

## DIGITAL COMPETENCES OF FUTURE TEACHERS OF FINE ARTS

<sup>a</sup>ADRIANA RÉČKA

*Constantine the Philosopher University, Faculty of Education,  
Department of Creative Arts and Art Education, Dražovská 4,  
949 74 Nitra, Slovakia  
email: <sup>a</sup>arecka@ukf.sk*

This work was supported by the Slovak Research and Development Agency under the contract No. APVV-15-0368.

**Abstract:** The paper deals with the problem of digital competences of university students - the future teachers of Fine Arts, in relation to their cultural awareness and expression systematically developing during their pregradual preparation within the disciplines focused on theory and history of Fine Arts at the Department of Creative Arts and Art Education at the Faculty of Education at Constantine the Philosopher University in Nitra. The paper looks into students' competences of given area via questionnaire based on self-assessment. The author of this paper explores the problem in relation to project goals supported by Slovak Research and Development Agency according to Act No. APVV-15 - 0368 in the context of present requirements of teacher training program in the area of critical thinking and creativity.

**Keywords:** digital competences, Fine Arts education, self-assessment, critical thinking, creativity.

### 1 Introduction

Digital literacy can be undoubtedly described as one of the key competences of today's man living in cultural society. The relevance of this issue is evident in the fact, that the Slovak Institute for Public Affairs (slov. *Inštitút pre verejné otázky*) based in Bratislava has been regularly monitoring the issue of digital literacy and informatization of society for the last fifteen years via sociological research which is representative for the population of the Slovak Republic over 14 years of age, in terms of education, age, nationality, size of the residence and regions of the Slovak Republic. Research has been carried out since 2005 in two or three-year periodicity. Each research has reflected so far not only monitored indicators of digital literacy of our population, but also changing conditions of the society significantly determining status of investigated competencies. The results of the research conducted in 2020 were published by Veľšic, Marián: *Digitálna gramotnosť na Slovensku 2020* (eng. Digital Literacy in Slovakia 2020). Indicators of digital literacy are defined and specified in this publication in four areas: hardware control, software control, work with information and services and communication skills (Veľšic, 2020, p. 2).

Digital literacy as a relevant key competence for lifelong learning is also defined in "Recommendation of the European Parliament and of the Council" of 18 December 2006 (2006/962 /EC). This document, in the annex "*Key Competences for Lifelong Learning - European Reference Framework*", defines eight key competences as a combination of knowledge, skills and attitudes, including digital competence.

#### 1.1 Theoretical background

Veľšic defines digital literacy as "*the ability to understand information and use it in various formats from various sources presented through modern information and communication technologies (ICT)*" (Veľšic, M., 2013, p. 2). Definition of digital literacy as an integral part of the "*set of professional skills and dispositions the teacher should be equipped with in order to effectively perform his profession*" as defined by Petlák in Self-reflexion and competences in teacher's work (Hupková, M. - Petlák, E., 2004, p. 98), proved in educational practice during an emergency situation due to the global pandemic of COVID-19 in the spring months of 2020 as a necessity.

State Educational Program (slov. *Štátny vzdelávací program*, hereinafter SEP) of the Slovak Republic as a binding document in addition to the general goals of education sets out the key competencies to which an education should lead to. SEP documents issued and published by the Ministry of Education, Science, Research and Sport of the Slovak Republic, focused on

framework educational content for individual levels of education, contain important information in the context of applying information technologies in education. Considering that the workplace of the author of our paper implements the study programme for Teachers of Fine Arts as double-subject study and from the academic year 2020/2021 there will also be possibility of single-subject study Art Education, both fields of study - bachelor's and master's degree programs preparing teachers especially for the lower and upper secondary education, in our paper we proceed from the documents of SEP for lower secondary education - primary schools (ISCED 2) and SEP for grammar schools in the Slovak Republic (ISCED 3A - Upper secondary education) issued for educational area of Arts and Culture. The document State Educational Program Art Education (Educational Area: Art and Culture). ISCED Annex 2 within the educational topics arranged into methodological series as the 10th states Electronic Media and recommends the application of these educational topics or rather artistic problems: "5.12. *digital image editing / scanning / basic digital image operations /alt.: examples of digital photo editing options on a computer*, 6.11. *image processing / image assembly, layers, filters, transformations, colour variations / font and image /alt.: simulation of layers and filters via mechanical and artistic means*, 7.11. *morphing / shape transformation into another shape through software /alt.: shape transformation into another shape through line drawing, principles of morphing*" (source: SEP. Art education. (Educational area: Art and culture). Annex Štátny vzdelávací program ISCED 2, Bratislava, 2009).

Within the technical skills a graduate of lower secondary education should have had acquired, the document also mentions the mastery of basic graphic operations on a computer. Document SEP Art and Culture (Educational Area: Art and Culture). Annex ISCED 3, Bratislava, 2011 within the content of education for particular years defines thematic units, of which at least two presume direct application of information technologies in educational process. One of them is a thematic unit called Popular and Mass Culture. Electronic media, which in the thematic subject Electronic media within the content focus of the year "*Experiential and active form of perception of an artwork connected with practical activities focused on learning and mastering means of expressions of art and culture*" within the process and educational output specifies the creation of logos, websites and development of students' internet competences. Thematic unit Principles of popular culture, mass culture, electronic media. Cultural communication. Culture and technology within the content focus of the year "*Interpretation of works of art - continuity of interconnection of various works of art through common themes and elements. Forms and functioning of culture*", in the process of specification and educational output mentions work with Internet via thematic area Analysis and interpretation of products of popular culture (source: SEP Art and Culture (Educational area: Art and Culture). Annex Štátny vzdelávací program ISCED 3, Bratislava, 2011).

### 2 Digital skills of future teachers of Fine Arts from the perspective of higher education

#### 2.1 Research objectives

Aim of our research was to find out what competencies the students - future teachers of Fine Arts studying at the Department of Fine Arts and Education, Faculty of Education, Constantine the Philosopher University in Nitra have, in the field of digital literacy according to self-assessment in relation to expected and supposed experience and skills obtained during secondary and ongoing university studies at bachelor's and master's level with the emphasis on the ICT experience and skills that are absolutely essential for fulfilment of educational goals and content of education in the scope of subjects focused on theory and history of Fine Arts, which the author of this paper teaches at all grades involved in this research.

## 2.2 Hypotheses of research

We assumed that:

1. Respondents - senior students of university study will percentually evaluate the level of their ICT skills higher (as good or excellent) than students of lower-years.
2. Out of all respondents there will be more of those declaring their skills and experience with the basic word processors, spreadsheets and presentation programs than those, who would not declare such skills.
3. Respondents - senior students will percentually declare control of text or bitmap editors, presentation and graphic programs higher than respondents -junior students.
4. The range of proprietary or free software currently available on the market, specified by respondents having experience with, will be wider with senior students than the junior ones.

