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DIGITAL TECHNOLOGY AND TEACHERS' COMPETENCE FOR ITS APPLICATION IN THE CLASSROOM[1]

Abstract: The subject of the research is focused on questioning teachers' attitudes in reference to using ICT competencies in the classroom, considering the gender, years of service and education, while the problem of the research concerns the question: What are the teachers' attitudes in reference to using ICT competencies in the classroom? Regarding to the previously defined subject and problem, the aim of this research is to question the attitudes of teachers - reflective practitioners in reference to using ICT competencies in the classroom considering the gender, years of service and the education. The teachers' attitudes in reference to using ICT competencies in the modern teaching, in the teaching practice research and for self-development were examined by using the Likert scale which consists of 31 items, especially constructed for the need of this research. The research included 100 primary school teachers with various years of service from the city of Nis (N=100). The results showed that there are no statistically significant differences in reference to the variables: gender, years of service and the education concerning the teachers' attitudes towards importance of using ICT competencies in the classroom. They are mostly considered to be insufficient. Thus, the respondents recognize the need and the importance of using ICT in preparation and teaching realization and they consider it as an important part of their professional development.

Key words: teachers' digital competence, information and communications technology.

Introduction

The new era, in which information and communication technology is viewed as the way to modernize education and its implementation with the students, requires the change of initial teachers' education and therefore the change of their professional development which must be primarly based on competencies required in modern education as well as the discourse in which the teacher realizes his/her role as an educational practice researcher. The social context in which education takes place has suffered a significant change in the past ten years. The expansion of knowledge and information has made requests towards teachers which involve new competencies that are being supported by many global, European and national

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documents govering educational policy. Current forms of education point to the set of far more complex dimensions of teachers' professionalism such as cooperation, implementation of innovations, teaching beyond the classroom and the subject area (Djurovic, 2011: 304-307). The emphasis in the new social order must be on the competent teacher i.e. reflective practitioner, leader and researcher who possesses and produces knowledge (Stanojevic, 2012: 131-149; Pavlovic, 2008: 388-402). Thus, the modern academic discource implies an increase of new teachers' competencies which will actually form a teacher of modern society, the teacher who must adjust his professional activity to the requirements of the epoch in which the same activity is carried out.

By identifying the key elements contained in the structure of the competence, we come to complex and dialectical framework that can certainly serve as a multidimensional ground for constructing and defining teachers' professional abilities, since the professionalism based on competencies is one of the substantial factors guaranteeing the quality and performance at work (Maksimovic, 2012: 271-288). In order to keep the school on track with changes and to adjust the educational system to the knowledge society in which there is neither time nor space for the traditional concept and a formal educational and teachers' development framework, the trend of modern, digitized and multimedia context represents the requirement for the change of the awareness and the routine in teachers' work.

Teachers' competencies for the application of ICT in modern teaching

According to Sucevic, Cvjeticanin and Sakac (2011: 11-23), new teachers' roles should follow modern, European context of basic education which includes suchcompetencies as: a professional teacher (professionalisation requires practical application of knowledge, an intellectual teacher, professional identity, professional development); an educational researcher; a collaborator in organisation of student activities; a teacher asa team member and as an expert with a high degree of autonomy.

In order to gain new competencies, future teachers will be in need of new knowledge which should be acquired at teachers' training faculties. Anyone who is preparingto work with students should, in addition to expertise, also gain pedagogical skills needed to perform in practice. Based on the professional framework, Vizek Vidovic (2009: 38) has defined the models of teachers'competencies which are divided into two groups: *competencies specific to the subject*and *educational competencies*. When it comes tothe educational competencies, they include: competencies related to the educational process and competencies related to the permanent, lifelong education in which it is important to understand the educational system, to develop the abilities for improving methodical skills, the abilities for improving language skills and the abilities to master the modern information technology. Considering the lifelong learning context, Andjelkovic (2009: 285-298) has defined the following pedagogical and didactic-methodological competencies of educators: team work ability, communication skills, openness to change, professional autonomy, permanent expert and professional development and openness to information and to application of the new information technology in everyday school context. In this respect, the informatisation of the education implies a new organisation of school life and work, and also a new way of teaching. In the society informatisation conditions, where knowledge and ideas become the basic production resources, schoolhas the role of a carrier of change and becomes an important media in social environement. Full implementation of information technology requires fundamental changes in the informatical sphere of teacher education, and teachers'aquisition of digital competencies becomes the precondition for successful execution of educational

