy in Europe. The total capacity of solar and wind power plants is close to 100 GW, while private households account for about 40% of the capacity, and about 10% account for farmers. In Germany, every 12th citizen owns an alternative power

generating facility. Here, the type of property such as solar cooperatives is actively developing. Owners of solar and wind power plants are combined into a common mini-grid to ensure the sustainability and continuity of electric energy generation. The proportion of alternative energy in Germany exceeds 25%.

In 2017, the proportion of alternative energy in the UK increased by 5%, reaching 30%. In total, in recent years, the green energy generation accounts for about 55% of all electric energy produced. However, this includes the performance of nuclear power plants, though their proportion in electric energy production is constantly declining, while solar and wind power plants are increasing their total capacity.

Despite the fact that the proportion of alternative energy in Australia is yet 3-4%, this country is one of the world leaders in the pace of solar energy development. Each year, the capacity of solar power plants is almost doubled. Especially worth noting is Australia's contribution to the development of hybrid (joint use of solar and wind power plants) alternative energy, as well as the construction of large systems of energy accumulation and storage.

Countries that do not lack traditional sources of energy are also engaged in the development of alternative energy. For example, the UAE plans to invest about 50 bln USD in the construction of solar power plants. Iran, considering the possibility of building a 2 MW solar power plant, has already signed a delivery contract on solar panels with the Norwegian manufacturer.

Today, in most advanced countries worldwide, more and more attention is paid to the implementation of Smart Grid technologies in the power industry as the basis for future energy industry development. In this regard, the international energy practice initiated the development of innovative renewal concepts of the electric power industry, which is based on the following initial provisions:

1. Comprehensive modernization of the concerned power industry sector, including all its elements, such as power generation, dispatching, transmission and distribution, sales, and energy consumption.
2. The power grid (all its segments) is considered as a key object to create a new technological basis for the functional properties development of the power system.
3. The energy system is developing as an Internet-type infrastructure to form relationships between all energy market players and other stakeholders in the field of energy, information, economy, and finance.
4. The concepts' creating process includes the broad range of activities – from preliminary research to transfer of innovations, and is carried out at all tiers of innovative development of the electric power industry, namely, regulatory, technological, technical, organizational, managerial, and information levels.
5. The development and implementation of concepts and appropriate programs for the implementation of smart technologies are innovative in nature and give impetus to the transition to a new technological structure in the power industry and the economy in general.

The central position among the energy-efficient developments is occupied by Smart Grids, which are automated self-regulating power systems based on advanced information technologies, and capable of making energy supply more reliable, while energy consumption – more economical, providing maximum restriction of adverse impact on the environment.

In the world energy sector, there are different interpretations of the Smart Grid concept. Generally, Smart Grid is an electric network based on modern innovative technologies and equipment, which effectively coordinates and manages the operation of all connected objects, namely, various systems of power generation, transmission, and distribution of electric energy to consumers in order to create an economically viable and stable power system with low losses and a high level of reliability and quality of energy supply.

It follows from the conducted review that, first of all, Smart Grid is interpreted today all over the world as a concept of innovative renewal of electric power industry, which allows using the latest technologies, tools, and methods to significantly improve the efficiency of energy systems.

At the global level, the Smart Grid concept combines a number of modern trends and technologies, which include:

- control of electrical and energy consumption systems, such as intelligent control systems at centralized and distributed power generation, including alternative energy sources;
- power distribution automation systems for medium and low voltage systems;
- smart metering, i.e. smart system technology for accounting and settlement, as well as load control mode;
- customer information and billing systems in the field of energy supply and public services;
- electric vehicle charging systems, and the like.

In order to improve the efficiency of energy resources and reliability of the power grid complex during the global economic crisis, the initiative for the Smart Grids development was supported by the governments of several countries. The EU countries, USA, and Canada have stepped up work in these areas with priority implementation of the two main components of the Smart Grid concept: flexible alternating current transmission systems (FACTS), and voltage regulation, as well as the system of smart multitariff metering on energy consumption (Smart Metering).

The implementation of the Smart Grid concept should take into account the requirements of all stakeholders, namely, the state, generating, network, and energy supply companies, consumers and equipment manufacturers, etc.

In accordance with this, the core values of the new electric power industry are defined as follows:

- availability, i.e. providing consumers with energy meeting the required parameters;
- reliability and quality of power supply;
- efficiency, i.e. optimization and differentiation of tariffs for energy supply with simultaneous reduction of system-wide costs for electric energy production and distribution;
- efficient use of all types of resources and technologies in electric energy production, transmission, distribution, and consumption;
- reduction of adverse impact on the environment.

