

RELATION BETWEEN THE IMPLEMENTATION FREQUENCY OF REFLEXIVE METHODS AND SELF-EFFICACY OF LOWER SECONDARY SCHOOL TEACHERS

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Abstract: The aim of this paper is to analyse the relations between the frequency of reflexive method implementation by teachers and their self-efficacy. To find out the frequency of reflexive method implementation by teachers our own scale questionnaire was used. Its internal structure was analysed using exploratory factor analysis which showed the existence of two dimensions (traditional and non-traditional reflective methods). Reliability of dimensions was evaluated using Cronbach's alpha and the result varied between 0.71 and 0.73. To map self-efficacy of teachers, OSTES (The Ohio State Teacher Efficacy Scale) was used; and it was adapted to Slovak conditions by Gavora (2012). In this case, exploratory factor analysis demonstrated that it is appropriate to consider two dimensions (teacher efficacy in using teaching strategies and manage class). Their reliability varied between 0.84 and 0.86. 345 lower secondary school teachers – ISCED 2 participated in the research. The average length of work experience of male and female respondents (n=45) was 12.80 years (SD=10.70) and (n=300) 16.20 years (SD=9.88) respectively. Statistically significant moderate positive relation was identified between the implementation frequency of traditional reflective methods and self-efficacy of teachers in using teaching strategies. Similar relation was proved between the implementation frequency of non-traditional reflective methods and the mentioned component of self-efficacy of teachers. A weak direct dependence proved to exist between implementation frequency of both reflective method groups and self-efficacy of teachers in class management.

Keywords: professional reflection, efficacy, teacher, lower secondary school

1 Introduction

Teaching is undoubtedly one of the most difficult professions. There is a discussion about life-long profession (Pavlov et al., 2018) where teachers face crises, changes and innovation for four decades following the completion of pre-gradual preparation. The image of a teacher ensuring transmission of knowledge to pupils and developing social relationships is insufficient at present, and thus the model of the minimum efficacy becomes outdated (Kosová & Tomengová et al., 2015). Teachers deal with a series of interpersonal and intrapersonal issues which require them to be professional authorities in his/her profession (Hargreaves, 2000; Korthagen et al., 2000).

Whether teachers become experts is largely dependent on their knowledge, skills and development of their professional competences and efficacy. It is impossible, however, to ignore the significance of how they self-assess themselves and their potentials. To be more explicit, their belief in their own abilities and possibilities and opportunities to implement the same in school practice is an important factor supporting teacher's influence on their pupils. Based on ideas of Bandura (1994, 1997) who considers a man to be a proactive factor regulating its cognitive processes, actions and motivation, it is obvious that teachers can modify their performance while participating in self-confidence boosting or failing when confronted with more challenging tasks. Motivational capacity of the teacher known as self-efficacy comes to the forefront.

Researches point out that self-efficacy is a predictor having a significant impact on work performance in a wide range of tasks and duties (Stajkovic & Luthans, 1998). Teachers with better self-efficacy are more persistent in their assistance to children with special needs (Soodak & Podell, 1993) and they are more demanding when it comes to educational work and the work of pupils (Ross, 1995). Self-efficacy of teachers shows positive bonds with their personal performance, job satisfaction and determination to teach (Zee & Koomen, 2016). It also appears that teachers with higher self-efficacy in class management are less likely to experience burnout (Aloe et al., 2014).

Based on presented research outcomes it can be stated that teachers with higher self-efficacy can be expected to be more willing to make more efforts to meet their educational objectives and not to be distracted by any related limits such as conflicts with pupils and changes in existing teaching concept.

According to Mareš (2013, pp. 453 – 454), teacher's self-efficacy can be influenced by autoregulation and external intervention. With auto-regulation the assumption is followed that teachers naturally review their educational achievements and failures against their colleagues and analyse how colleagues evaluate their work. Here, however, the tendency towards distortion is usual and it is the reason why some teachers overestimate while others underestimate themselves. In an effort to reduce self-assessment mistakes it is appropriate to use self-diagnostic tools to evaluate teacher's educational procedures and their attitude towards pupils. Efficient autoregulation should lead to deeper knowledge of personal qualities and professional skills of the teacher. Most frequently, feedback is the external intervention (post-observation interviews, workshops, action research, etc.) and on the basis the feedback the misconception of an individual about their possibilities is gradually modified.

