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ICT COMPETENCES OF TEACHERS AND EDUCATORS

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ABSTRACT

The information society requires changes at all levels, starting from the educational system. In order to change the educational system, it is important to know where to begin, and the start is in working with the youngest children, in preschool institutions and in primary schools. In order to acquire all the necessary knowledge and skills, child has to learn how to learn and communicate in the information society. Here, we thus discover a role of educators and teachers in preschool institutions and primary schools.

The aim of the research was to identify the present ICT competences of educators and teachers and their willingness to acquire some new competences required by the information society. This paper shows all the results obtained from both educators (N=59) employed in preschool institutions and teachers (N=92) employed in primary schools in the Republic of Serbia. The questionnaire, especially constructed for this purpose, has been used to test both groups.

Key words: *Information society, educational system, changes*

INTRODUCTION

In accordance with the requirements for new competences of educators and teachers, as established by the modern society, i.e. the society of knowledge, a project 'Teachers and Educators' ICT Competences for the Society of Knowledge' has been initiated. A long-term goal of this project is

adjusting the educational system, from preschool to higher levels, in order to effectively and continuously increase the educational and intellectual potential of pre-schoolers and schoolers, and to make them ready for a new way of the world communication and business; it also refers to understanding and adjusting to changes that are being brought by the society of knowledge.

The first step in the education of teachers and educators is to determine the real state between teachers and educators in their practices (Soleša-Grijak, 2010). Their present ICT competences are considered as the reality, but there is also readiness, i.e. flexibility and adaptability of teachers and educators themselves for life-long learning for the purpose of acquiring some new competences.

In defining competences, the Eurydice analysis was used (Eurydice, 2000) and it represents a comparative description of crucial competences which every citizen of the EU should have during his/her compulsory education, trying to apply the knowledge to teachers and educators. Day (Day 1999) defines competences as a capability for performing tasks and roles needed to achieve expected standards, whereas it is very important to know who sets the standards; their achievement is conditioned by the context, which should also be taken into account.

When we think about the competences of teachers and educators, we come to the authors of the Key Competences document (Eurydice, 2002) that relate the acquisition of competences to the training of an individual for mobility, usage, and integration of the acquired knowledge in complex, different, and unpredictable situations; this suggests that competences can be defined as capabilities of effective actions in many situation, based on the acquired knowledge, although it is not limited by the knowledge itself (Eurydice, 2002). Such knowledge is wide enough and, to some extent, suitable enough for the description of what the modern society requires from teachers and educators, which also involves a continuous professional development as knowledge, acquired in the process of training, is never sufficient enough (Jacques, 2002).

In the analysis created by the system of Eurydice, it has turned out that today no country, when settling its requirements for teachers and educators, implies just classical (specific) competences related to the work with children, learning and teaching. Apart from the classical requirements, this analysis has identified five areas of new competences (new competences expected now) and these are as follows (Eurydice, 2000):

- teaching with the use of information and communication technologies (ICT),
- integration of the children with special needs,

- working in the group with different children, in multi-cultural groups, as well,
- management of school and different administrative jobs,
- solving all kinds of conflicts.

So, it is to conclude that the list above refers to more or less transferable areas of competences meaning subject independent competences. However, learning and acquiring transferable competences require a shift in the methods of teaching (from subject- centered and teacher-centered to learner-centered). It means more active involvement of pupils, more encouragement of critical and creative opinions, more problem-solving, more guiding through using the knowledge in new situations and less classical teaching (Soleša-Grijak et al., 2009). The acquisition of competences is not possible without active involving pupils themselves (Definition and Selection of Competences: Theoretical and Conceptual Foundations (DeSeCo), 2001).

Although our educational system has accepted computer literacy as compulsory knowledge and skills being acquired throughout the schooling, the results – even in primary schools – are not completely satisfying. Besides, those who finished their schooling earlier are not qualified at all, i.e. computer literate, so there is an obvious need for their additional education or, better to say, training on how to use computers at all levels (Soleša, 2008).