Achieving the above goals in the framework of the Smart Grid concept is based on the following core approaches:

1. Taking into account the needs of all participants and customer-oriented approach. Decision-making on the electric power industry development and activities is carried out by balancing the array of participants' interests in terms of their expected benefits and costs, where the consumer is also an active participant in the process in the context of the independent formation of conditions for the amount of energy received, the nature of energy properties, and the quality of energy services.
2. The increasing role of automated control in power systems and energy consumption modes with improved control of individual elements and the power system in general.
3. Transforming information links into the main element that provides the transition from the energy system to a qualitatively new energy information system.

At that, information is the main means of optimizing management.

The following functional properties of the electric power industry are developing within the framework of Smart Grid concepts:

1. Self-repair in case of emergency damage. The power system and its elements constantly maintain their technical condition at the required level through the identification of risks, their analysis and the transition from the perturbation-based management to the prevention of emergency damage to the power grid elements.
2. Encouraging active actions of the end consumer.
3. Ensuring the stability of energy supply and quality of energy in all price segments; transforming a system-oriented approach into the customer-based approach.
4. Ensuring a variety of power plant and energy storage types (distributed generation), as well as optimal integration of generating and storage capacities into the power system, connecting through standardized technical connection procedures, and implementing microgrids at the consumer level.
5. Expanding power and energy markets to include end-users. Free access to the energy markets of an active client and distributed generation.

Smart meters as the main element of the Smart Metering system are an economical means for obtaining reliable information, enabling power systems and pricing authorities to widely introduce differentiated tariffs for energy consumption depending on the time of day and time of year, and to monitor and manage energy consumption through stimulating tariff design, thus ensuring rational use of energy resources.

In general, Smart Grids combine elements of traditional electric power industry and the latest electric power technologies, as well as Wide Area Control Systems (WACS) and Wide Area Monitoring Systems (WAMS), information technology and communication tools, smart measuring systems, including Smart Metering, Dynamic Grid Management, energy flow management systems (FACTS), demand response, increased security, and reducing energy costs.

It should be emphasized that the implementation of Smart Grid technologies will facilitate the integration of RES into the electric energy grid.

#### 4 Assessment of the Structure and Development Trends of Green Energy Projects in the Russian Federation

According to Bloomberg New Energy Finance data, the total installed capacity in the Russian Federation for all types of energy generation is at the level of 225 GW, of which alternative sources amount to just 1%, namely: biomass (0.6%), small hydropower plants (0.3%), wind energy, solar power, and geothermal sources (0.1%) [7]. It should be noted that the Resolution of the Russian Federation Government of May 28, 2013, No 861-p assumes that by 2020 the proportion of green energy in the wholesale market will be about 6 GW, that is 2.5% (Figures 1 and 2).

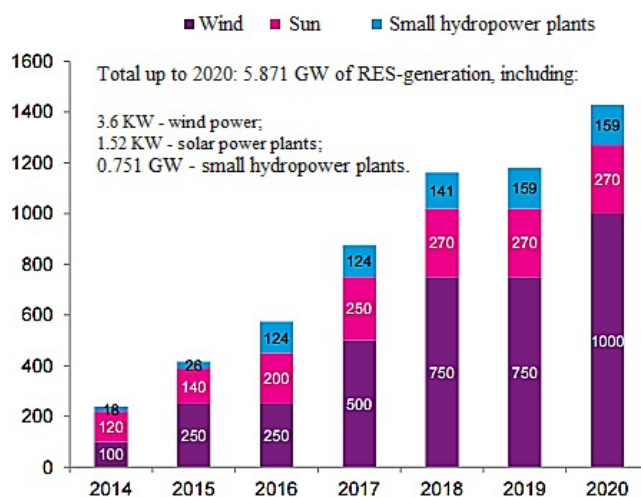


Figure 1. The target amount of RES capacity commissioning in the Russian Federation, MW [8]

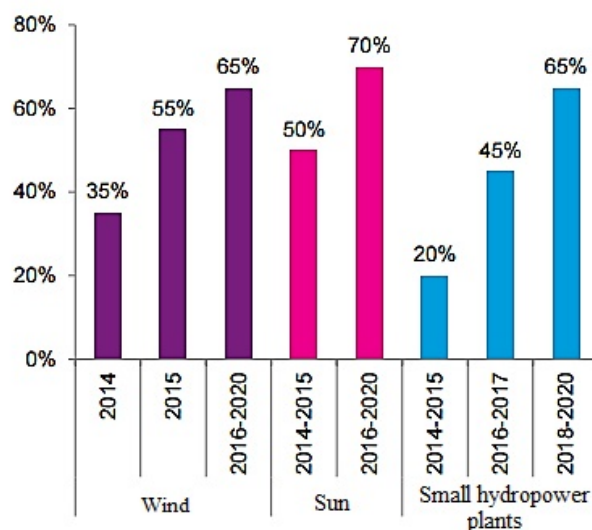


Figure 2. Target localization of RES objects in the Russian Federation, % [8]

The current Russian renewable energy production potential is shown in Table 2.