According to Gavora (2011), another aspect affecting teachers' self-efficacy and its formation is their own successful experience in teaching. Teachers' self-efficacy improves if learning performance of pupils the teacher works with is good and their educational outcomes meet expectations. On the other hand, teachers' self-efficacy can improve also through failures if these are understood as a challenge and a chance to overcome own weaknesses. Shared experience should not be underestimated as well, e.g. observing the practice of other teachers where professional model plays a strategic role. The same is material in pre-gradual preparation of future teachers (Rovňanová, 2018). Self-efficacy is largely affected also by praising in the form of an official compliment or proving teacher's strengths as one of the forms of the social support. Teacher's emotional settings should also be taken into account. The teacher with optimal emotional fitness is predisposed to overcome difficulties in educational process (Gavora, 2011).

It is evident from the above mentioned that professional reflection helps improve teacher's self-efficacy correctly. The same has been proved in longitudinal study by Korthagen and Wubbels (2011) who found out that unlike the teachers who sporadically apply professional self-reflection, the feeling of personal security is stronger in reflective teachers who are also more convinced about their efficacy.

Rahimi and Weisi (2018) found out that practical and cognitive reflection of teachers strongly predicates their self-efficacy. At the same time it was proved that teachers engage in research activities connected with practice in order to be more reflective and efficient. In their study, Runhaar et al. (2010) highlighted an interesting phenomenon of teacher's working or professional self-efficacy and their orientation to teaching objectives positively related to reflection and feedback.

Studying roles and meaning of professional reflection in physical education teachers, Jung (2012) identified four areas where reflection affected their practice: (1) they were better able to handle unexpected educational events, (2) develop their knowledge while acting, (3) they made important decisions flexibly in course of teaching, and (4) they were able to rebuild an image about their professional efficacy. The research by Genc (2010) revealed stimulating findings on professional reflection and development of teacher autonomy and their decision-making skills. Data analysis showed that teachers started to make more informed decisions on various aspects of teaching after they started writing reflective diaries.

Professional reflection is understood as a tool to improve pedagogical and didactic work of the teacher (Tugui, 2011; Tripp & Rich, 2012; Mathew et al., 2017). It allows the teacher to argue for adequacy of their teaching concept and also for discursive analysis of unconscious processes which may not be promptly covered due to educational dynamics (Korthagen, 2011). We share the view of Farrell (2007) that reflective approaches applied by teachers in teaching evaluation result in conceptualization of teaching at a higher quality level based on experience and personal beliefs.

In personal and professional development of teachers, professional reflection has not only developing function but also adaptation function which helps them to adapt to existing conditions while accepting needs of pupils; motivational function stimulating teachers to make an effort and understand applied didactics and educational processes; control function which helps determine the scope of changes demonstrated in educational work outcome; preventive function because with reflection, teachers can foresee their future reactions to problematic situations in course of educational process; relaxation function because with the analysis of successfully resolved educational events they can get impulses for further activities, and the creative function reducing stereotypical approach to pupils (Hupková, 2006; Obst, 2009; Korthagen et al., 2011; Kouteková & Furinová, 2015).

We agree with Evans (2011) that professional development of teachers should be built on development of professional reflection (behavior, attitudes, and intellectuality). The study implemented by Yost (2006) has drawn the attention to a serious phenomenon: the ability of professional reflection of beginning teachers and their efficacy supported by successful experience in teaching are more decisive factors for job success than positive school climate. It is assumed that the same may apply to more experienced teachers.

The efficacy of professional reflection depends on using reflective methods as sources of teachers self-evaluation in course of which the roles of actor and observer are integrated (Brookfield, 2017; Orosová et al., 2018a). These methods are used to obtain feedback on teacher performance in course of educational process.

Feedback affects future performance of teachers when it contains positive notes on educational activity as well as on the person who carried out such educational activity. It is desirable to detail what was good in teacher's performance and what their strengths are. It is also important that the feedback contains information on improvements that could be made. These proposals should not be understood as negative criticism but rather as an appeal for personal improvement. Feedback as one of the forms of reflection contains also issues related to further planning of activity and its change (Plamínek, 2014).

Reflective methods may be classified based on various criteria. Based on the extent to which their implementation depends on engagement of the competent people and pupils reflective methods may be interactive – these include job shadowing, reflective dialogue with a colleague, questionnaire, discussion of school teachers on educational problem and pupils opinions on the course of classes and teaching.