tasks. The usage of modern means such as educational software, multimedia teaching, the Internet, gives the possibility to enrichthe learning process and therefore the methods and forms of work. According to these aspects, the ICT development has made significant changes to the conceptualization of the teachers' role, and has caused a new approach to the professional training and development of teachers. The focus of teaching is now transfering from the class itself to its planning, preparation and rationalization of teaching i.e. to modification of the curriculum according to the newest achievements in science and technology (Minic Aleksic, 2012: 868-876). In order to achieve the expected educational outcomes, the teacher may realize the class by using the elements of information technology, developed models of multimedia teaching, the achievements of e-learning which will enable the design of the new teaching system called e-teaching, while the teacher's activity within that system is named e-tutor (Krstic, 2014: 319-323). The realization of such teaching requires a wide range of knowledge and skills within the context of the basic professional competencies, especially focusing ondigital competencies which have been designated by the EU as one of the eight basic competencies for lifelong learning. According to the reference framework of key competencies which has been established in 2006, digital competence in a broader sense includes safe and critical usage of technology of information society for work, leisure time and communication (Key Competencies for Lifelong Learning - European Reference Framework 2010: 174-182). This competence also includes the ability to search, collect and process information as well as its critical and systematical usage, assessing the relevance and distinguishing the real from the virtual. In the context of education and teachers' developing, most authors (Arsenijevic & Andevski, 2011: 25-35; Bjekic, Krneta & Milosevic, 2008: 7-21; Ceklic & Spasojevic, 2010:99-108; Pavlovic Breneselovic, 2014: 450-455; Tomicic, Cvrtila & Pavetic, 2012:87-93) agree when it comes to defining and determining the essence of digital competence which implies knowledge and skills related to digital media, and refers tological and critical reflecting about digital teaching content, safe use of information and communications technology in the classroom and also well developed communication skills inwork with students, their parents and colleagues. Therefore, in order to develop teachers' digital competence Pavlovic Breneselovic (2014: 450-455) points out the following "(…) to be competent is more than just a sum of separate and individual skills and knowledge. In digital terms, this means that the teacher has the ability to apply and to integrate new technology into teaching; and that he/she uses the advantages, controls the disadvantages and risks of digital technology and develops childrens' awareness and habits for its correct use; he/she also uses digital technology for planning activities, for observation, evaluation, documentation; he applies digital technology for informational exchange with family, colleagues, associates; he/she uses it for his/her professional development." Based on this, the competencies for the informational teaching are differentiated into three separate approaches of integrating ICT into the teaching process: (1) The application of information and communications technology in the classroom where the technological system and the computer are used as the teaching tool; (2) The usage of e-learning which has the status of an independent procedure in the educational system; (3) The realisation of e-teaching which is regarded as a developed teaching system.

Teachers' competence for the usage ofmodern information technology in the school curriculum doesn't only refer totheir individual plan, but also requires a systemic competence which implies mutual cooperation of individuals, groups and institutions to jointly participate in learning and reflection. The essence of using ICT in the teaching process refers to the change of the teacher's and student's role, the change of the resources that are being used and the change of the essence of the teachers' instructions which are provided with the help

of technology. Minic Aleksic (2012: 868-876) argues that the teachers' professional development for the application of ICT is related to the following aspects: (1) Technological literacy - developing teachers' skills which enable the integration of information and communication standards when creating the modern curriculum; (2) Enhancing the knowledge - the ability to manage the information, to formulate specific tasks and to integrate new technology and application oriented to the subject; (3) The creation of knowledge - connecting new professional skillsof teachers and all the possibilities of technological development in order to support and guide the students. This would practically mean that the successful professional training in this area includes the support of the development of teachers (reflective practitioners) as researchers of their own practice and that this training is carried out in everyday practice through the cooperation with colleagues, associates and researchers while it also includes learning the ICT skills bysolving and developing the specific curricular and extracurricular activities.