## 2.3 Research plan and research file

The research was carried out in 2019 with data collection in two terms, during the spring semester of the academic year 2018/2019 (1st, 2nd, and 3rd year of Bc. and 1st year of MA degree Teaching of Fine Arts in combination) and during the winter semester of the academic year 2019/2020 (1st year of Bc. degree Teaching of Fine Arts in combination).

Our research sample consisted of 98 respondents, full-time students in the study program Teaching of Fine Arts in combination. 64 students studying in the academic year 2018/2019, particularly 23 students in the 1st year of Bc. degree, 18 students in the 2nd year of Bc. degree, 13 students in the 3rd year of Bc. degree, 10 students in the 1st year of MA degree, and 34 respondents studying in the academic year 2019/2020 in the 1st year of Bc. degree.

## 2.4 Research methods

The method of data collection was an anonymous questionnaire in printed form containing 10 items, 5 with closed and 5 with partially opened questions. The data collection was carried out by the author of this paper in a limited period of time within the seminars in compulsory subjects intended for smaller groups of students, in order to ensure the largest possible number of respondents of researched group. The introductory 4 items of the questionnaire were devoted to the basic selection characteristics, used to determine the affiliation of a respondent to the relevant study program, year of study, focus on previous completed secondary education, gender and the region of permanent residence. The other items focused on following issues:

1. Level of ICT skills according to self-assessment (being instructed to mark only one out of five options).
2. Way of obtaining acquired ICT skills (being instructed to mark more options).
3. Usage of a computer within the education of a respondent (being instructed to mark only one out of five options).
4. ICT skills, mastery of text or bitmap editors, presentation and graphics programs (being instructed to mark more options by underlining the appropriate answer).
5. Usage of PC in their free time or at work (being instructed to mark more options).
6. Practice or experience in the field of art education or creative action using PC or another type of ICT (being instructed to mark more options).

The method of data processing was a quantitative and qualitative analysis of answers from given questionnaires projected into tables and verbal interpretation of answers, as well as verification or rather evaluation of hypotheses. Due to the nature of the questionnaire including open questions and our ambition to refer to the statements of our respondents (in the tables we use the abbreviation "R") and formulation of their answers, each questionnaire was assigned according to the following key: year number (1, 2, or 3), abbreviation of the degree of education (Bc.

- bachelor's degree, MA - master's degree), serial number (1 - random serial number of the respondent in the given group to process data questionnaire). Due to the fact that we collected the data during two academic years, to be able to distinguish the respondents - students of the 1st year Bc. we used letter "a" in one group of our respondents. Our questionnaires are therefore referred to as: 1Bc1 to 1Bc34, a1Bc1 to a1Bc23, 2Bc1 to 2Bc18, 3Bc1 to 3Bc13, 1MA1 to 1MA10.

## 3 Research results

As mentioned above results of our research are provided in quantitative and qualitative level in connection with selected items of given questionnaire and by evaluation of previously assessed hypotheses. Each table provides information about the number of respondents in each year. For clearer preferences of certain groups in selected tables (No. 1, 2, 3, 6) numeric data altogether with the percentage are highlighted in italic and bold font. The first table shows respondents' secondary education (see Table 1).

Table 1: Respondents' secondary education

Respondents' secondary education	1. Year Bc. 2019 / 2020	1. Year Bc. 2018 / 2019	2. Year Bc. 2018/ 2019	3. Year Bc. 2018/ 2019	1. Year MA 2018 / 2019	Altogether
	34 R	23 R	18 R	13 R	10 R	98 R
a) Four year grammar school	9	7	4	1	1	22
b) Eight year grammar school	2	2	0	3	0	7
c) Other type of grammar school i.e. 5-year bilingual etc.	0	0	0	0	1	1
d) Secondary vocational school with the focus on artistic orientation	15 <i>44,11%</i>	9 <i>39,13%</i>	11 <i>61,11%</i>	8 <i>61,53%</i>	6 <i>60%</i>	49 <i>50%</i>
e) Secondary vocational school with no focus on artistic orientation	8	5	3	1	2	19

Source: Own arrangements, 2020

Points d) and e) of Table No.1 are provided with additional information about secondary school's specialization (the figure shows the number of graduates):

1st year Bc. 2019/2020 - Teacher Training in Early childhood education and Tutoring 5, Hotel Academy 1, Business Academy 1, Secondary Medical School 1, Promotional Graphics 4, Graphic Design 3, Advertising 2, Furniture and Interior Design 2, Digital Media Graphics 1, Unspecified artistic orientation 3.

1st year Bc. 2018/2019 - Teacher Training in Early childhood education and Tutoring 2, Secondary School of Veterinary Medicine - Cynology 1, Secondary School of Civil Engineering 1, Economics and Tourism 1, Promotional Art 1, Graphic Design 4, Restoration of Old Books and Print 1, Photographic Design 1, Digital Media Graphic Designer 1, Unspecified artistic orientation 1.

2nd year Bc. 2018/2019 - Pedagogical Academy 1, Secondary Medical School 1, Management of regional tourism 1, Promotional Graphics 3, Graphic Design 1, Design and shaping

of wood 1, Photographic Design 2, Applied arts painting 1, Unspecified 3.

3rd year Bc. 2018/2019 - Secondary Vocational school - hair cosmetics, hairdressing 1, Promotional art 2, Promotional graphics 1, Photographic Design 2, Graphic and Spatial design 2, Advertising Creation 1.

1st year MA 2018/2019 - Teacher Training in Early childhood education and Tutoring 2, Promotional Graphics 3, Promotional Art 2, Unspecified artistic orientation 1.

Our first hypothesis followed the level of digital competencies in various years of university study based on self-assessment assuming that respondents - senior students will evaluate level of their ICT skills as good and excellent percentually higher than junior students. The results in quantitative form are presented in Table No. 2. Our first hypothesis was supported by our research and the results brought several interesting findings. In terms of percentage, the most respondents evaluating their ICT skills as good are in the group of 3rd year students of Bc. degree and 1st year of MA degree. However, it is surprising that not a single respondent from the group of 1st year of MA degree students evaluates their ICT skills as excellent. By contrast 2 out of 10 think, their ICT skills are at beginner's level. Most respondents evaluating their ICT skills as excellent are in the group of 3rd year students of Bc. degree. We were also surprised by the high percentage of respondents who in the 1st and 2nd year of Bc. degree evaluated their level of ICT skills as beginners. 1 respondent in the 1st year of Bc. degree even stated that he does not master work on the computer at all. Current results of self-assessed ICT skills of our students were compared with the results of our research carried out with students - future teachers of fine arts in combination in the academic year 2012/2013. Results are presented in Table No. 3. In terms of percentage those who assessed their ICT skills as good in 2013 in the group of all respondents is identical with the result from 2019. In 2019, compared to 2013, the percentage of those who evaluated their ICT skills as excellent was significantly lower, but on the contrary, the percentage of those who evaluated their ICT skills as beginners increased. These results, however, correspond with the findings presented by Vešić in his publication *Digital Literacy in Slovakia 2020*, in the chapter called "Adapting to modern ICT - the situation is getting more complicated" (Vešić, 2020, p. 5).