On the other hand, teachers also use reflective methods that require no interaction but provide possibilities to analyse their educational work. These include self-observation, pedagogical diary, self-evaluation, self-reflexive taxonomy, teacher portfolio, preparation for teaching and studying pedagogical literature.

Reflective methods can be divided also based on tradition of use. To improve their work, teachers in practice are required to prepare for classes, use self-observation and self-evaluation and related reflective dialogue with a colleague about educational issues. As an option, they may also use reflective methods which are beyond their duties if they are interested in professional development (pedagogical diary, teacher portfolio, studying

pedagogical literature or analysis of pupils' opinions on the course of classes in the form of a dialogue at the end of the class).

Based on the background above four research hypotheses were formulated:

- H1: *We assume there is a statistically significant positive relation between the implementation frequency of traditional reflective methods by teachers and their self-efficacy in using teaching strategies.*
- H2: *We assume there is a statistically significant positive relation between the implementation frequency of traditional reflective methods by teachers and their self-efficacy in class management.*
- H3: *We assume there is a statistically significant positive relation between the implementation frequency of non-traditional reflective methods by teachers and their self-efficacy in using teaching strategies.*
- H4: *We assume there is a statistically significant positive relation between the implementation frequency of non-traditional reflective methods by teachers and their self-efficacy in class management.*

2 Characteristics of the research sample

Respondents in a research set were obtained by means of available selection because our possibilities to make selection allowing better research outcome generalization were limited. On-line questionnaire was used as the most suitable to meet our purpose because the research was carried out among teachers of the lower secondary schools in all Slovak regions. Respondents were addressed via school e-mail addresses available on the website of the Slovak Centre for Scientific and Technical Information.

The data were collected between January and March 2017. 372 teachers participated in the research but beginning teachers and teachers with short work experience (about 1 year) were removed from the database as they could probably respond inadequately to most of items and this could distort research outcomes (N=345).

Majority of the research set consisted of female respondents (n=300; 86.96%). Respondents who obtained teaching qualification studying teaching programme at universities (n=260; 75.36%) made up almost three quarters of the research set. The number of respondents who completed training aimed at reflective teaching within last 8 years was lower (n=99; 28.70%). A significant part of participants (n=271; 78.55%) responded positively to a question whether they were interested in participating in such training. Respondents from eight-year grammar schools showed little interest (n=26; 7.54%) in participating in the research compared to respondents at primary schools. Specification of respondent's answers with respect to the year and school subject as specified in methodology part could be the reason. Average work experience of respondents is 15.76 years (SD=10.04). The research set divided by the duration of the work experience of the respondents and the region where the school of pedagogical activity is located are shown in Table 1 and Table 2.

Table 1: Representation of respondents in the research set by duration of work experience

<i>Duration of work experience in completed years</i>	n	%
1.5 – 5	65	18.84
6 – 10	67	19.42
11 – 15	58	16.81
16 – 20	56	16.23
21 – 25	33	9.57
26 – 30	33	9.57
31 and more	33	9.57
Total	345	100

Table 2: Representation of respondents in the research set by region

Region	n	%
Bratislava	42	12.17
Trnava	11	3.19
Trenčín	57	16.52
Nitra	24	6.96
Žilina	42	12.17
Banská Bystrica	48	13.91
Prešov	55	15.94
Košice	66	19.13
Total	345	100

3 Research methodology

Revalidated version of the adapted Ohio State Teacher Efficacy Scale (OSTES) (scale questionnaire) was used to identify the level of teacher's efficacy (Gavora, 2012). The questionnaire comprised 15 items formulated as questions the respondents were supposed to answer using 9-point scale. For purposes of our research, the extent of the scale was reduced to 5 levels (nothing – a few – a little – quite – a lot), because the questionnaire was filled in by teachers of lower secondary schools teaching at least one of their subjects to 7th grade pupils. They responded to issues related to the selected subject (taught the first in a week) and the grade of pupils which was relatively difficult because teachers were limited by this specification (they had to think more in case of alternatives). At the same time, the following item was modified: What are you able to do with very problematic pupils?; our idea of this type of pupils (pupils with learning disabilities) was added in brackets.