The question of teachers' competencies in reference to using ICT often comes down to the issue of their competence to work with the modern technology means and to the understanding of applications which enable efficient and efficacy learning. On the other hand, Dzigurski, Simic, Markovic and Scepanovic (2013: 29) note that in the introduction of The Competency Standards in Reference to Teachers' Profession and their Professional Development it is stated that the teachers should be applying ICT and that this is the general condition which must be accomplished in the education and the society. The standards of the application of ICT in teaching are defined by the regulations within The Competencies for Module, Subject and Teaching Methods: the knowledge - the teacher is familiar with the technology of thescientific discipline and with his teaching subject; the planning - the teacher is planning the informingon new trends and the usage of appropriate and available technology in the classroom; the realisation - the teacher uses the adequate technology in teaching; the development - the teacher is continuously improving in the scientific discipline of the subject, in teaching methods and in the educational technology.The successful integration of ICT in the classroom will depend on the teachers' ability to successfully overcome the traditional ways of learning, that is to say that in order to implement ICT in teaching, it must become an integral part of the teacher's personal and professional development.

The methodological approach to the research problem

Considering the competencies as the key element of teachers' education for reflective practice, the subject of this research is focused on questioning the attitudes of teachers - reflective practitioners in reference to using ICT competencies in the classroom, considering the gender, years of service and education. In relation to the subject, the research problem concerns the question: What are the attitudes of teachers - reflective pracitioners in reference to using ICT competencies in the modern classroom considering the gender, years of service and education? The aim of this research is to question the attitudes ofteachers - reflective practitioners in reference to using ICT competencies in the classroom. The tasks of the research are: (1) To examine if there are statistically significant differences in the teachers' attitudes in reference to using ICT competencies in the classroom considering the gender;(2) To examine the teachers' attitudes in reference to using ICT competencies in the classroom considering the years of service; (3) To examine if there are statistically significant differences in the teachers' attitudes in reference to using ICT competencies in the classroom considering their education. In accordance with the research tasks, we formulated the general hypothesis: It is assumed that the teachers - reflectitive practitioners have positive attitudes in reference

to using ICT competencies in the classroom. In accordance with the tasks, the specific hypothesis formulated in this research are: (1) It is assumed that there are no statistically significant differences in the teachers' attitudes in reference to using ICT competencies in the classroom considering the gender; (2) It is assumed that there are no statistically significant differences in the teachers' attitudes in reference to using ICT competencies in the classroom considering the years of service; (3) It is assumed that there are no statistically significant differences in the teachers' attitudes in reference to using ICT competencies in the classroom considering the teachers' education. In the research, we used the descriptive method, the scaling technique, while the instrument TCICT (the evaluation scale - Teachers' competencies in reference to using ICT in the classroom) has been especially constructed for the need of this research. The research sample consisted of 100 respondents - primary school teachers from the city of Nis during the school year of 2015. The sample structure based on the respondents'gender, years of service and education is given in Tables 1, 2 and 3.

Table 1: The sample structure considering the gender

Gender	*F*	%	Valid %	Cumulative %
Male	38	38.0	38.0	38.0
Female	62	62.0	62.0	100.0
Total	100	100.0	100.0	

In Table 1, in which the research sample structure considering the gender is presented, there are 38 male teachers and 62 female teachers. This is not surprising in this type of researches since there are far more female students at the teachers' training faculties, especially in the last decade.