The second hypothesis followed the control of basic word and spreadsheet processors, presentation programs. We assumed that in the group of all respondents will be more of those declaring their skills and experience with basic word and spreadsheet processors, presentation programs than those not declaring such skills. Our hypothesis was supported by our research. As many as 96.94% of all respondents declared control of Microsoft Office (Word, Excel), in the group of the 1st year also in the 3rd year of Bc. degree of the academic year 2018/2019 it was 100% respondents. Microsoft Office PowerPoint presentation program was mastered by fewer respondents, but it was pleasing to find out that the percentage of respondents who master work with this program is in the 3rd year of Bc. degree and 1st year. of MA degree higher than in lower years (see Table 6).

Table 2: Respondents' level of ICT skills according to their self-assessment (questionnaire's item No. 5)

Respondents' level of ICT skills according to their own self-assessment	1. Year Bc. 2019 / 2020	1. Year Bc. 2018 / 2019	2. Year Bc. 2018 / 2019	3. Year Bc. 2018 / 2019	1. Year MA 2018/ 2019	Altogether
	34 R	23 R	18 R	13 R	10 R	98 R
a) PC work – beginner	8 23,52%	1 4,34%	4 22,22%	0	2 20%	15 15,32%

ginner level						
b) I have good PC skills	21 61,76%	17 73,91%	12 66,66%	10 76,92%	8 80%	68 69,38%
c) I have excellent PC skills	4 11,76%	5 21,73%	2 11,11%	3 23,07%	0	14 14,28%
d) I do not know how to use PC but I would like to.	1 2,94%	0	0	0	0	1 1,02%
e) I do not know how to use PC and I do not mind	0	0	0	0	0	0

Source: Own arrangements, 2020

Table 3: Results of a survey from 2013 with an overview of students' level of ICT skills according to their self-assessment

Students ICT skills according to their own self-assessment	1. Year Bc.	2. Year Bc.	3. Year Bc.	1. Year Mgr.	Altogether
a) PC work – beginner level	2 4,5%	2 6,1%	2 5,6%	4 19%	10 7,5%
b) I have good PC skills	31 70,5%	17 51,5%	32 88,9%	13 62%	93 69,4%
c) I have excellent PC skills	11 25%	14 42,4%	2 5,5%	4 19%	31 23,1%
Altogether	44	33	36	21	134

Source: Réčka, 2013, p. 85.

Table 4: Method of acquiring digital skills according to students' own opinion (questionnaire's item No. 6)

Method of acquiring digital skills according to students' own opinion	1. Year Bc. 2019/20 20	1. Year Bc. 2018/ 2019	2. Year Bc. 2018/ 2019	3. Year Bc. 2018/ 2019	1. Year Mgr. 2018/ 2019	Altogether
	34 R	23 R	18 R	13 R	10 R	98 R
a) digitals skills acquired during secondary or university studies	28	21	15	11	9	84
b) I took a course focused on PC work	1	0	0	0	0	1
c) digitals skills acquired at work as a part of working process	2	1	0	3	1	7
d) digitals skills acquired thanks to professional help of	14	12	7	3	5	41

family, friends						
e) Self-taught through literature and PC practice	16	10	9	10	2	47

Source: Own arrangements, 2020

The third hypothesis followed the experience and skills of respondents with software relevant within the preparation for the future profession of art teachers which we strive to apply during undergraduate preparation in our educational process. We assumed that the respondents - senior students will to a greater extent declare control of text or bitmap editors, presentation and graphic programs than respondents - junior students. Our hypothesis was supported by our research. It was gratifying to find out percentual distribution of "forces" according to the year of study in point c) Table No. 6 containing proprietary and free software, which we consider adequate in our educational practice (see Tab. No. 6).

Table 5: Application of ICT, specifically PC in the framework of students' education (questionnaire's item No. 7)

Applica-tion of ICT specifically PC in the frame-work of students' education	1. Year Bc. 2019/2020	1. Year Bc. 2018/2019	2. Year Bc. 2018/2019	3. Year Bc. 2018/2019	1. Year MA 2018/2019	Al-to-gether
	34 R	23 R	18 R	13 R	10 R	98 R
a) The PC is my essential ICT tool in education, I use it every day to write seminar work, create graphic designs, edit photos, etc	17	13	10	9	7	56
b) I do not use PC every day, only when it is necessary	16	9	8	4	3	40
c) if AIS would not be implemented at university neither PC nor ICT would be needed for my education	1	1	0	0	0	2

Source: Own arrangements, 2020

Our fourth hypothesis followed the respondents' experience with available software assuming the range of proprietary or free software currently available on the market, specified by respondents having experience with, will be wider with senior students than the junior ones. Our hypothesis was not supported by our research, on the contrary, most software, except the ones specified in our questionnaire, were stated by students of the 1st year of Bc. degree. Respondents, especially in the group of students of the 1st year of Bc. degree in the academic year 2019/2020 in an item f) specified a number of proprietary and freely distributable software they master listed in alphabetical order: Adobe Animate, Adobe Premier, CAD, Clip Studio Paint, Corel Painter, FireAlpaca, Hores, Krita, Omega, Paint Tool SAI, Sculpttris, SketchBook, SketchUp, Rebelle, TV Paint, Zoner Callisto. Among which are software developed for areas our respondents might not need in their future profession as art teachers (eg. CAD for technical departments, Omega accounting program or Hores hotel management system, SketchUp for

architects and designers), but it is satisfying to know, that several of our respondents acquired digital competencies related to their professional orientation during their secondary school studies.

Respondents of the 1st year of bachelor's degree in the academic year 2018/2019 in an item f) stated the following software: Adobe Flash, Krita, Lumion, Rebelle 3, Rhinoceros, SketchUp. Respondents of the 2nd year of bachelor's degree in the academic year 2018/2019 in an item f) stated the following software: Krita, Rhinoceros, Zoner Photo Studio, Paint.NET, Pixlr, piZap. Respondents of the 3rd year of bachelor's degree in the academic year 2018/2019 in an item f) stated the following software: Adobe After Effects, Adobe Photoshop Lightroom, LibreOffice Krita, Rebelle, 3D Studio Blender.