Table 2. Russian renewable energy production potential [9]

Types of power plants	RES potential, bln kWh		
	Technological capacity	Economic capacity	Industrial capacity
Hydropower plants with capacity <25 MW	372	205	6-10
Wind power plants	6,517	32,6	70-90
Geothermal power plants	34,905	335	40-60
Biomass-based thermal power plants	412	203	90-130
Tidal power plants	253	61.6	16-45
Solar power plants	2,714	435	5-10

In accordance with the major public policy in the field of energy efficiency, Russian government plans to increase the proportion of RES in the production and consumption of electric energy in Russia from 1.5% in 2010 to 2.5% in 2015, and to 4.5% in 2020 [10].

At that, in fact, competition is noted only among the objects of solar generation. In particular, in 2014, 33 investment projects on solar power engineering with the total planned capacity of 505 MW were selected. Among them, 5% of capacity were commissioned in 2015, 8% - in 2016, 31% - in 2017, and 56% - in 2018. The average amount of capital investment as of 2015 reached 78 thousand rubles/MW [10]. The projects were implemented in Russian regions with increased solar activity, namely, the South of the country and Siberia.

In accordance with the limited capital investment and installed capacity targets given in the Russian Federation Government Resolution of 28.05.2013 No. 861-R, the amount of investment in renewable energy facilities by 2020 will have to exceed 480 bln rubles. At that, it is planned to invest in the wind energy facilities about 230 bln rubles, in the solar energy facilities – more than 150 bln rubles, and in a small hydro generation – more than 100 bln rubles [11].

At first glance, the expected increase in the number of RES seems rather insignificant. As of the current date, the proportion of alternative power engineering in the energy balance of Russia does not exceed 1.5-2%. However, in case of effective implementation of the state program, a fairly serious basis will be formed for the further development of high-intelligence energy projects based on renewable energy and Smart Grid that will give an additional impetus to the development of small and medium-sized businesses in this industry sector.

### 5 Analysis of Existing High-Intelligence Projects in the Field of RES and Smart Grid-Based Power Engineering

Greenpeace International environmental organization suggests in its report entitled "Energy revolution: The path to Russia's energy security system" quite an ambitious scenario for the development of alternative energy in the Russian Federation. The report is based on the review of international documents and recommendations of scientists of the UN Intergovernmental Panel on Climate Change (IPCC). According to the Greenpeace scenario, available and cheap hydrocarbon resources will be exhausted in the coming decades. [12]. The report contains proposals to reduce carbon dioxide emissions in the Russian energy sector by 78% by 2050 compared to 1990 and the abandonment of nuclear energy by 2030. As specified in this report, in order to reduce carbon dioxide emissions to the required level, Russia will have to make maximum use of energy

efficiency and renewable energy. In the production of electric energy, the proportion of renewable sources should be 18.5% (including large hydropower plants), while in heat supply - about 2% [12].

The proportion of RES in thermal power engineering will exceed 68% by 2050. Centralized heat supply will be largely replaced by geothermal energy, biomass-based energy, and solar collectors. Since 2020, the role of electric vehicles will increase. By this time, the proportion of primary energy produced by RES will reach 14%, while by 2050, about 57% of primary energy will be produced based on alternative energy sources.

According to the data for 2017, in the Russian Federation, there were up to 20 wind and 20 solar power plants, of them more than 50% were built in the Crimea (isolation of the energy system of the Peninsula is an objective explanation for this fact). More than 60 solar and 12 wind plants were at the design and construction stages.

The report presented by the National Rating Agency notes that according to the data of 2013-2015, the results of the competitive selections indicate that the development of RES projects in the Russian Federation is uneven: the most actively implemented projects are based on the photoelectric conversion of solar energy. At the same time, the target parameters of state programs envisage percentage of wind energy generation equal to 60%, while the percentage of small hydro generation (up to 25 MW) is 13% of the total energy generated from RES [13]. Other types of alternative energy have not been widely reflected in policy documents, while statistics are not available at the sectoral level. At the same time, one can mention some cases of effective implementation of projects in the segments of geothermal and biofuel energy.

According to data for 2018, Russia is implementing two major projects in the field of green energy, which are Orskaya Solar Power Plant named after A.A. Vlaznev and the wind farm in the Ulyanovsk Region.

Describing RES projects in terms of energy efficiency, one can highlight the following advantages of their application:

- performing an innovative role in the highly intelligent development of the national economy and energy;
- saving financial and natural resources and serving as a highly profitable source of capital investment in the future;
- providing opportunities to improve national and regional energy security;
- reducing harmful emissions into the environment;
- solving large-scale problems of traditional energy markets distribution and transformation.