Table 2: The sample structure considering the years of service

Years of service	*F*	%	Valid %	Cumulative %
Less than 5 years	21	21.0	21.0	21.0
6 to 15 years.	34	34.0	34.0	55.0
16 to 25 years	28	28.0	28.0	83.0
Over 25 years	17	17.0	17.0	100.0
Total	100	100.0	100.0	

Table 2 represents the sample structure considering the years of service variable which shows that there are 21 teachers with less than 5 years of service, 34 teachers with 6 to 15 years of service, 28 teachers with 16 to 25 years of service, while the last category (over 25 years) includes 17 teachers.

Table 3: The sample structure considering the teachers' education

Education	*F*	%	Valid %	Cumulative %
Natural sciences	27	27.0	27.0	27.0
Social sciences	30	30.0	30.0	57.0
Technical sciences	10	10.0	10.0	67.0
Languages	24	24.0	24.0	91.0
Art	9	9.0	9.0	100.0
Total	100	100.0	100.0	

As Table 3 shows, the largest number of respondents (30 teachers) belongs to the category of social sciences. After that, there are 27 teachers belonging to the category of natural sciences. There are 24 teachers in the category of philological sciences, while the categories of art and technical sciences consist of the lowest number of teachers, 9 and 10 teachers respectively.

The instrument reliability, measured by using the Cronbach's Alpha test, is 0.85 which indicates a good reliability and an internal consistency of the scale for the research sample. The Cronbach's Alpha testshows reliability when the scale values are above 0.7, while the preferred values are above 0.8 (Table 4). The reliability table also shows the total number of items, that is 31.

Table 4: TCICT Scale Reliability

		N	%	
Cases	Valid	100	100	
	Excluded	0	0	
	Total	100	100	
Cronbach's Alpha		N of Items		
0.850		31		
Mean		Variance	Std. Deviation	N of Items
1.3554		171.524	13.09670	31

The factor analysis of the results

The validity of the scale used for questioning the teachers' competencies in reference to using ICT in teaching was verified by factor analysis which helped structure the correlations between a lot of variables of the TCICT scale. The convenience of the intercorrelation matrix for factorization was tested by using the Kaiser-Meyer-Olkin Measure of Sampling Adequacy (KMO) which must show a value above 0.3, and the Bartlett's test of Sphericity with a value of 0.05 or less.

Table 5: KMO and Bartlett's test

KMO and Bartlett's test		
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		.716
Bartlett's Test of Sphericity	Approx. Chi-Square	1.2553
	Df	528
	Sig.	.000

The analysis of Table 5 shows that the value of the KMO test is 0.72, while the Bartlett's test value indicates a statistical significance of p=0.00 which justifies the usage of the factor analysis. Table 6 shows that 11 factors have a specific value greater than or equal to 1, however, starting from the intercorrelation matrix of manifest variables, in accordance with the need of the research, 9 factors with a specific value greater than or equal to 1 whose total percent of the variance is 62.81% had been allocated and retained by using the factor analysis. Nine factors with a specific root value greater than 1 have been extracted by using the factor analysis with Promax rotation. The data obtained by the factor analysis show that the instrument constructed for the need of this research has good psyhometric properties, making it more compatible with the need and the importance of the research.

Table 6: The factor analysis of the evaluation scale of teachers' competencies in reference to using ICT in teaching before and after factor rotation

Factors	Specific root	% of variance	Cumulative %	Specific root	% of variance	Cumulative%
ICT seminar	7.137	21.626	21.626	7.137	21.626	21.626
Lack of competence	2.851	8.640	30.266	2.851	8.640	30.266
ICT in teaching	2.115	6.408	36.675	2.115	6.408	36.675
Skills	1.896	5.745	42.420	1.896	5.745	42.420
Competencies	1.694	5.133	47.553	1.694	5.133	47.553
Mastering	1.391	4.214	51.767	1.391	4.214	51.767
Application	1.297	3.931	55.698	1.297	3.931	55.698
Interests	1.233	3.736	59.434	1.233	3.736	59.434
Linguistic competence	1.117	3.385	62.819	1.117	3.385	62.819

The factor saturation of every factor is presented in the matrix (Table 7). The total number of items (31) has been retained and divided into 9 factors that have been named in accordance with the content that they represent.