Pre-research on a sample of 162 Slovak teachers resulted in a selection of one grade that respondents would focus their answers on. In addition to the proposal of respondents that the questionnaire should include other variables, our attention was drawn to the fact that difficulties might be expected in generalization of research outcomes because the research took place in all regions. This was solved by specification of the research sample. 7th grade of the lower secondary school was preferred above all other. Our decision is based on the following reasons: (1) These teachers had known given (7th grade) pupils for a longer period of time (they worked with them in previous grades of the primary school or eight-year grammar school); (2) Following the sample specification we obtained as high number of respondents as possible. Comparing the number of 7th, 8th, and 9th grade pupils at schools as of September 2016, the number of 7th grade pupils was higher ($n=40,673$; 8th grade – $n=38,490$, 9th grade – $n=35,126$). Based on this fact a conclusion was drawn that the number of teachers teaching at 7th grade must have been higher than the number of teachers teaching older pupils. The numbers of pupils were obtained from the Statistical Yearbook of Education (www.cvti.sk).

To understand the structure of the research tool the exploratory factor analysis was used based on working with the fixed number of factors (2). Exploratory factor analysis was preferred over confirmational one due to the modification of the questionnaire mentioned above and the research sample was quite specific (see Table 3). As the research by Gavora (2012) and other experts dealing with the issue of teacher's self-efficacy proved, dimensions of the OSTES questionnaire are highly correlated among each other (Hamman et al., 2006; Martin & Sass, 2010), thus the method of the principal components with promax oblique rotation, was applied assuming that factors will not be independent of each other (Tabachnick & Fidell, 2018; Rabušic et al., 2019). The value of the total used variability of the variables following their rotation could not be determined due to factor correlation.

KMO test for selection adequacy ratio (0.891) confirms that factor analysis is appropriate for data obtained and Bartlett's test of sphericity refutes the hypothesis that the correlation matrix is an identity matrix ($0.000 < 0.001$). Minimum factor loading for the item to be included in one the factors was 0.40. Factor

loading of the item could not be higher than 0.40 in two or more factors at the same time. In course of the exploratory factor analysis, 3 items with low communality value ($< 0,30$) (*What are you able to do to teach your pupils critical thinking?*, *What are you able to do when your pupils ask difficult questions?*, *What are you able to do with very problematic pupils – pupils with learning disabilities?*) were excluded.

The factor of efficacy in teaching strategies consisted of items related to methodological management of the class by the teacher. The value of Cronbach's alpha for this dimension was 0.835, and this slightly differs from the value of reliability in Slovak version of OSTES for this dimension (0.87). The reason is in the fact that two items were eliminated from the said dimension. The factor of efficacy in class management consisted of items related to class management by the teacher in terms of discipline. The value of Cronbach's alpha for this dimension was 0.856. It can be stated that the factor analysis proved it was appropriate to consider two factors as in case of the factor analysis outcome by Gavora (2012). The value of Cronbach's alpha for the entire research tool was 0.882.

Based on the value of Spearman's rank correlation coefficient it can be said that there is a strong correlation between dimensions ($p < 0.001$; $r_s=0.558$). Although these dimensions reflect two aspects of the self-efficacy in teaching, they are closely interconnected because successful usage of teaching strategies is often determined by how the teacher is able to regulate the discipline of pupils in their class. This would correspond with the statement by Kohútová (2018) resulting from Tschannen-Moran and Woolfolk Hoy, as well as Gavora, that unidimensional research tool may also be considered.

The scale questionnaire we designed was used to map the implementation frequency of reflective methods by teachers. The items comprised respective methods and the respondents had to choose the frequency of their usage on a 7-point scale (every day – 2x per week and more – once a week – once a fortnight – once a month – once every three months – never). As with items of the first research tool, respondents had to relate their answers to the selected subject and seventh grade. This caused that the initial values had to be re-coded in order to avoid discrimination of respondents who teach given subject to seventh grade pupils for a shorter period of time. Table 4 contains correction of scale levels made in connection with the number of days given subject is taught by teachers of seventh grade pupils. This step has been consulted with the methodologist and statistician in advance.

In order to capture the structure of the research tool, exploratory factor analysis was conducted as in the previous case (see Table 5). The method of principal components with equamax orthogonal rotation proved to be most appropriate with the proved standard exhausted variability of variables (55.79%). KMO test for selection adequacy ratio (0.782) confirms that factor analysis is appropriate for data obtained and Bartlett's test of sphericity refutes the hypothesis that the correlation matrix is an identity matrix ($0.000 < 0.001$). Minimum factor loading for the item to be included in one the factors was 0.40. Factor loading of the item could not be higher than 0.40 in two or more factors at the same time. In the course of exploratory factor analysis, 1 item was excluded with the factor loading higher than 0.40 in two factors at the same time (professional standard).