Thus, renewable energy has become in the last decade a dynamic segment of the Russian energy market, which plays a compensatory role in total energy consumption. The key factors of its development are a significant reduction in the cost of technology development in this area, an increase in the level of environmental taxation of the business sector, and large-scale government support of energy efficiency projects.

### 6 Development Prospects of Small and Medium-Sized Entrepreneurship in the Field of Energy Efficiency and Energy Saving

For an individual enterprise, improving energy efficiency should lead to a decrease in the proportion of fuel and energy in the cost of products and services, as well as increase profitability, competitiveness and, as a consequence, the market value of the company.

The main measures aimed at improving energy efficiency are the implementation of effective technologies, modernization of equipment, reduction of energy intensity of technological processes, replacement of traditional fuels with alternative ones, etc.

Energy efficiency of enterprises is influenced by a number of external and internal factors:

1. External factors:

- state tariff policy in the energy resource sector and their final cost;
- state fiscal policy in energy saving;
- energy supplier policy;
- availability of energy supplier infrastructure;
- regulatory rules in the field of regulation and energy consumption audit.

2. Internal factors:

2.1. Investment opportunities of the enterprise:

- indicators of the enterprise's financial performance and financial sustainability;
- the proportion of innovative implementations at the enterprise in energy efficiency;
- the proportion of funds allocated by the enterprise for the implementation of new energy-saving technologies;
- the involvement of enterprise in public and private energy efficiency programs.

2.2 Technological and innovation policy of the enterprise:

- application of energy-saving technologies and equipment;
- energy rating and metering system at the enterprise;
- energy audit;
- the proportion of production of energy-intensive products;
- involvement in energy saving programs;
- the degree of utilization of secondary energy resources;
- production of energy resources by own/local energy sources.

2.3. Personnel Policy:

- staff incentive towards energy efficiency and energy saving;
- personnel qualification in energy saving;
- encouraging suggestions for saving fuel and energy resources through the wages fund, and other ways of the personal motivation of the personnel.

The search for the optimal strategy of the enterprise to save and improve energy efficiency, as well as its implementation and monitoring of the results is called energy management.

Energy management is an activity which allows significantly optimizing the energy inputs and is aimed at ensuring the rational and saving use of energy resources. Energy management at enterprises is regulated by the international standard ISO 500011 and provides for the following sequence of actions to improve energy efficiency:

conducting an energy audit, which involves identifying bottlenecks;

identifying optimal energy efficiency and energy saving measures which can be implemented at a particular facility, taking into account the available budget, and development of a strategy for their implementation;

implementation of the energy efficiency strategy;

monitoring of achieved results and searching (if necessary) for new ways to optimize production processes.

Energy management and its elements (for example, energy audit) can be implemented by SMEs independently or purchased as a third party service.

The main energy saving measures are presented in Table 3.

The compositional application of innovative and organizational measures by the enterprise will provide an opportunity to reach a new level of energy efficiency, thereby increasing the competitiveness of both products and the enterprise in general.

Certain types of energy efficiency and energy saving measures can lead to the optimization of the use of a certain type of resource (for example, replacement of networks, installation of meters), while others will have an integrated effect (thermal insulation leads not only to a reduction in heat supply costs but

also to a reduction in the consumption of electric energy by air conditioners).

At the same time, it should be noted that eco-construction is mainly aimed at meeting the needs of domestic consumers. At that, the construction of office centers based on eco-technologies is still an unoccupied niche, which can be of significant interest for both developers and potential consumers (tenants, who are mainly representatives of SMEs).

Table 3. Main energy saving measures for SMEs

Industry sector	Recommended measures
1	2
Agriculture	Organizing an accounting and reporting system on energy costs; Applying waste-free technologies of production, processing, and storage of agricultural products; Equipping existing and newly commissioned livestock and poultry complexes with bioenergy plants to produce organic fertilizers and biogas; Improving the heating system of greenhouses, livestock farms, and poultry plants, drying processes of agricultural products and production waste, utilizing low-potential secondary energy resources.
Service sector	Implementing energy-saving measures to ensure compliance with the requirements of relevant state standards, construction rules and regulations to achieve the established specific indicators of energy consumption; Organizing energy cost accounting and automated energy management in buildings and engineering equipment systems; Using heat recovery equipment in the projects of buildings and structures.
Industry	Organizing record-keeping (including technical record-keeping) of energy and automated management of energy consumption in production processes; Using secondary energy resources for heat and power generation; Implementing energy-efficient production technologies, installing high-performance equipment in terms of energy efficiency; Full utilization of effluent gases heat, the heat from the cooling equipment, heat from spent steam, and the like.