Table 7: The structure matrix of the extracted factors

17.	-.123	-.219	-.041	**.681**	.230	.105	-.096	.259	.106
18.	-.146	.236	.236	**.666**	-.026	-.033	.120	.083	.092
19.	.303	-.155	.000	**.485**	.213	-.149	.149	-.252	-.095
20.	-.196	.013	-.027	.119	**.792**	-.008	.067	-.038	.126
21.	.187	.075	.057	-.068	**.653**	.261	-.157	-.135	.121
22.	.046	.175	-.187	.211	**.504**	.257	.063	.232	-.125
23.	-.002	.036	.030	-.115	**.167**	.857	.117	-.144	.218
24.	.145	.009	.179	.268	.018	**.622**	-.276	-.094	.229
25.	-.010	-.171	.092	.087	-.234	**.447**	.034	.439	-.284
26.	-.191	-.072	-.134	-.077	.091	.048	**.875**	.085	.183
27.	.029	-.140	.303	.004	-.126	-.066	**.667**	.103	.000
28.	.162	-.075	-.100	.239	-.053	-.159	.089	**.804**	-.051
29.	-.119	.245	.342	-.114	.399	.063	.113	**.430**	-.056
30.	-.057	.062	.018	.188	.131	.261	.148	-.097	**.895**
31.	.388	-.182	.191	-.051	.298	-.245	.024	.155	**.393**
6.	**.584**	.281	-.007	-.198	-.178	.113	.031	.015	.245
7.	.017	**.866**	.019	.009	.127	-.069	-.275	.161	-.082
8.	.141	**.704**	-.226	-.118	.004	.122	.096	-.102	.130
9.	-.248	**.480**	.186	.189	-.009	.060	-.030	-.295	.112
10.	.101	**.392**	.198	-.004	.179	-.243	.065	-.198	-.281
11.	.108	**.388**	.273	.365	-.308	-.084	.133	.288	.226
12.	-.102	-.083	**.874**	.016	.039	-.077	-.119	.015	.228
13.	.266	-.019	**.678**	-.166	-.095	.128	.140	-.040	-.145
14.	.108	.128	**.537**	-.022	-.026	.274	-.069	-.312	-.243
15.	.094	-.329	**.411**	-.028	.072	.247	.202	-.073	.193
16.	.181	.023	**-.292**	.782	-.012	-.048	-.134	.081	.099

Nine main factors were extracted by using the factor analysis and were named in accordance with the content of the items isolated within each one of them.

The first factor is named *ICT seminar*, the second factor is *Lack of competence*, the third factor is *ICT in teaching*, the fourth is *Skills*, the fifth is *Competencies*, the sixth is *Mastering*, the seventh is *Application*, the eighth is *Interests* and the last one - the nineth factor is named *Linguistic competence.*

The results and interpretation of the data

By analyzing the teachers' attitudes in referece to using ICT competencies in teaching considering the gender, years of service and education we have come to the following results.