Traditional reflective methods should be the methods that have a stable place in the work of teachers. Using these methods respective educational elements are reviewed and revised. The work of teachers would practically remain unimproved without these methods. The value of Cronbach's alpha for this dimension was 0.731. Non-traditional reflective methods are the methods that do not necessarily need to be used by teachers in their educational practice but can help them develop professionally and mentally. These methods are time consuming and difficult in terms of the ability of the targeted self-observance which the teacher keeps using. The value of Cronbach's alpha for this dimension was 0.708. The value of Cronbach's alpha for the entire research tool was 0.760.

Table 3: Components of perceived teacher's self-efficacy (Rotated matrix of factor loadings)

Factor-feeding items	Factors		
	α	I	II
(I) Efficacy in using teaching strategies	0.835		
What are you able to do to develop creativity of your pupils?		0.836	-0.137
What are you able to do to use diversified methods to review and test pupils' knowledge and skills?		0.747	-0.045
What are you able to do for your pupils to better understand the content of learning?		0.711	0.011
What are you able to do to introduce innovation into your teaching?		0.666	-0.015
What are you able to do to formulate adequate questions for your pupils?		0.635	0.070
What are you able to do for routine activities to run smoothly during classes?		0.616	-0.012
What are you able to do to support development of talented pupils?		0.548	0.207
What are you able to do if pupils do not understand the content of learning at all?		0.438	0.361
(II) Efficacy in class management	0.856		
What are you able to do against cheeky pupils?		-0.081	0.896
What are you able to do to eliminate individual pupils who are able to disrupt the class?		-0.003	0.833
What are you able to do to manage pupils disturbing others?		0.047	0.827
What are you able to do to prevent pupils from disturbing others?		-0.035	0.814
<i>eigenvalue</i>		4.57	4.26

Table 4: Scale level correction

Number of days of teaching/ example of the subject		5 days (e.g. Mathematics, Slovak language)	4 days (e.g. English language, Biology)	3 days (e.g. Geography, Physics)	2 days (e.g. History, IT)	1 day (e.g. Religious Education, Music)
Alternative change	<i>always</i>	every day	every day	every day, 2x a week and more	every day, 2x a week and more, once a week	every day, 2x a week and more, once a week
	<i>almost always</i>	2x a week and more	2x a week and more	once a week	once a fortnight	once a fortnight
	<i>often</i>	once a week	once a week	once a fortnight	once a month	once a month
	<i>from time to time</i>	once a fortnight, once a month	once a fortnight, once a month	once a month	once per three months	once per three months
	<i>never</i>	once per three months, never	once per three months, never	once per three months, never	never	never

Table 5: Components of the scale questionnaire to find out the implementation frequency of reflective methods by teachers (Rotated matrix of factor loadings)

Factor-feeding items	Factors		
	α	I	II
(I) traditional reflective methods	0.731		
self-observation		0.806	0.060
self-evaluation		0.803	0.130
reflective dialogue with a colleague		0.705	0.230
preparation to teaching		0.570	0.104
(II) non-traditional reflective methods	0.708		
teacher portfolio		0.055	0.823
pedagogical diary		0.004	0.791
studying professional pedagogical literature		0.338	0.660
pupils' opinion on the course of the class (in the form of the dialogue at the end of the class)		0.366	0.521
<i>eigenvalue</i>		2.37	2.10
<i>% of dispersion</i>		29.60	26.19

The value of Spearman's rank correlation coefficient is a proof that there is a moderate dependence between values ($p < 0.001$; $r_s=0.379$) which, in principle, reflects our understanding of these methods where traditional reflective methods represent a stimulus to exploit non-traditional reflective methods directed towards more pregnant self-diagnosis of teachers. Thus teachers take a new perspective being the basis for changes in school practice through selecting appropriate educational tools for work with pupils.

Statistically significant differences and relations between variables were verified with the confidence level of 0.05. Non-parametric significance tests were used such as Spearman's rank correlation coefficient, Mann-Whitney U test and Kruskal-Wallis' test because variables failed to show normal distribution per the set and subsets which was verified using Kolmogorov-Smirnov and Shapiro-Wilk tests ($p < 0.05$). A median (Me) was used from descriptive statistics. The data were evaluated in SPSS 20.0 programme.