Depending on the financial capacity, structure, amount of current costs and expected benefits, SMEs have the opportunity to choose a strategy to optimize energy costs. At that, measures that do not actually require significant capital costs can be effective. This concerns, for example, the implementation of the green office strategy, which provides for personal responsibility and discipline of each employee, that is, attracts SME employees to save energy resources.

The behavior of employees in the framework of energy strategy chosen by the management plays an important role in controlling energy consumption. At that, the management of the enterprise should take into account that the average employee transfers habits from household energy use to the workplace. Therefore, if an employee is accustomed to the careless use of energy at home, it is likely that the same behavior will be observed in the workplace, especially if he is not a business owner. It is logical that the larger is the business, the more difficult is to manage energy consumption processes and implement the energy saving principles, and thus, the higher is the need to encourage employees to save energy.

## 7 Opportunities of State Support of SMEs in the Energy Sector Based on RES and Smart Grid

The RES projects in Russia are implemented with the support of the Industrial Development Fund. Besides, such projects can be supported through a special investment contract. Further development of small and microprojects of alternative energy at the local level can be supported under the terms of syndicated lending by means of special project financing societies. Such green foundations can be represented by VetroOGK and NovaVind public companies.

Positive factors in the development of renewable energy projects in the Russian Federation include considerable progress in the development of green energy technology. In particular, the increase in the efficiency of solar cells and the development of storage technologies makes it possible to obtain solar energy even in polar latitudes. This leads to increased availability and cheaper solar-wind power plants, even in the piece version, not to mention combined options. Another development driver is the possibility of using hybrid stations that combine the use of renewable energy and hydrocarbons.

It should be noted that the greatest interest in renewable energy projects is shown, first of all, by nonstate-owned companies. In order to increase their interest and, consequently, increase the amount of investment, the state needs to create an attractive climate for activity in this area. Currently, this is implemented through the mechanism of power supply agreements (PSA). In particular, such agreements allowed attracting an additional 3.6 trillion rubles of private investment to the electric power industry in 2008-2014. As a result, the installed capacity of the country's energy system has already increased by more than 20 GW, and another 7 GW are coming soon. If the cost compensation by the state and the guaranteed purchase of power capacities and electric energy have worked for traditional power engineering, then, as experts believe, one can expect a similar result for the alternative power engineering [14, 15].

The public-private partnership mechanism is another option for cooperation. Today, such cases are rare in Russia and mainly depend on the attitude of regional and local authorities. The most relevant example is the Center for Alternative Energy, which is planned to be created in Khimki near Moscow.

However, small and medium-sized businesses can take the initiative to solve together with the authorities the problem of getting money for green projects. It is enough to agree on the launch of the so-called circulation of green bonds.

The first green bond was issued in 2007. For the first time, such securities were traded on the Luxembourg Stock Exchange in 2016. But as far as by the beginning of 2018, investors have bought green bonds for 384 bln dollars worldwide. As of 2018, the largest amounts of financing for alternative energy have been attracted through green bonds by the USA (82 bln USD), China (48 bln), France (43 bln), and Germany (25 bln). Mainly, the governments of the mentioned states were the issuers of such securities. Note that yet in China the circulation of green bonds is widespread only in five provinces. Among the Eastern Europe countries, Poland has similar experience.

Small and medium-sized entrepreneurs will be wise to cooperate with local authorities to reduce the cost of issuing green bonds, and then to increase investment in renewable energy.

In addition, in the light of the fact that there are prerequisites for the development of RES through venture funds in order to encourage the implementation of renewable energy projects, it is necessary to create attractive conditions aimed at developing high-risk investments in the Russian Federation, as well as to establish a special system of motivation on the part of the state in order to create venture funds and companies. It is necessary also to carry out constant monitoring of the state of affairs in the innovation sector, strengthen the protection of intellectual property rights, and provide adequate information support to

venture investors ensuring a high level of quality and reliability of the information provided.

## 8 Conclusion

In general, it can be argued that alternative energy in Russia continues developing. However, in the short term, the main burden falls on private companies, including SMEs in the energy sector. The state, for its part, should create the most favorable working conditions for them, knowing what benefits it will bring in the future.

According to expert assessment [11], the combined effect for the Russian economy from the renewable energy projects development will amount to 200 bln rubles. At that, over 80 bln rubles will go directly to the budgets of different levels and extrabudgetary funds in the form of taxes, duties, and insurance premiums. Export income will exceed 90 bln rubles, while the environmental costs will decrease by 20 bln rubles. In the field of alternative energy, 25,000 jobs will be created and more than 100,000 jobs will appear in the related industry sectors.