Following the development of ICT, we are increasingly faced with the notion of computer literacy as well as with a wider notion of information literacy which is considered as a foundation for developing the modern society. Computer literacy is defined as a capability of using computers and computer programs while information literacy includes capabilities, such as: recognizing the need for information, finding information, analyzing and evaluating information, using and publishing information. Briefly, information - literate person is a person who has learned how to learn. He/she knows how to learn because he/she knows how knowledge is organized, how to find the information needed and how to recycle and use it in such a way to enable other people to learn from it. The person is then prepared for life-long learning because he/she can always find the information needed for any task or decision he/she is faced with (Gerlič, 2004).

RESEARCH METHODOLOGY

The aim of research is to determine how competent teachers and educators are today in the sphere of information and communication technologies, and how much they can meet all the modern society requirements. So, it is focused on the following tasks:

1. To determine the ICT competences of teachers and educators for education in the information society.
2. To determine some willingness to change their former role in the sphere of ICT covering the educational system.
3. To suggest possible solutions of how to prepare teachers and educators for the educational process in the society of knowledge.

The research, presented in this paper, was conducted on the sample of educators in preschool institutions and teachers in primary schools (N=160). The technique used refers to a questionnaire testing the ICT competences through the indicators of computer, information and communication aspects of the ICT competences. The questionnaire consisted of 25 questions. The research was conducted from May to July, at the Faculty of Pedagogy in Sombor, Nikola Vukićević and Avram Mrazović primary schools in Sombor, Petar Kočić Primary School in Beočin, the preschool institutions of Vera Gucunja in Sombor, *Radosno detinjstvo* in Novi Sad, and *Kolevka* in Subotica.

RESULTS AND DISCUSIONS

The sample was made of teachers having some experience in the work with children. The ones who do not have any school teaching experience were excluded from the analysis, no matter whether they worked somewhere else or they were out of work. Table 1 presents the sample structure according to the years spent on teaching:

Table 1. The teacher sample structure per years spent on teaching

Years	Frequency	Mean
1-10	36	14.05
11-20	35	
21-30	19	
31-35	2	

As shown, the biggest number of teachers spent 10 years on teaching, a smaller number belongs to the second category of teachers with up to 20 years spent on teaching, and the smallest number of them refers to the ones doing the teaching job for over 30 years. They are relatively young taking into consideration that they have been averagely teaching for 14 years. This may be

explained by the fact that the biggest number of them was basically educated at the Department of Primary School Teaching.

The sample was also made of educators having some experience in the work with children. The ones who do not have any experience in working in preschool institutions were excluded, no matter whether they worked somewhere else or they were out of work. Table 2 presents the sample structure according to the years spent in the educational process.

Table 2. The educator sample structure per years spent in the educational process

Years	Frequency	Mean
1-10	50	6.54
11-20	8	
21-30	1	
31-35	0	

Table 2 shows that the biggest number of educators belongs to the first category with up to 10 years spent on the work with children. They are young because they have been doing the job for 6.54 years on average and the biggest number of them was attending professional training when the research was conducted.

From the results shown above, it is possible to conclude that many teachers and educators are ready today to start their professional and personal development. This personal, i.e. professional development actually represents the most important competences needed for the society of knowledge. Since the modern society requires some new knowledge and skills, our sample shows that there is a good foundation onto which new competences can be built.

Knowing computer as a data processing machine

The first two questions (1-2) in the questionnaire examines how much the participants understand computer as a machine for data processing. The five-point Likert scale was available to them, with the following answers: 1) always, 2) almost always, 3) sometimes, 4) almost never, and 5) never. In Table 3, we can see the results obtained with the use of descriptive analysis.

Table 3. How much the participants know about computer as a machine for data processing

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
1.	Understanding computer hardware	2.56	1	5	2.33	1	4
2.	Factors influencing the computer features	2.61	1	5	2.41	1	5

The first level of ICT competences refers to the knowledge of computer as a machine for data processing. Table 3 shows that the biggest number of teachers are double minded about knowing computer hardware and factors that influence its properties. The encouraging fact which shows that there is some basic although weak knowledge in some teachers is that 11 of them answered that they “always” or “almost always” knew computers as data processing machines.