4 Research Results

Table 6 shows that there is a moderate direct dependence between the frequency of implementation of traditional reflective methods by teachers and self-efficacy in using teaching strategies. More frequent analysis of teachers' work appears to improve self-efficacy of teachers in choosing more adequate educational means meeting pupils' needs. As seen in Table 6 this statement also fits the description of the relation between the implementation frequency of non-traditional reflective methods and the component of the professional self-efficacy. Moreover, Table 6 shows that there is a weak direct dependence between the implementation frequency of traditional reflective methods and self-efficacy in class management. The same is true for the relation between the implementation frequency of non-traditional reflective methods and the mentioned component of professional self-efficacy. The correlations show that more frequent analysis of teacher's educational activity is not a factor that would significantly affect how teachers believe in themselves when dealing with behavioural problems of pupils in their class.

Table 6: Relation between the implementation frequency of reflective methods and self-efficacy of teachers

Relation between reflexive methods and components of professional self-efficacy		Efficacy in using teaching strategies	Efficacy in class management
Traditional reflective methods	<i>Spearman's Rho</i>	0.332	0.211
	<i>p-value</i>	0.000*	0.000*
	<i>N</i>	345	345
Non-traditional reflective methods	<i>Spearman's Rho</i>	0.348	0.186
	<i>p-value</i>	0.000*	0.001*
	<i>N</i>	345	345

5 Discussion

Teachers as representatives of a helping profession are expected to develop permanently and keep themselves professionally ready and only then they are able to actively respond to changing situation in the society. Professional reflection is one of principal tools used to update expert knowledge and skills of teachers (Farrell, 2015; Hall & Simeral, 2015; Bolton & Delderfield, 2018).

European ideas for better learning (2018) by the European Commission deals with the need for professional learning of teachers in more details and highlights the importance of reflexive practice playing a role in professional improvement of teachers. We agree with Kosova (2012), Kasacova (2013), Rovnanova (2013), Rovnanova and Nemcova (2017), Orosova et al. (2018b) that this practice gives teachers a chance to look at educational activity through theory and create new capabilities.

In their research, Korkko et al. (2016) proved that supporting reflexive skills of teaching students can have a positive impact on their development because professional reflection and feedback from dealing with educational situations help creating practical theories. Based on their research, Urzua and Vasquez (2008) argue that developing reflective competence that would participate in educational process improvement should start already with beginning teachers in the form of mentoring which creates the space for discursive analysis of pedagogical and didactic procedures. The findings of Postholm (2008) prove the fact that by questioning their practice teachers can go beyond the framework of their teaching and apply new perspective on educational phenomena.

Professional reflection participates in autoregulation of personality. Zibrinyova (2014) presents studies according to which autoregulation helps focus on long-term objectives and Lovaš (2011) looks at autoregulation in terms of internalization of standards following and observation of which is independent of external control. Thematic analysis of carrier competence concept by Hašková and Vaculík (2016) revealed that introspection and positive self-concept are a part of professional potential development. Here, interconnection with self-efficacy of teachers described by Majerčikova and Gavora (2013) as belief in skills that ensure meeting educational tasks. The impact of self-efficacy on teacher's work is unquestionable as summarized in general overviews (Bray-Clark & Bates, 2003; Mok & Moore, 2019).

Our research identified statistically significant moderate positive relation between the implementation frequency of traditional reflective methods and self-efficacy of teachers in using teaching strategies. Moderate positive correlation was shown also between the implementation frequency of non-traditional reflective methods and self-efficacy of teachers in using teaching strategies. Weaker direct dependence was reported between implementation frequency of traditional reflective methods and self-efficacy of teachers in class management. Correlation between the implementation frequency of non-traditional reflective methods and self-efficacy of teachers in class management was similar.

Outcomes of the research by Noormohammadi (2014) showed positive relation between the implementation frequency of practical, cognitive, meta-cognitive, critical and learner reflection and self-efficacy of teachers in using teaching strategies. Direct dependence was also confirmed between the implementation frequency of respective types of professional reflection (except for critical) and self-efficacy of teachers in class management. Moreover, Babaei and Abednia (2016) found out that meta-cognitive reflection of teachers is a predictor of self-efficacy of teachers.

We are of the opinion that a stronger direct dependence between the implementation frequency of given groups of reflective methods and self-efficacy of teachers in class management has not been proved because there is a constant pressure placed on teachers in terms of their pupils achieving better learning and educational results. This makes teachers review the teaching strategies they use and take account of educational needs of pupils. This seems to reduce the opportunities to reflect modification of the behaviour disturbing the course of teaching. However, optimum class management is the baseline for implementation of selected teaching methods and forms (Rovnanova, 2019). Salaty (In Petlak, 2004) highlights the fact that, in educational process, the teacher has the role of a manager creating conditions for pupils' work, and an integrator ensuring equivalent positions of pupils in a group.