Expected results from the implementation of Smart Grid systems include the following:

- using energy resources more efficiently;
- improving the reliability of power supply, reducing the time of emergency shutdown;
- increasing the utilization efficiency of electrical networks' equipment;
- increasing transit amount of electric energy (up to 40-50%) excluding construction of new grid facilities;
- reducing the cost of electric energy production and energy loss in electric networks;
- activating distributed generation and overall growth of RES application;
- reducing the adverse environmental impact of energy facilities (reduction of CO<sub>2</sub> emissions into the atmosphere);
- providing two-way communication with the consumer;
- identifying irrational use and theft of electric power, damage to equipment, as well as reducing the cost of energy resources when implementing differentiated tariffs that is very important and appropriate for SMEs.

In the framework of the implementation of Smart Grid systems' concept and methodology, the requirements of all stakeholders should be taken into account. This concerns the state, generating, network, and energy supply companies, as well as consumers, and equipment manufacturers.

In addition, a synergetic and a multiplicative effect from the development of alternative energy and Smart Grid systems is expected, assuming the impact of this industry sector on the GDP of the Russian Federation through the development of metallurgical, engineering, and electrical industries, as well as power electronics, transport, and telecommunications sectors, information technologies, production of innovative energy-saving building materials, etc.

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# THE MODEL OF UNIVERSITY TRAINING OF PROFESSIONALS FOR THE IRON AND STEEL INDUSTRY

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**Abstract:** The model of approach to designing educational programmes of professional engineering personnel training for research activities, creation of new products and development of iron and steel works is proposed. The model differs from the traditional approach within the education massification, it differs in certain academic mobility, freedom and a personalized approach to students.

**Keywords:** design of engineering educational programmes for the iron and steel industry, inter-disciplinarity, multi-professional competences, engineering personnel competences, mass, personalized education, modernization of universities' educational policies

## 1 Introduction

The modern iron and steel industry has some unique features. On the one hand, technologies and scientific principles known from the 18th and 19th century are still used in it, and on the other hand, in the past 30 to 50 years, this industry has become so complicated due to development of information technologies, the power industry and automation, that it requires specialists of higher level compared to those trained 10 to 15 years ago [1].

In the context of stiff global competition of world steel making companies, expenses per 1 tonne of product are one of key criteria of competition. In this respect, the issues of headcount optimisation and specialist model change through development of his or her multi-functional professional knowledge and skills are of high importance at metallurgical enterprises. In addition, there is a demand for specialists who are capable to solve quickly and understand existing process and operational problems, and improve the technology efficiency, create new products, apply new methods and approaches, developing in this way the production and the industry in general [2].

In this situation, universities get involved into the competitive struggle of metallurgical companies. In this context, universities have to compete with each other not only for the best applicants and students, but also in the area of development of new educational programmes and educational technologies providing training for 'new' specialists working on the frontier of knowledge in metallurgy and contributing to technology breakthroughs of iron and steel companies. Such educational programmes, certainly, shall be unique, exclusive, and shall differ from the principles of mass training at universities.

## 2 Task Setting, Problems

Before talking about design of new educational programmes for the iron and steel industry, it is required to summarize the existing models of engineering personnel training at universities. Modern universities having 5,000 to 10,000 students and more are forced to be involved into education massification under optimisation of the resources. When such model is used, an educational programme has a certain "base" and a variable part that determines the educational profile and specialization of a graduating student. The massification model is explained on Fig. 1 in more details.

One cannot deny that when such model is implemented universities are seeking to keep up with the time as much as possible, develop their own, and implement existing, frontier educational technologies, which will replace traditional education formats in the nearest future. They are global educational internet-platforms, on-line trainings, different

simulators, etc. Availability of internet resources is currently one of the main modules for developing programmes of mass engineering personnel training.

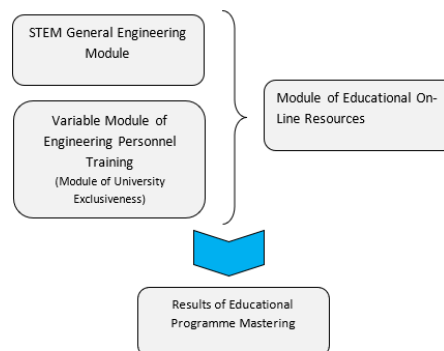


Fig. 1. The Model of Mass Implementation of Engineering Personnel Training

Due to development of information technologies, the amount of information is so large that the present knowledge could not be placed into textbooks and is becoming out-of-date. It should be mentioned that the portion of implementation of educational programmes due to the use of internet resources will only grow and will achieve 30 to 40% of the total volume of credits, and these technologies are used for implementation of the following two modules.

The next module is so-called the general engineering module named STEM: Science means science basic knowledge (philosophy and history, philology, mathematics and physics, chemistry, economics), Technology means existing technologies in engineering (application of basic knowledge in existing technologies of different industries); Engineering means basic principles of computer-aided design and simulations, basic knowledge of CAD and CAE systems; Math means applied mathematics and informatics.