As opposed to them, educators showed a lower level of knowledge about the same issue. The results in Table 3 indicates that the biggest number of educators “never” or “almost never” understand computer hardware; this is the same with their knowledge of all the factors that may influence computer properties. In comparison with the situation of teachers, here we speak about a very serious situation and an urgent need for some training on the basic ICT competences among educators.

The existed difference in the results may be rooted in the fact that teachers, in their education, have more subjects dealing with issues from the area of computer science and educational technology. In the curriculum for educators, they are present to a smaller extent. Another source of differences is the fact that teachers, more than educators, use computers in their lesson planning and teaching.

Different uses of software applications

The next two questions (3-4) in the questionnaire examine how much the participants use different software applications. They were offered the five-point Likert scale with the following answers - 1) always, 2) almost always, 3) sometimes, 4) almost never, and 5) never. Table 4 presents the results based on data descriptive analysis.

Table 4. How much the participants use different software applications

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
1.	Using different software applications	2.71	1	5	2.49	1	5
2.	Using ICT in everyday life (e-learning,e-trading, e-banking, e-government)	3.04	1	5	3.10	1	4

After understanding computer as a data processing machine, the next level of ICT competences refers to knowing and using different software applications. The results in Table 4 show that teachers use ICT only in some situations in everyday life. Although there are some participants who have never used ICT, even 34% of them “always” or “almost always” use software applications. This means that teachers were instructed about the computer software.

Almost 34% of educators also use different software applications. As seen in Table 4, teachers and educators report on the same considering the second level of ICT competences about the use of information and communication technologies in everyday life. According to the results it is to conclude that teachers and educators have some good foundation for the acquisition of ICT competences.

Understanding and knowing the functions of applicative software

Table 5. How much the participants know about the importance of applicative software

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
1.	Functions of the operative system	2.60	1	5	2.45	1	4
2.	Using the software for text processing	2.30	1	5	2.35	1	4
3.	Using the software for grid calculations	2.66	1	5	2.68	1	5
4.	Using the database	2.45	1	5	2.35	1	5
5.	Using the software for making presentations	2.63	1	5	2.44	1	5

Questions 5-9 in the questionnaire examine how much the participants understand applicative software features and know about them. The five-point Likert scale was available to them, with the following answers: 1) always, 2) almost always, 3) sometimes, 4) almost never, 5) never. In Table 5, there are given the results based on data descriptive analysis:

As seen in Table 5, teachers mostly use the program for grid calculations, as well as the software for making presentations. In that way, they show that they have mastered the applicative software functions, i.e. they use computers in their work.

The same table shows some less successful results of educators regarding their knowledge about applicative software features. They mostly use the program for grid calculations. Why they do not use other applications may be explained by the fact that they work with the youngest children, aged 3 and older, who are generally not suitable for following any kind of presentation, except for animated movies. However, it is not the reason why educators do not use even the program for text processing in their work, and especially the database. The obtained results are surprising, but they are in accordance with the previous ones, supporting the conclusions that educators do not have developed ICT competences; but the basic knowledge acquired during their education is at a very low level.

Using the Internet

Questions 10-12 in the questionnaire examine to what extent the participants use the Internet. They were offered the 5-point Likert scale for providing the answers, such as: 1) always, 2) almost always, 3) sometimes, 4) almost never, and 5) never. Table 6 presents the results based on data descriptive analysis.

Table 6. Using the Internet

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
1.	Using the software for browsing the Internet	2.21	1	5	2.08	1	5
2.	Web-communication	2.71	1	5	2.22	1	4
3.	Using e-mail	2.39	1	5	2.08	1	5

The next level of ICT competences is using the Internet which implies using the software for browsing the Internet, communication on the web, and using e-mail. The results in Table 6 show that teachers communicate on the Web, but rarely use e-mail communication. Such result probably considers

using the social software such as Facebook, different forums, "chat- rooms", Skype, etc. These ways of communication are more and more popular because of their speed of communication between participants who are geographically far away from each other. Taking into consideration the need of modern society for skills which enable us to find and get new information easily, the result of teachers rarely using the software for browsing the Internet is very unsatisfactory.