Respondents of the 1st year of master's degree in the academic year 2018/2019 in an item f) stated the following software or applications: CAD systems, digiCamControl, Microsoft Sketchpad, Picassa, Rhinoceros.

Table 6: Computer skills, control of text or bitmap editors, presentation and graphic programs according to students' own expression (questionnaire's item No. 8)

Computer skills, control of text or bitmap editors, presentation and graphic programs according to students' own expression	1. Year Bc. 2019/2020	1. Year Bc. 2018/2019	2. Year Bc. 2018/2019	3. Year Bc. 2018/2019	1. Year MA 2018/2019	Al-to-gether
	34 R	23 R	18 R	13 R	10 R	98R
a)Microsoft Office Word, Open Office Writer, Excel	33 97,05%	23 100%	17 94,44%	13 100%	9 90%	95 96,94%
b)OpenOffice Imp-ress, Microsoft Office Power-Point	20 58,82%	18 78,26%	10 55,55%	12 92,30%	7 70%	68 69,39%
c)Ado-be Photo-shop, Gimp, Paint. Net, Corel Photo-Paint, Revela-tion Natural Art, Artwea-ver	12 35,30%	13 56,52%	9 50%	11 84,61%	7 70%	52 53,06%
d)Al-chemy, My-paint, Twistedbrush Pro Studio, Dog-waffle, GimpPainter	0	2 8,7%	1 5,55%	1 7,7%	0	4 4,08%
e)Ink-scape, Adobe Illustra-tor, Adobe InDe-sign, Corel-Draw	6 17,65%	9 39,13%	8 44,44%	5 38,46%	6 60%	34 34,7%
f)other, state:	18 52,94%	4 17,39%	6 33,33%	7 53,85%	2 20%	37 37,8%

Source: Own arrangements, 2020

Table 7: Application of ICT (especially PC) by respondents in their free time or at work (questionnaire's item No. 9)

Application of ICT (especially PC) by respondents in their free time or at work	1. Year Bc. 2019 / 2020	1. Year Bc. 2018 / 2019	2. Year Bc. 2018/ 2019	3. Year Bc. 2018/ 2019	1. Year MA 2018 / 2019	Al-together 98 R
a) PC is my necessarily working tool (Word, Excel etc.)	23	21	11	11	10	76
b) In addition to image browsers and virtual galleries, the websites of some galleries also offer various interactive create-ve art activities I also have experience with.	29	21	13	12	9	84
c) I use PC for leisure and cultural activities (eg targeted search of information on Wikipedia, web lexicons, browsing of works of art in virtual galleries, etc.).	27	20	14	13	10	84
d) I use PC for archiving family photos and editing	24	19	14	12	7	76
e) I use PC for obtaining important information (departures of public transports, cinema screenings, theatre performances, news, weather, etc.)	21	16	15	11	10	73

f) I use ICT for online shopping	23	17	14	10	7	71
----------------------------------	----	----	----	----	---	----

Source: Own arrangements, 2020

Respondents, especially in the group of students of the 1st year of bachelor's degree in the academic year 2019/2020 in an item b) specified several applications and platforms they use to communicate with family and friends or photo sharing listed in alphabetical order: Discord, Instagram, Messenger, Pinterest, Snapchat, Viber. In addition to the listed applications in other groups of respondents other applications were specified: Tumblr, WhatsApp. It was an interesting find that none of 98 respondents mentioned the usage of micro blogging social network Twitter to communicate with family and friends, but on the other hand it is mainly popular in the USA.

Table 8: Activities or experience in the field of art education or creative activity using ICT (questionnaire's item No. 10)

Activities or experience in the field of art education or creative activity using ICT	1. Year Bc. 2019 / 2020	1. Year Bc. 2018 / 2019	2. Year Bc. 2018 / 2019	3. Year Bc. 2018 / 2019	1. Year MA 2018 / 2019	Al-together 98R
a) I regularly visit internet / web sites of galleries and museums, offering various forms of art education or virtual tour of collections	4	4	6	2	5	21
b) In addition to image browsers and virtual galleries, the websites of some galleries also offer various interactive create-ve art activities I also have experience with.	1	0	0	0	1	2
c) I have only little experience with virtual galleries and museums	14	12	9	8	1	44
d) I do not have any	11	4	2	2	3	22

experience with galleries and museums websites, I am not used to visiting virtual galleries and museums. I have not tried it yet and do not know how to						
e) I do not have any experience with the websites of galleries and museums, I do not visit virtual galleries and museums as I do not like admiring art through internet, I prefer going to museums in person.	10	4	0	2	0	16
f) I have experience in the field of digital art thanks to freely distributable painting and drawing programs (give examples)	7	9	4	3	2	25

Source: Own arrangements, 2020

Additional information to Table No. 8: Respondents who indicated in an item 9 an option a) specified the following institutions or platforms: 1st year of bachelor's degree 2019/2020: Slovak National Gallery, Slovak National Museum, Academy of Fine Arts.

1st year of bachelor's degree 2018/2019: Online Art Gallery Ateliér Hlavina, Rijksmuseum, Tate, Web of Arts, WikiArt, Jerry Saltz on Instagram, 1340 ART Magazine.

2nd year of bachelor's degree 2018/2019: Flickr, Facebook of Lucia Dovičáková, Sreetart, Web of Art, 500px.

3rd year of bachelor's degree 2018/2019: Albertina Museum, Andy Warhol Museum of Modern Art in Medzilaborce, GOAP / Central Gallery in Prague, Nitra Gallery.

1st year of master's degree 2018/2019: Artlist, Artsy, Bibiana, British Museum, Google Art, Museu Nacional d'Art de

Catalunya, Nitra Gallery, Slovak National Gallery, Web Art, Wiki Art.

We have to note, that the number of 21 respondents who indicated an option b) is relatively small compared to the total number of 98 respondents, but at the same time students declaring regular visits to internet/web galleries and museums offering various forms of art education or virtual tours of art collections, have a good knowledge and visit websites with valuable content beneficial for their professional development.

We were interested in correlations between self-assessment of ICT skills and the answers to other items, especially the way of acquiring such skills and concretization of controlled text or bitmap editors, or presentation and graphic programs within respondents who rated their ICT skills as excellent and vice versa as beginners or being completely absent.

Firstly we analyze a group of respondents rating their ICT skills as excellent.

In the 1st year of Bc. studies in the academic year 2019/2020, out of 34 respondents 4 stated having excellent ICT skills.