The third module of an educational programme in the context of mass implementation of the educational process of engineering personnel trainings is so-called the variable module, where the profile and specialization of a future engineer is formed, and elective courses are implemented. In this module, higher education institutes and their departments and sub-departments can implement original courses based on implementation of own research, and an educational process in this module can consider the regional component of university positioning.

Therefore, the content and specific character of this module reflects original exclusive features of each university within educational courses built on the results of own scientific studies, availability of unique specialists-experts as instructors, and particularities of the regional industry. The portion of this module shall be at least 30% of the total volume of an educational programme.

It should be understood that within the model represented above it is very difficult and sometime impossible to train a specialist capable of solving actual production tasks at the expert-analytical level, capable of conducting scientific research independently, designing a technology and creating new products for the iron and steel industry, contributing to the development of an iron and steel company in this way. Therefore, new approaches and understanding are required for design of engineering educational programmes.

### 3 Description of the Process of Development of the Engineering Personnel Training Model

Provided that training of 'a unique specialist' shall be based on certain training, the process of designing of an educational programme for training of master-level students for the iron and steel industry is reviewed as an example. Before we have considered the model of training of a specialist as a person working inside the profession, and now the attention will be given to the modelling of the process of training of 'a professional' as a person developing the industry.

Before starting to design an educational programme, it is required, as banal as it may sound, to set goals, to answer the question about a purpose of this educational programme: what product will be received as a result, what 'should happen' after mastering the educational programme, what effect will be received after solving the considered problems, how the condition of the existing system will be changed. For example, a metallurgical company needs specialists in the area of predictive and statistical analysis, or computer modelling of cold rolling, or automation of a process technology, or in general, a combination of these skills.

When developing a new educational programme, it is necessary to consider specific aspects and a unique nature of a university in this field, there should be a concept of new proposals on its content and forms of educational process organisation. It is logical to analyse how other universities implement similar programmes now, whether they did it before, and what results were achieved.

Students must not be viewed as young and inexperienced for such training. These educational programmes are entered by quite mature people who usually already have production experience, know the technology and equipment of metallurgical productions and who have faced certain technological problems. It also should be taken into account that in the modern world every person seeks to make himself or herself within 'his or her unique trajectory', and, respectively, an educational route [4].

So, how can a student find his or her unique route and, respectively, control his or her education? There should be a general principle or a common ground, on which many educational formats can be combined and the results of experiments in education can be captured. This general principle is a competence as an ability to follow a certain type of actions in a certain professional and social context.

The following types of competences are distinguished in training of professional engineering personnel:

- Narrow specialized competences (knowledge of technologies and equipment of cold and/or hot rolling of flat products, grasp of calculation methods, operation of automated control systems, mill speed mode control, steel cooling, etc.)
- Over-professional competences, such as an ability to come up with new possibilities and identify them (development of control system operation algorithms, programming, big data analysis)
- Competences characterizing a universal class of activities, which, as some people think, are personal characteristics, a personality of a specialist and a student, but which also can be developed during an educational process. These competences are also called existential, for example, leadership skills, teamwork, public speaking skills, etc. [5, 6].

To a large extent, a competence is not a perfect concept. Some difficulties with competence description also exist. However, a competence-based language of description of education results is convenient for an employer and clear to the labour market, as it is easy to evaluate narrow competences. Outlook studies in this field represent a specialist competence model formed through big data analysis in the system of a metallurgical enterprise.

When designing educational programmes of professionals training, the following formats are usually taken as the key ones:

- Designing of educational programmes together with business. In this case an employer is not a sponsor, but a task provider. And in this case there is a risk of being dependent on a certain employer; therefore, game formats, creation and study of models and analysis of cases are used
- An educational programme is created on the basis of practical skills, and knowledge plays a secondary role
- In the educational programme, a student gets into a professional community of experts through practice/internship in the actual production environment
- Work in teams of students where they teach each other
- In the training process, students implement projects within selection of goals and means for solving tasks of research and applied nature [7].

In any case, an educational programme of professional engineering personnel training in its content represents research and development projects and creation of technologies.

The suggested model of design of educational training is based on the world known approach of an educational programme structure named MAJOR-MINOR with additions and corrections [8].

In contrast to the traditional approach to the MAJOR module formation as the fundamental or general engineering training, introducing a student to a special field, it is suggested to immerse master-level students into issues of metallurgical production, studying of global scientific problems in the considered industry, receiving skills of formulation of new hypotheses, problems setting, organization and conduction of pilot studies, acquiring skills of applied mathematics and informatics using up-to-date software packages. It is also necessary to analyse the existing methods and approaches to solving tasks for the iron and steel industry in order to develop the new ones. It is clear that new results cannot be received by old methods.