The results obtained from educators are the same as above, although they mostly selected the "almost never" answer. A few of them answered "always" or "almost always". Educators need not only some basic course on ICT competences but also some special training in using the Internet, considered as the main source of information in the world.

Using the educational programs and educational Web portals

Questions 13-15 in the questionnaire examine how much the participants use some educational Web portals and educational software. The five-point Likert scale was offered to them, with the following answers: 1) always, 2) almost always, 3) sometimes, 4) almost never, and 5) never. Table 7 shows the results based on data descriptive analysis:

Table 7. Using the educational programs and educational Web portals

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
1.	Choosing the educational software for individual subjects	2.85	1	5	2.84	1	5
2.	Using the educational Web portal	2.92	1	5	2.93	1	5
3.	Setting up some educational contents onto the educational Web portal	3.56	1	5	3.44	1	5

Table 7 presents the results pointing to the qualifications of teachers and educators to use the educational software. The first step is certainly motivation to start finding such software as well as capability, knowledge and skills in making selection of the software for a specific subject. After that, there comes the capability of teachers and educators to create educational contents independently and to set them up onto educational Web portals.

The results show that teachers and educators are equally trained for using educational programs and educational Web portals. They will rather choose to create these programs on their own in order to set them up onto educational portals than to use the already finished ones. The results, although

encouraging, are not in accordance with the previous ones showing that they rarely use the program for browsing the Internet. A possible explanation is to be found in the fact that they have some knowledge about these things and awareness of how much it would be important for them if they used such software.

Why?

Educational software and information being contained within various web portals are very important for preparing teachers for the teaching process. Different sources of information enrich teaching contents, make them modern and offer different approaches to the same topic. In this way, both learning and teaching are being improved, especially creative and critical thinking in the process. However, these are not related only to student as a subject of learning. The modern society views the concept of life-long learning as one of the basic competences. Finding, selecting, and using/studying different educational software as well as using the contents of different educational Web portals are very important skills for the relevant life-long learning. Social changes, in some areas of life and science, are very abrupt and fast, which makes never-ending professional training very significant for a successful orientation in the modern society. Besides, the information society gives the primary role to information and knowledge, so to find the most recent information quickly is also seen as crucial for the human functioning in the new society.

Using the digital material

Questions 16 and 17 in the questionnaire examine the extent to which the participants use digital materials in their classes. They were offered the five-point Likert scale for such answers: -1) always, 2) almost always, 3) sometimes, 4) almost never, 5) never. Table 8 shows the results based on data descriptive analysis:

Table 8. Using the digital material in classes

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
1.	Digitalization of teaching materials	3.17	1	5	3.02	1	5
2.	Using digital materials in teaching and learning	3.07	1	5	2.71	1	5

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The digitalization of teaching materials means using different pictures, animations, sounds and other things that make the multimedia presentation of some contents. This level of ICT competence refers to using the program for presentations as a basis for creating some multimedia materials. The digitalization of teaching materials is followed by their use in the process of teaching and learning.

As the results in Table 8 shows, teachers and educators sometimes digitalize their teaching materials and use them in teaching. This points out that a majority of the participants has a good starting point for this level of ICT competences, but they also need an additional training. Some comprehensive training is required for those who "never" or "almost never" use such programs. Digital materials stimulate the process of learning in pupils, especially younger ones who need animation to remain focused on the given topic. It is well known that the learning of preschool and younger school children is the easiest throughout game playing, and a variety of animations provide that.

Using the Web applications and social software

Questions 18 and 19 in the questionnaire examine how much the participants use the web applications and society software. They were offered the five-point Likert scale for their answers: 1) always, 2) almost always, 3) sometimes, 4) almost never, and 5) never. Table 9 shows the based on data descriptive analysis.

Table 9. Using the Web application and social software

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
1.	Using ready-made Web contents (Movies, Animations, Pictures, Sound)	2.67	1	5	2.49	1	5
2.	Using social Web applications (Blog, Wikipedia)	2.81	1	5	2.76	1	5

The digitalization of teaching materials, which includes different pictures, sounds and/ or animations, is followed by the Web application usage. The Web application means that a picture, sound and animation are downloaded on the Web i.e. the Internet. It can be concluded that this level of ICT competences is in a direct relation to using the Internet as one of the previously selected starting points in the context of ICT competences.