We believe that regulation of the behaviour of pupils in course of teaching is a hotspot for teachers because they are limited in using negative motivation (e.g. threats, bans) that would force pupils to respect rules in course of tasks and activities. On the other hand, we note that it is more important to draw the attention of pupils during educational process to the extent it will not be necessary to use coercive means; this would explain the

focus on more frequent reflection of applied teaching strategies (Sámelová, 2014; Čapek, 2015; Tóthová et al., 2017).

Korthagen and Wubbels (2011), who based their ideas on works of psychologists focusing on self-efficacy, believe that professional reflection is also a threat for our self-concept because we are exposed to the evaluation of professional performance. To avoid disruption of internal integrity of personality, defensive reaction usually follows.

Possible reason behind why no stronger direct dependence between dimensions of tools was shown can be in the fact that respondents who obtained teaching competences in complementary pedagogical studies had statistically significant lower score for the dimension of self-efficacy in class management than that of respondents who studied teaching as their primary university education (Me=4.00; Me=4.25; Mann-Whitney U test=9439.500; p=0.041). The score for the dimension of self-efficacy in class management of respondents who had not completed the reflective teaching training was significantly lower than that of respondents who completed such training (Me=4.00; Me=4.25; Mann-Whitney U test=10539.500; p=0.048).

According to Tremblay et al. (In Veteška & Tureckiová, 2008), it is typical for professional competences that they are contextualized, created based on previous knowledge, experience, needs or interests of learners; multidimensional, consisting of various sources and efficient work with such sources; standard-defined, defined by a set of criteria for teacher's behaviour and activity; and they have potential for action and development which means they are obtained and deepened in course of further education and learning. This fact should not remain underestimated also in case of professional reflection. Its adequate course may not be taken for granted especially in case of intentional reflection.

Thus the respondents were also asked on what practices they use for intentional professional reflection. Most of them use oral practice in the form of an internal dialogue (n=221; 64.06%). Almost one third of respondents (n=99; 28.70%) prefer to carry out intentional professional reflection practice in writing where they put notes in their preparation or a sheet attached to the lesson preparation on what they would have changed and how. The research set also contained respondents who did not tend to use any professional reflection practices at all (n=25; 7.25%).

It can be noted that statistically significant difference was shown in implementation frequency of traditional (Kruskal-Wallis H test=9.713; p=0.008) and non-traditional (Kruskal-Wallis H test=12.588; p=0.002) reflective methods in terms of the form in which intentional professional reflection practices are carried out by teachers. Respondents who carry out oral and writing intentional professional reflection practices had a higher score for implementation frequency of traditional (Me=4.50; Me=4.50) and non-traditional (Me=2.75; Me=3.25) reflective methods than the respondents who carry out no professional reflection practices (Me=3.75; Me=2.25). Statistically significant difference in the score for the dimension of the professional efficacy in using teaching strategies and class management was not proved in terms of the discussed variable.

According to Jay and Johnson (2002), the practice of reflection consists of these three steps: description, comparison and criticism. It is questionable whether the last stage is carried out where the teacher processes new information and evaluates alternatives for purposes of educational element modification. In similar researches, it would be desirable to work with a control variable indicating the level of reflection of teachers. Findings by Greene (2017) in the field of social care indicated that the role of reflection seems to be an ideological concept. Research participants considered reflection to be a professional skill but they failed to use it regularly in practice. Statistically significant difference was identified in frequency of use of non-traditional reflective methods by teachers in terms of their interest in participating in reflective teaching training.

Respondents who were interested in participation in such training had a higher score in frequency of use of non-traditional reflective methods than those who would not participate in such training (Me=3.00; Me=2.50; Mann-Whitney U test=7460.500; p=0.001).

As for the independent variable of sex, female respondents had statistically significant higher score in frequency of use of traditional reflective methods than male respondents (Me=4.50; Me=3.75; Mann-Whitney U test=5187.500; p=0.012). Čerešník (2011) who analysed the research of Marusic aimed at finding correlation between masculinity, femininity and items of personality questionnaire pointed out that altruism, modesty and kindness may be included to feminine characteristics in addition to aesthetic sense, confidence, and fairness. We consider these attributes to be the platform for correct professional reflection that takes account of weaknesses in educational activities as well.