The result of student education at this module should be the skill to 'ask questions rather than the ability to answer them'.

The MAJOR model can be called 'the problematics module' in the represented concept of the educational programme design.

In turn, the MINOR block is focused on development of over-professional and narrow competences of a specialist in the area of metallurgy.

This block consists of two parts:

1. MINOR Professional Project (an interdisciplinary module of team education of students). At this module, a student is not taught to individual special disciplines, but is immersed into implementation of actual research tasks in the interdisciplinary field. Therefore, the student training shall result in solving industrial problems or research tasks. The theme of tasks to be solved can be determined by business, or by a university, or by a student himself. This module shall be designed in such a manner that it would be of the same volume in credits and it should start and end at the same calendar period at several engineering educational programmes for training specialists in partner areas for the iron and steel industry (power, automation and IT, and equipment). It will allow for the formation of student teams during an educational process, who will deal with scientific studies, applications and engineering. Within this module, a student, on his or her own, can also get an internship in R&D structures of iron and steel companies. A key moment in this module is not a studied subject/discipline, but a topic. The required specialist is formed at the module. This module is a 'formation' module.

2. MINOR The Module of Multi-Professional Competencies Development. In the contrast to the module described above, this

module is disciplinary and elective. In this module, a student can choose additional competences from other educational programmes, for example, to study programming in depth, improve the skills of designing and modelling in CAD and CAE-systems, electric drive and hydraulic systems.

Essentially, this module is a competence build-up of the model of professional engineering personnel training for the iron and steel industry. This module shall be based on the needs of the 'future' responding to the question 'What additional competences shall a professional in the area of metallurgy have?' Students from different engineering educational programmes are also admitted to elective courses for purposes of creation and development of professional communities. This module can be called as 'the module of development'. The model of an educational programme of professionals training for the iron and steel industry is schematically represented on Fig. 2.

**Conclusion.** Implementation of the considered approach on design of an educational programme of master-level professionals training for frontier development of the iron and steel industry also involves creation of absolutely new evaluation systems, for example, projects completed by a student, obtained results, an economic benefit, implementation, the level of interested experts from the industry, etc.

The distributed system of competence exchange at the interdisciplinary and multi-professional level addressed in the paper can become one of the directions of educational policy modernisation within current expert professional communities (clubs, departments, etc.) at universities.

Implementation and positioning of such programmes shall be started within the following aspects and leads:

- Interest and demands of students
- Trajectories of personal growth of 'successful people' from the considered professional community, an industrial iron and steel plant; for example, which competences are required in order to become a chief technologist of rolling production
- Formation of an educational trajectory with involvement of so-called 'mentors', 'educational navigators', the future of education is his or her individualization

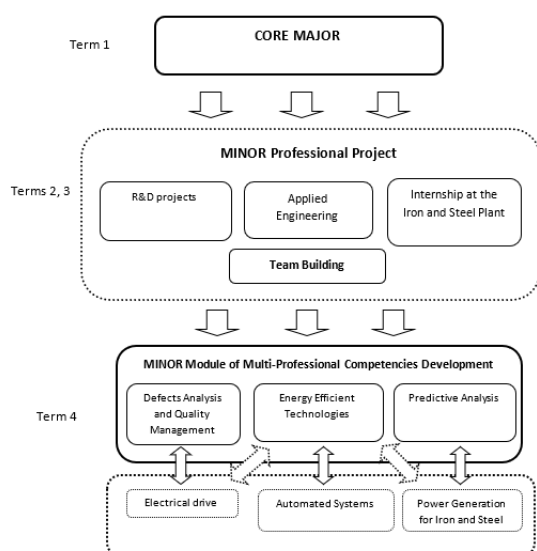


Fig. 2. The Model of Master-Level Students Training for Iron and Steel Industry Enterprises

One should be warned against possible mistakes in modernisation of the engineering personnel training system at universities. You cannot choose between education and R&D at universities. The competences of R&D should be obtained first, and then the education shall be focused on [9, 10]. It should be

noted that a person not involved into research cannot teach anything. Presence of an R&D centre at the university also does not mean presence of competences for professional engineering personnel training.

It is possible to teach only in the course of actual actions, and these actions shall be focused on development. However, new knowledge cannot be born 'in captivity'. 'An academic freedom', autonomy from mass educational processes taking place at universities shall be created. Topics of projects shall be selected by a student, not given by an instructor. Efficient tools for students' immersion into independent behaviour shall be developed at the university. The proposed format of design of new educational programmes requires certain liberation of teaching and research staff from the burden of existing restraining educational formats.

It should be understood that education is a basis and a source of transformation.

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