Respondent 1Bc4 a man from Nitra region, studying Teaching of Fine Arts in combination with English language and literature, graduate of a secondary vocational school with a focus on promotional graphics, stated in an item 6 having acquired his ICT skills during secondary school and university studies and also stated being self-taught. In an item 7 he indicated an option a). Spectrum of programs he masters according to his evaluation is wide, he marked Microsoft Office Word, Microsoft Office PowerPoint, Adobe Photoshop, Paint.net, Corel Photo-Paint, Adobe InDesign, CorelDraw, in an item f) he listed proprietary software Corel Painter Essentials and TV Paint Animation. In an item 9 he marked options a), b), c), and e), in an item 10 he chose an option c) declaring having very little experience with visits to virtual galleries and museums.

Respondent 1Bc17 a woman from Nitra region, studying the same study program as respondent 1Bc4, Four-year Grammar school graduate, marked only an option e) in an item 6, an option a) in an item 7. However, in other items her answers unconvincingly confirm having excellent ICT skills. In an item 8 she marked only an option a) containing Microsoft Office Word processors, Open Office Writer and Excel spreadsheets, she did not use an option of any preference, neither did she give examples in an option f). In an item 9, she indicated all the options. In an item 10 she decided to indicate an option e).

Respondent 1Bc18 a woman from Košice region, studying Teaching of Fine Arts in combination with Aesthetics, Secondary pedagogical school graduate with the focus on Early childhood education and Tutoring, marked in an item 6 options a), d) and e), declaring having mastered her ICT skills in addition to secondary, university studies and self-study also thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option a). This respondent is also disputable in regard to her self-assessment stating her ICT skills as excellent as in an item 8 she marked options a) and b) basic word processors, spreadsheets and presentation programs, likewise the respondent 1Bc17, she did not give examples of any other software in an item f). In an item 9 she marked all the options. In an item 10 she decided to mark options d) and e), which from the point of view of self-assessment, current study program and application of ICT in her leisure time or at work was a surprising find.

Respondent 1Bc29 a woman living permanently in Serbia, studying Teaching of Fine Arts in combination with Psychology, Secondary school graduate with a focus on Graphic design, marked options a), d) and e) in an item 6, declaring having mastered her ICT skills in addition to secondary, university studies and self-study also thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option a). In an item 8, she circled all the options except d) and used an

option to underline appropriate answers marking Microsoft Office Word, Excel, Microsoft Office PowerPoint, Adobe Photoshop, Adobe Illustrator, Corel Draw and in an item f) mentioned animation program Adobe Animate. In an item 9 she circled all the options except f) and in an item 10 she decided to mark an option e).

In the 1st year of Bc. degree in the academic year 2018/2019 out of the total number of 23 respondents, five stated having excellent ICT skills.

Respondent a1Bc3 a woman from Nitra region, studying Teaching of Fine Arts in combination with Mathematics, Eight-year Grammar school graduate, marked in an item 6 options a), d) and e) declaring having mastered her ICT skills in addition to secondary, university studies and self-study also thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option a). In an item 8, she marked an option a), b), c) and e) and in the group of listed software she underlined only Adobe Photoshop and Gimp. As one of the few respondents declaring not using ICT to communicate with family and friends neither through social networks nor via e-mail, this respondent did not mark in an item 9 options b) or e) meaning she uses her ICT skills only in the field of education and work. In an item 10 she marked options c), e) and f) having experience with freely distributable software Gimp and Inkscape.

Respondent a1Bc7, a woman from Nitra region, studying Teaching of Fine Arts in combination with English language and literature, Secondary Industrial School of Civil Engineering graduate, stated having acquired her ICT skills during secondary and university studies and being self-taught. In an item 7 she marked an option a). In an item 8 except an option d), she marked all the other options without underlining any preferred ones, in an option f) she marked mastery of 3D computer programs popular among designers, engineers and architects: SketchUp, Lumion and Rhinoceros, likely related to her professional focus and experience at secondary school. In an item 9 she marked all the options except an option d). As one of the few respondents in an item 10, she marked an option a) and stated regular visits to Web Arts portal (available on Internet: <https://www.webumenia.sk/>). It is an online catalogue of works of art from different collections of Slovak galleries registered in the Central Register of Works of Fine Arts, created and managed by the platform of the Slovak National Gallery - *lab.SNG*, exploring the possibilities of using digital technologies in gallery and museum practice. The respondent also mentioned a regular visits to Dutch museum Rijksmuseum web portal, which in 2015 launched a series of online catalogues of collections within the project of Early Netherlandish Paintings (available on the Internet: <https://www.rijksmuseum.nl/en/research/online-collection-ca> talogue).

Respondent a1Bc15 a man from Nitra region, studying Teaching of Fine Arts in combination with English language and literature, Secondary vocational art school with a focus on Graphic design graduate, marked in an item 6 only an option e) claiming having acquired excellent ICT skills as being self-taught. In an item 7 he marked an option a). In an item 8 he marked only the possibility a) controlling the basic word and spreadsheet processors, in other items he used the preference of several programs: Microsoft Office PowerPoint, Adobe Photoshop, Adobe Illustrator, Adobe InDesign. In an item 9 he marked only an option a) and f) meaning not using ICT (especially computer) to communicate with family and friends. In an item 10 he marked an option a) and stated regular visits to non-profit institution Visual Art Encyclopaedia WikiArt, which makes art from all over the world accessible online (available online: <https://www.wikiart.org/en>).

Respondent a1Bc16, a woman from Nitra region studying Teaching of Fine Arts in combination with Psychology, Secondary Vocational School of Transport and Services with a focus on Digital media graphics, marked an item 6 as well as an option 7 a). In an item 8 she did not mark any option as a whole, but almost in every group of options (except point d) she

underlined selected programs: Microsoft Office Word, Microsoft Office PowerPoint, Adobe Photoshop, Adobe Illustrator, Adobe InDesign. In an item f) she listed Adobe Flash Player animation and movie viewing software. In an item 9 she marked all the options including an item c) using ICT for leisure and cultural activities (including viewing works of art in virtual galleries), in an item 10 she decided to mark an item c) having little experience with visiting virtual galleries and museums.

Respondent a1Bc22, a woman from Žilina region, studying Teaching of Fine Arts in combination with Pedagogy, Secondary vocational art school with focus on Graphic design graduate, declared having acquired her ICT skills during secondary and university studies and by being self-taught. In an item 7 she marked an option a). In an item 8 she marked options a) and c) as a whole without underlining any program preferences and marked none in point f). Regarding this fact as well as the answers of the following items of our questionnaire we assume that this respondent overestimated her ICT skills rating them excellent. In an item 9 she marked options a), b) and c), in point b) she underlined usage of social networks for communication with family and friends. In an item 10 she decided to mark an item c) having little experience with visiting virtual galleries and museums, although in an item 9 she marked an option c) using ICT for leisure and cultural activities (viewing works of art in virtual galleries included).