The total score of respondents for the implementation frequency of traditional reflective methods regardless the independent variable indicates that respondents use these methods almost always (Me=4.25) while global score for the implementation frequency of non-traditional reflective methods indicates that respondents often use these types of methods (Me=3.00). As for especially the second group of methods, the claim by Lucas (1996) that courage should be included in attributes of the reflective practice.

By means of qualitative research, Feranská (2019) wanted to find out factors that affect self-efficacy of teachers. Analysing data from talking to teachers she created four material determinants participating in improvement of their educational activity. These are teacher's personality, his experience, working with pupils and stress or frustration management. These factors are considered to be equivalent.

We are of the opinion that experience of teachers in respective areas is more or less decisive because, as the author claims, it enables teachers to make their work precise and better consider needs of pupils. On the other hand, more experienced teachers are also more exhausted in their profession and they use routine teaching techniques and proven educational means while beginning teachers are full of enthusiasm and more passionate. The truth is that dealing with a shock of school reality common for beginners is not an easy thing.

The number of respondents with longer work experience in the research set was naturally higher (from 11 to 15 years to 31 and more years) representing 61.74% (n=213); despite this fact we were able to cover only a trivial statistically significant positive relation between the duration of work experience of respondents and their self-efficacy in using teaching strategies ($r_s=0.148$; p=0.006).

Summarizing the findings of experts dealing with professional efficacy of teachers, Gavora (2008) claims that self-efficacy is situation-specific, changes depending on the level of school, school subjects and various educational situations.

Our research set was unique because respondents had to respond to questionnaire items related to selected subject and grade. Certain ontogenetic specifics are connected with seventh grade pupils. It is the period of adolescence where abstract, meta-cognitive and divergent thinking starts but also mood changing and inadequate expression of emotions. The teacher is considered to be an authority by pupils of this age when they are able to attract the attention of pupils (Oravcová, 2010; Vágnerová, 2012; Rovňanová & Šukolová, 2019). As for the school subject, the number of teachers teaching languages (Slovak, English languages, etc.), Mathematics and Sciences was significantly higher in the research set. The content of these subjects is more difficult in terms of mental processes of pupils.

6 Conclusion

Based on the presented research outcomes we would argue that there is a connection between the components of frequency concepts of reflexive methods implemented by teachers and their self-efficacy. The proved positive relation between both components of the implementation frequency of reflexive methods and professional efficacy of teachers in using teaching strategies is especially noteworthy. Although it is not relatively strong direct dependence which could be used as the basis for addressing more pregnant recommendations to lower secondary school teachers and their practice, we believe that strengthening the model of reflective teaching where teachers obtain new knowledge and actively participate in developing their professional skills (not only) through theory-based interpretation of educational situations, should be permanently present in teachers' practice. Ultimately, the same may be proved also on the level of the self-efficacy of teachers in working with the content taught in terms of needs and opportunities of pupils.

It is questionable, however, whether it is appropriate to talk about implementation frequency of professional reflection when mapping the implementation frequency of reflective methods. Although teachers use reflective methods, it is not a rule that they plan quality improvement of their work intentionally and deliberately. The reality is that covering implementation of professional reflection is quite complicated because it is a hidden process inside the personality. Although scale questionnaires are used with items containing statements on the frequency of considering or thinking about certain aspects of teaching, it can be doubted whether they reflect purposeful decision-making of teachers and making fact-based decisions in course of teaching.

We follow the understanding of reflective teaching by Kasáčová (2014, p. 9) who considers it to be a "complex of teacher's activities that reflect teacher's thinking, activities and opinions in course of preparation, implementation and evaluation of educational process in perspective of the content, social and institutional educational situation on the basis of their professional, ethical and personal self-awareness."

Distortion should also be taken into account in case of teachers' self-assessment related to the extent to which they are able to use selected activities with pupils during educational process. When one is exposed to the self-assessment, they tend to see themselves in better light compared to reality.

The use of available selection of respondents limited by several aspects seems to be a problem, too. One of them is that research outcomes cannot be generalized to Slovak teachers teaching seventh grade pupils at lower secondary schools in a valid way. As it is very difficult to motivate teachers as respondents to fill in questionnaires, and this makes random selection more complicated, it would be adequate for further researches to take place in selected regions or larger districts. Thus research outcomes would have more appropriate generalization potential.

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