Table 8: Primary school teachers' attitudes in reference to using ICT competencies in teaching considering the gender

		M	*SD*	*t - test*	*df*	*p*
ICT seminar	Male	4,4	0,7	-1,665	98	0,41
	Female	4,3	0,6			
Lack of competencies	Male	4,2	0,8	970	98	0,23
	Female	4,1	0,6			
ICT of teaching	Male	4,0	0,8	-0,078	98	0,68
	Female	4,1	0,7			
Skills	Male	4,2	0,6	101	98	0,62
	Female	4,2	0,5			
Competencies	Male	4,1	0,7	489	98	0,49
	Female	4,1	0,6			
Mastering	Male	3,8	1,1	480	98	0,48
	Female	3,7	0,8			
Application	Male	3,7	0,9	105	98	0,41
	Female	3,8	0,8			
Interests	Male	3,8	0,7	117	98	0,88
	Female	3,8	0,9			
Linguistic competence	Male	3,7	0,8	672	98	0,67
	Female	3,9	0,7			

When examinating the teachers' attitudes in reference to using ICT competencies in teaching, the results have shown that there are no statistically significant differences in teachers' attitudes considering the gender variable. Both male and female teachers higly value professional development seminars for using ICT in teaching (first extracted factor), but they certainly have a lack of skills (M=4.2) which, due to the lack of competence, may be

compensated by the interest in and by attending the seminars for professional development in reference to using ICT competencies in the modern classroom. These data confirm the first specific research hypothesis.

Table 9: Primary school teachers' attitudes in reference to using ICT competencies in teaching considering the years of service

		Sum of Squares	*df*	*Mean Square*	*F*	*p*
ICT seminar	Between Groups	32.468	3	10.823	.737	0.53
	Within Groups	1409.532	96	14.683		
	Total	1442.000	99			
Lack of competence	Between Groups	19.587	3	6.529	1.161	0.32
	Within Groups	539.973	96	5.625		
	Total	559.560	99			
ICT in teaching	Between Groups	17.831	3	5.944	1.622	0.90
	Within Groups	351.879	96	3.665		
	Total	369.710	99			
Skills	Between Groups	4.459	3	1.486	.312	0.82
	Within Groups	457.301	96	4.764		
	Total	461.760	99			
Competencies	Between Groups	6.823	3	2.274	.385	0.76
	Within Groups	566.887	96	5.905		
	Total	573.710	99			
Mastering	Between Groups	4.072	3	1.357	.746	0.52
	Within Groups	174.568	96	1.818		
	Total	178.640	99			
Application	Between Groups	4.071	3	1.357	.468	0.70
	Within Groups	278.439	96	2.900		
	Total	282.510	99			
Interests	Between Groups	4.570	3	1.523	.827	0.48
	Within Groups	176.740	96	1.841		
	Total	181.310	99			
Linguistic competence	Between Groups	9.764	3	3.255	.844	0.47
	Within Groups	370.076	96	3.855		
	Total	379.840	99			

Regarding to the years of service variable, the F test results have shown that there are no statistically significant differences in primary school teachers' attitudes in reference to using ICT competencies in teaching (p>0,05), which confirms the research hypothesis. Whether we talk about teachers with less than 5 years of service or about teachers with over 25 years of service, their attitudes are homogeneous. Table 6 also shows that teachers highly value the seminars for the application of ICT in teaching (first factor), stating their necessity in the fields

of work and development. On the other hand, the factor isolated as the lack of competence can certainly be compensated by the first factor within the seminars for the application of ICT in teaching which can help teachers to develop new skills and interests, to overcome and apply the seminars' content in their work with students and thus acquire competencies which are the key for teaching organization and self-development in the era of digitalization. The data obtained in this research are in accordance with the interpretation of many authors (Arsenijevic & Andevski, 2011: 25-35; Bjekic, Krneta & Milosevic, 2008: 7-21; Ceklic & Spasojevic, 2010: 99-108; Pavlovic Breneselovic, 2014: 450-455; Stanojevic, 2012: 131-149) which says that the teachers' competencies are always directed to the combination of knowledge, skills, motivation, interests which certainly enable effective action in their profession.