In the 2nd year of Bc. degree in the academic year 2018/2019, out of the total number of 18 respondents, two declared having excellent ICT skills.

Respondent 2Bc12 a woman from Žilina Region, declared having acquired her ICT skills during secondary and university studies, in an item 7 she marked an option a). In an item 8 she marked the programs Microsoft Office Word, Excel, Microsoft Office PowerPoint, Adobe Illustrator, and in point f) she stated Czech program for editing and organizing photos for Windows, Zoner Photo Studio. The respondent studies Teaching of Fine Arts in combination with Mathematics and is a Four-year grammar school graduate. In an item 9 she marked all listed options. However, in an item 10 she marked an option d).

The second respondent in the 2nd year 2Bc15 a man from Nitra region, also declared having acquired his ICT skills during secondary and university studies and by being self-taught. Unfortunately, he did not specify the secondary art school he graduated from. The range of programs he marked was relatively small including only: Microsoft Office Word, Adobe Photoshop and Gimp. In an item 8 he did not mark any other options. In an item 9 he marked options b), c), d), f). In an item 10 he marked an option a) and stated regular visits to community photo and video sharing website Flickr and social network for photo sharing 500px. The respondent studies Teaching of Fine Arts in combination with Technology.

In the 3rd year of Bc. degree in the academic year 2018/2019, out of the total number of 13 respondents in this group, three declared having excellent ICT skills.

Respondent 3Bc2 a man from Trenčín region, studying Teaching of Fine Arts in combination with Psychology, Secondary vocational art school with a focus on Promotional graphics graduate, stated having acquired his ICT skills during secondary and university studies and by being self-taught. In an item 7 he marked an option a). In an item eight, he marked options a), b), c) and e) as a whole, in point f) he stated control of Rebelle digital painting software and Adobe After Effects motion graphics and visual effects software. These software enable creative user with advanced ICT skills to create unique works of art. In an item 9 the respondent marked all the options and his ICT skills according to an item 10 of our questionnaire he marked an option a). He also educates himself in the field of theory and history of art by regular visits to gallery and museum websites offering various forms of art education such as: Vienna Albertina Museum, Central Gallery in Prague, Nitra Gallery, Andy Warhol Museum of Modern Art in Medzilaborce. Both



above mentioned Slovak institutions offer various educational activities via their website within the gallery or museum pedagogy. Nitra Gallery has many works from its collection available online via Virtual Gallery (available on Internet: <https://nitrianskagaleriala.sk/publ-cinnost/virtualna-galeria/o-virtualnej-galerii/>) and during an emergency situation due to COVID-19 also created and made accessible online a series of creative activities called Gallery in Your Home (available on Internet: <https://nitrianskagaleriala.sk/vzdelavanie/galeria-u-vas-doma/>).

Respondent 3Bc5 a man from Banská Bystrica region, studying Teaching of Fine Arts in combination with History, Eight-year grammar school graduate, marked only an option e) in an item 6 claiming having acquired his excellent ICT skills by being self-taught. Group of respondents rating their ICT skills as excellent, he was one of the two identifying in an item 7 an option b) stating not using a computer for education every day only when necessary. In an item 8 he marked options a) and b) as a whole without underlining any preferences, in an item f) he listed the following open source software: Krita raster graphics editor, Blender software for modelling and rendering 3D computer graphics, animations and movies using various techniques, and office LibreOffice package. In an item 9 he marked all the options from a) to f). In an item 10 he marked only an option f) gaining experience in digital art via freely distributable painting and drawing programs mentioning Krita software again, professional open source painting program and open Alchemy project focused on exploration of possibilities of digital art especially in the field of creating sketches and drawings.

Respondent 3Bc11 a woman from Trenčín region, studying Teaching of Fine Arts in combination with Pedagogy, Eight-year grammar school graduate, stated having acquired her ICT skills during secondary and university studies, and by being self-taught. From the group of all respondents who rated their ICT skills as excellent, she was one of the two respondents (both 3rd year Bc. degree students) in an item 7 option b) stating not using a computer for education every day only when necessary. In an item 8 she marked points a), b), c) as a whole without any preference of selected software, neither had she specified her skills to any particular software. In an item 9 she marked only options c) and e) putting herself among those not using ICT especially PC to communicate with family and friends. In an item 10 she marked options c) and f) stating the name of commercial graphic program Adobe Photoshop, although the question was related to experience in the field of digital creation via free distributable painting and drawing programs. This fact in the context of her answers significantly reduces reliability of her self-assessed ICT skills as being excellent.

In the group of respondents - students of the 1st year of master's degree none of the respondents evaluated and marked their ICT skills as excellent.

We were also interested in correlations of the answers of those respondents who evaluated their skills as beginners.

In the 1st year of Bc. degree in the academic year 2019/2020 out of the total number of 34 respondents, eight evaluated their ICT skills as beginners.

Respondent 1Bc1 a woman from Nitra region, studying Teaching of Fine Arts in combination with Psychology, Secondary vocational medical school graduate, marked options a) and d) in an item 6 declaring having acquired her ICT skills during secondary and university studies and thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option b). In an item 8 she marked options a) and b) as a whole without any preference of selected programs. In an item 9 she marked options c), d) and f) and in an item 10 marking an option e) she confirmed the consistency of her answers by marking an option a) in an item 5.

Respondent 1Bc6 a woman from Nitra region, studying Teaching of Fine Arts in combination (not stating her

combination), Business academy graduate, marked options d) and e) in an item 6 declaring having acquired her ICT skills thanks to professional help of her family, relatives and friends and also by being self-taught. In an item 7 she marked an option b). In an item 8 she marked an option a) as a whole without any preference. In an item 9 except an option a) she marked all the options and in an item 10 she marked an option a). According to the fact she did not mention any web gallery or museum we consider her answer as unconvincing.

Respondent 1Bc13 a woman from Prešov region, studying Teaching of Fine Arts in combination with Ethics, Secondary art school with a focus on Graphic and Spatial design graduate, marked an option a) in an item 6. As one of the two respondents out of a total number of 98 respondents she marked in an item 7 option c) claiming that if AIS had not been implemented at university she would not need ICT for education at all. In an item 8 she marked an option a) as a whole without any preference. In an item 9 she only marked an option f) claiming using ICT only for online shopping. Marking an option d) in an item 10 is in accordance with other answers. The fact that she studied at the Secondary school with a focus on Graphic and Spatial design calls into question her education as she must have mastered good ICT skills.

Respondent 1Bc20 a woman from Banská Bystrica region, studying Teaching of Fine Arts in combination with Pedagogy, Secondary vocational school graduate with a focus on Furniture and Interior design, marked options a) and d) in an item 6, declaring having acquired her ICT skills during secondary and university studies and thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option a) in an item 8 she also marked an option a) as a whole without any preference for selected software. In an item 9 except for an option e) she marked all the options, in an item b) she underlined Facebook and e-mail as her means of communication. In an item 10 she marked an option c). Likewise the 1Bc13 respondent, the question arises about the application of her ICT skills during secondary school studies. There are currently more freely distributable graphics programs on the market focused on drawing, painting and 3D modelling, suitable for both fields of study which obviously within the secondary education of these two respondents were not applied.

Respondent 1Bc22 a woman from Nitra region, studying Teaching of Fine Arts in combination with Technology, Secondary art school graduate (the respondent did not state her specialization), marked an option a) in an item 6. In an item 7 she marked an option b) declaring not using the computer in education every day, only when necessary. In an item 8 she marked an option a) as a whole without the any preference of selected programs, in an item b) she underlined Microsoft Office PowerPoint. In an option 9 she marked options a) and c) but these answers contradict the previous ones as well as marking an option d) in an item 10.

Respondent 1Bc23 a man from Nitra region, studying Teaching of Fine Arts in combination with Technology, Secondary art school graduate (the respondent did not state his specialization) marked an option a) in an item 6. Likewise the respondent 1Bc22 he marked an option b) in an item 7. In an item 8 he marked options a) b) and e) as a whole without any preference considering his answer unreliable, as computer programs listed in an item e) Inkscape, Adobe Illustrator, Adobe InDesign, CorelDraw require good ICT skills. In an item 9 he marked options d) e) and f). In an item 10 by marking an option c) he declared having little experience with visiting virtual galleries and museums.

Respondent 1Bc25 a woman from Banská Bystrica region, studying Teaching of Fine Arts in combination with Psychology, Secondary art school graduate with a focus on Promotional graphics, marked in an item 6 and 7 an option a). In item 8 she marked options a) b), c) and e) and underlined the following programs: Microsoft Office Word, Microsoft Office PowerPoint, Adobe Photoshop, CorelDraw. In an option f) she added an



application WO Mic - a virtual microphone device. In an item 9 except for an option f) she marked all the options and in an item c) she underlined targeted search for information on Wikipedia. In an item 10 she marked an option d).

Respondent 1Bc30 a woman from Nitra region, studying Teaching of Fine Arts in combination with Psychology, Four-year grammar school graduate, marked in an item 6 an option e) declaring being self-taught. Likewise the other three respondents in this group of ICT beginners in the 1st year of Bc. degree, marked in an item 7 an option b). In an item 8 she marked an option a) as a whole without any preference. In an item 9 she marked options a) and c) but her choice of an answer d) in an item 10 is not entirely in accordance with her choice.

In the 1st year of Bc. degree in the academic year 2018/2019, out of the total number of 23 respondents in this group, only one evaluated her ICT skills as a beginner.

Respondent a1Bc17 a woman from Nitra region, studying Teaching of Fine Arts in combination with Physical education, Four-year grammar school graduate, marked in an item 6 an option a). Likewise the other four respondents in the group of beginners in ICT in the 1st year of Bc. degree in an item 7 she marked an option b). In an item 8 she marked options a) and b) as a whole without any preference to selected programs. In an item 9 except for an option f) she marked all of the options. In an option b) questioning the usage of ICT for communication with family and friends, she added usage of Instagram. In an item 10 she choose an option d) declaring absence of any virtual experience with galleries and museums. In an item f) she declared having experience with freely distributable painting and drawing programs naming "Kryta" and "Rebelle", but the reliability of such statement is questionable as an easily remembered name of a professional open source painting program Krita was spelled incorrectly (assuming she only heard about it) and the painting program Rebelle is not freely distributable software. It is a very successful affordable Slovak commercial product, a unique painting software enabling to create works of art with procedural and final effects of wet and dry techniques (the respondent probably only heard about it).

In the 2nd year of Bc. degree in the academic year 2018/2019, out of the total number of 18 respondents in this group, four respondents evaluated their ICT skills as beginners.

Respondent 2Bc2 a woman from Trnava region, studying Teaching of Fine Arts in combination with Pedagogy, Secondary art school with a focus on Promotional graphics graduate, marked in an item 6 options a), d) and e) declaring having mastered her ICT skills in addition to secondary, university studies and self-study also thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option b). In an item 8 she marked an option a) as a whole without any preference although she had a choice of choosing other software. She listed some of them in an option f) set to specify other programs. She listed Inkscape, CorelDraw and Adobe Photoshop. In an item 9 she marked all of the options. Reliability of her self-assessment reduces an answer to an option f) of an item 10, where she declares having experience with freely distributable painting and drawing programs, but states proprietary CorelDraw software, however, she also added Free Trials.

Respondent 2Bc4 a man from Banská Bystrica region, studying Teaching of Fine Arts in combination with Pedagogy, Secondary art school graduate (he did not state his specialization in the questionnaire) marked in an item 6 an option e) claiming being self-taught. In an item 7 he marked an option a). In an item 8 he marked only an option a) as a whole without any preference. In an item 9 he marked options c), d) and e) in an item 10 by choosing an option c) he declares having little experience with visits to virtual galleries. In an option f) he states having experience with freely distributable software GIMP, Krita and free online photo editor PIXLR.

Respondent 2Bc14 a man from Nitra region, studying Teaching of Fine Arts in combination with Ethics, Four-year grammar school graduate, declared having acquired his ICT skills during secondary and university studies, and by being self-taught. In an item 7 he marked an option b). In an item 8 he did not mark any of the options as a whole, but underlined Microsoft Office Word, Microsoft Office PowerPoint as his preference. In an option f) he stated the name of a logical computer game for one player called Minesweeper. By adding an emoticon he expressed his awareness towards his answer. In an item 9 he marked options d) and f). He impressed us by choosing an option a) in an item 10 by declaring regular visits to website galleries. According to his answers he visits Art Web (we mentioned this platform in connection with respondent a1Bc7 stating excellent ICT skills) Facebook page of a professional painter Lucia Dovičáková and a website of Dutch private initiative Streetart (for more details see [www.streetart.com](http://www.streetart.com)) dealing with mapping and selling (not only) street art but also organizing cultural events, workshops and exhibitions.

Respondent 2Bc16 a woman from Košice region, studying Teaching of Fine Arts in combination with Hungarian language and literature, Four-year grammar school graduate, marked options a) and d) in an item 6, declaring having mastered her ICT skills in addition to secondary, university studies and self-study also thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option a). In an item 8 she marked only an option a) as a whole without any preference. In an item 9 she marked options a), b), c) and f) but in an item 10 by choosing an option c) she declared having little experience with virtual galleries and museums.