Table 10: Primary school teachers' attitudes in reference to using ICT competencies in teaching considering the education

		Sum of Squares	*df*	*Mean Square*	*F*	*p*
ICT seminar	Between Groups	22.267	4	5.567	.372	0.83
	Within Groups	1419.733	95	14.945		
	Total	1442.000	99			
Lack of competence	Between Groups	20.068	4	5.017	.883	0.47
	Within Groups	539.492	95	5.679		
	Total	559.560	99			
ICT in teaching	Between Groups	16.236	4	4.059	1.091	0.36
	Within Groups	353.474	95	3.721		
	Total	369.710	99			
Skills	Between Groups	11.597	4	2.899	.612	0.65
	Within Groups	450.163	95	4.739		
	Total	461.760	99			
Competencies	Between Groups	17.725	4	4.431	.757	0.56
	Within Groups	555.985	95	5.852		
	Total	573.710	99			
Mastering	Between Groups	5.055	4	1.264	.692	0.60
	Within Groups	173.585	95	1.827		
	Total	178.640	99			
Application	Between Groups	12.063	4	3.016	1.059	0.38
	Within Groups	270.447	95	2.847		
	Total	282.510	99			
Interests	Between Groups	5.980	4	1.495	.810	0.52
	Within Groups	175.330	95	1.846		
	Total	181.310	99			
Linguistic competence	Between Groups	6.533	4	1.633	.416	0.79

	Within Groups	373.307	95	3.930		
	Total	379.840	99			

The results in Table 10, which represents the teachers' attitudes in reference to using ICT competencies in teaching considering the education variable, show that there are no statistically significant differences in the teachers' attitudes regarding to their initial education (p>0,05). The teachers' attitudes in reference to using ICT competencies in the classroom are homogeneous, because whether they belong to the category of social, natural, technical sciences or to the category of art, their attitudes are harmonized and they think that the professional development seminars for the application of ICT in teaching(first factor extracted) are necessary in order to innovate their work with students as well as their personal development which is in accordance with the findings of the research conducted by Dzigurski, Simic, Markovic and Scepanovic (2013: 31). This finding confirms the research hypothesis.

Conclusions

Enhancing the quality of teachers' work involves the strengthening and the development of their competencies necessary for their profession. Considering the results we obtained by questioning the teachers' attitudes in reference to the importance of using ICT in the classroom, we can conclude that the teachers recognize the necessity of using ICT competencies in teaching. Nine factors have been extracted by using the factor analysis: ICT seminars, Lack of competence, ICT in teaching, Skills, Competencies, Mastering, Application, Interests, Linguistic competence. The extracted factors reflect the teachers' attitudes in reference to the need and the importance of using ICT competencies in modern classroom, so the direct conclusions which resulted from determining if there are statistically significant differences in teachers' attitudes, have shown that within the professional development seminars for using ICT in teaching, teachers see the competencies as the structure core of their professional development, which was also shown by the first extracted factor in the research (ICT seminar). Also, according to the factor analysis data, the second extracted factor (Lack of competence) has shown that the teachers highly value their competencies, but that they are not very proficient in their application, meaning that the lack of ICT competencies and the insufficient capability complicates the teaching which had also been shown in the research conducted by Dzigurski, Simic, Markovic and Scepanovic (2013).

The data analysis has shown that there are no statistically significant differences in the teachers' attitudes in reference to using ICT competencies in teaching considering the gender, years of service and education because the teachers, despite the observed variables (gender, years of service, education), equally observe the lack of competencies for applying ICT in teaching, therefore the necessity for professional development in this field as an important precondition for innovation and the development of skills that are necessary for applying the modern technology in the work with students. This has also been confirmed by exctracting the fourth (Skills) and the eighth factor (Interests) in factor analysis of the teachers' attitudes. Therefore, it is important to mention that while planning the professional development, emphasizing the development of information competencies, in order to define quality standards of application and evaluation of ICT in teaching as well as the guidelines or the instructions for successful realization - from the practitum to the reorganization of didactic-methodological elements of teaching, it is necessary to consider the teachers' attitudes in

reference to using ICT competencies in teaching, which has been shown in this and in similar, earlier mentioned researches.

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