In the group of respondents - students of the 3rd year of Bc. degree, none of the respondents evaluated and marked their ICT skills as beginners.

In the 1st year of MA degree in the academic year 2018/2019, out of the total number of 10 respondents in this group, two respondents declared being beginners.

Respondent 1MA6 a woman from Banská Bystrica region, studying Teaching of Fine Arts in combination with English language and literature, Literary private grammar school graduate, marked an option a) in an item 6 and in an item 7 an option b). In an item 8 she did not mark any of the options as a whole, in an option f) she listed Microsoft Office Word and Google's Freeware for managing, cataloguing, editing and viewing Picasa photos and images, which in 2016 discontinued to provide these services and launched a new one called Google Photos. In an item 9 she marked all of the options, in an option c) she underlined targeted search for information and viewing works of art in virtual galleries. In an item 10 she marked an option a) stating regular visits to Art Web site (we wrote about in relation to respondents a1Bc7 having excellent ICT skills) and 2Bc14 (being a beginner), Nitra Gallery website (we wrote about in relation to respondent 3Bc2 having excellent ICT skills) and as the only one out of all 98 respondents stated regular visits to International House of Art website for Children Bibiana (see [www.bibiana.sk](http://www.bibiana.sk)). It is a cultural institution covering and implementing a wide range of activities focused on art education, including the prestigious international competition exhibiting original illustrations of children's books in "Biennial of Illustrations Bratislava, organized since 1967.

Respondent 1MGr9 a woman from Trnava region, studying Teaching of Fine Arts in combination with Hungarian language and literature, Secondary art school with a focus on Promotional graphics graduate, marked an option a) in an item 6, an option b) in an item 7. In an item 10 she marked options a) and c) as a whole without any preferences. In an item 9 she marked options a), b), c) and e) in an item 10 she marked an option b) as one of two respondents out of 98, but her choice of having experience with web galleries offering virtual tours and various interactive artistic activities without naming even one of them, raises doubts about reliability of her response.

In the group of all 98 respondents, only one assessed her ICT competencies as absent and in an item 5 she marked an option d) claiming not being able to work on PC at all, but would like to master some skills.

It is a respondent 1Bc27 a woman from Košice region, student of the 1st year of Bc. degree studying Teaching of Fine Arts in combination with History, Four-year grammar school graduate. In an item 6 she marked options a) and d) declaring having mastered her ICT skills in addition to secondary, university studies and self-study also thanks to the professional help of her family, relatives and friends. In an item 7 she marked an option a). In an item 8 she marked options a) and c) as a whole without any preference. In an item 9 she marked options b), c), d) and e) but in an item 10 by choosing an option c) she declared having little experience with virtual galleries and museums. We noticed the similarity of her profile with the profile of respondent 2Bc16 in many indicators.

### 3 Conclusion

Our research investigated the competencies of our students - future teachers of fine arts in the field of digital literacy according to their own self-assessment in relation to expected and anticipated experience and skills acquired during secondary and ongoing university studies at bachelor's and master's degree with an emphasis on experience and skills which are absolutely necessary for the fulfilment of educational goals and content of education within the subjects focused on theory and history of fine arts, the author of this paper teaches at the stated workplace in all grades involved in this research. Students come from different types of secondary schools from different regions having different initial knowledge, experience and skills. The results of our research proved that in relation to the competencies we monitored, the type of secondary school nor the affiliation to the region of permanent residence of our respondents plays a role. The results of our research are a great impulse for us to create such content and forms of education, focused on development of digital competencies in relation to effective application of available ICT with an emphasis on art education. Our goal is to prepare the future teachers of fine arts for an educational practice having adequate competencies for critical thinking on the one hand, and for finding information in the field of art culture and selecting suitable freely distributable software available on the market on the other, nevertheless to acquire all necessary skills during their pregradual training for creative usage of tools offered by such software.

### Literature:

1. Hupková, M. – Petlák, E.: *Sebareflexia a kompetencie v práci učiteľa*. Bratislava : Iris, 2004. 135 p. ISBN 80-89018-77-7.
2. *Recommendation of the European Parliament and of the Council of 18 December 2006 on Key Competences for Lifelong Learning (2006/962 / ES)*. Official Journal of the European Union. OJ L 394/10. SK. 30.12.2006. [Online],[cited on 10/06/2020]. Available at: <http://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2006:394:0010:0018:en:PDF>
3. Réčka, A.: *Digital literacy in the context of the university preparation of Fine Arts teachers*. In *Current Trends in Educational Science and Practice V.*, Ústí nad Labem : Univerzita J. E. Purkyně, 2013. ISBN 978-80-7414-683-1, pp. 79-87.
4. *Štátny vzdelávací program. Výtvarná výchova*. (Vzdelávacia oblasť: Umenie a kultúra). Príloha ISCED 2, Bratislava, 2009. [Online],[cited on 10/06/2020]. Available at: [http://www.statpedu.sk/files/documents/svp/2stzs/isced2/vzdelavacie\\_oblasti/vytvarna\\_vychova\\_isced2.pdf](http://www.statpedu.sk/files/documents/svp/2stzs/isced2/vzdelavacie_oblasti/vytvarna_vychova_isced2.pdf).
5. *Štátny vzdelávací program. Umenie a kultúra* (Vzdelávacia oblasť: Umenie a kultúra). Príloha ISCED 3, Bratislava, 2011. [Online],[cited on 10/06/2020]. Available at: [http://www.statpedu.sk/files/documents/svp/gymnazia/vzdelavacie\\_oblasti/umenie\\_kultura\\_isced3.pdf](http://www.statpedu.sk/files/documents/svp/gymnazia/vzdelavacie_oblasti/umenie_kultura_isced3.pdf).

6. Veľšic, M.: *Digitálna gramotnosť na Slovensku 2013*. Správa z výskumu. Bratislava : Inštitút pre verejné otázky, 2013. 15 p. ISBN 978-80-89345-40-3.

7. Veľšic, M.: *Digitálna gramotnosť na Slovensku 2020*, Bratislava: Inštitút pre verejné otázky, 2020. 17 p. ISBN 978-80-89345-81-6, © 2006 Inštitút pre verejné otázky, available online: [http://www.ivo.sk/buxus/docs/publikacie/subory/Digitalna\\_gramotnost\\_2020.pdf](http://www.ivo.sk/buxus/docs/publikacie/subory/Digitalna_gramotnost_2020.pdf)

**Primary Paper Section: A**

**Secondary Paper Section: AM**