The results in Table 9 show that teachers rarely use ready-made Web contents, which is in accordance with the results showing that the participants very seldom use the program for browsing the Internet. Educators even more seldom use the same contents from the Internet. It is possible to conclude that teachers and educators need to be trained for using some programs for browsing the Internet to be able to start improving their competences for using ready-made Web contents in teaching. The results show that the participants use some social software as a way of communication more than ready-made Web contents for teaching.

Participation in on-line communication and on-line learning

Questions 20-22 in the questionnaire examine how much the participants are engaged in on-line communication and on-line learning. They were offered the five-degree Likert scale to provide their answers: 1) always 2) almost always, 3) sometimes, 4) almost never, and 5) never. Table 10 shows the results based on data descriptive analysis:

Table 10. Participation in on-line communication and on-line learning

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
20.	Encouraging on-line learning	3.11	1	5	3.08	1	5
21.	Using on-line communication in teaching (Messenger, Skype ...)	3.61	1	5	3.18	1	5
22.	Using on-line exams in teaching	4.12	1	5	3.69	1	5

One of higher levels of ICT competences refers to the participation in on-line communication and on-line learning. In this way, life-long learning is provided to an individual, in this case teachers and educators.

As shown in Table 10, teachers and educators use some on-line communication such as Skype and Messenger in their teaching. However, the situation in kindergartens, schools and faculties as well as the previous results in our research lead to the conclusion that these results do not apply to the real situation. In other words, it is unclear if the participants have understood the above questions and the concepts of on-line communication and on-line learning properly. In accordance with their previous results, it may be also concluded that teachers and educators use some forms of on-line communication. They do not apply them in their teaching, though. There is a real situation in kindergartens and schools to explain this. Neither educational institutions, from kindergartens to higher-education schools, are equipped for something like this, nor teachers and educators are qualified for these skills.

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The skills of on-line communication and on-line learning require at least the use of the software for browsing the Internet, communicating on the Web and using e-mails. However, the results of participants are very poor on these questions.

So, the conclusion is that teachers and educators do not understand the concept of on-line communication and on-line learning, but the first step in their training for acquiring these skills is some training on the basic ICT competences.

Distinction of teaching contents in educational software

Question 23 in the questionnaire examines how much the participants understand a distinction of teaching contents in educational software. They had the five-point Likert scale available for providing their answers: 1) always, 2) almost always, 3) sometimes, 4) almost never, and 5) never. Table 11 shows the results based on data descriptive analysis:

Table 11. Distinction of teaching contents in the educational software

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
23.	Distinction of teaching contents in the educational system	3.83	2	5	3.64	1	5

The distinction of teaching contents in the educational software implies the evaluation of contents from the pedagogical, psychological, didactical and methodical viewpoints. This skill requires not only ICT competences of teachers and educators but also general competences for the work with children. The results showed in Table 11 may be explained by using this as they show that a majority of the participants “almost always” or “always” recognize the distinction of teaching contents in the educational software. Some explanation is needed since the majority of them has already answered that “never” or “almost never” use educational software in teaching.

Using the possibility of interactive teaching

Questions 24 and 25 in the questionnaire examine how much the participants use the possibilities of interactive teaching. They had the five-point Likert scale available for their answers: 1) always, 2) almost always, 3) sometimes, 4) almost never, and 5) never. Table 12 shows the results based on data descriptive analysis.

Table 12. Using the possibility of interactive teaching

No.	Question	Teachers			Educators		
		Mean	Min.	Max.	Mean	Min.	Max.
24.	Using the digital table for mutual interactive work in using the educational software	4.04	1	5	3.88	1	5
25.	Using video-conferences	4.30	1	5	3.89	1	5

The highest level of ICT competences involves knowledge and skills needed in using the digital table for interactive work while applying educational software, and using video-conferences. The results in Table 12 show that the participants did not understand the questions above. It is possible that they misunderstood the given concepts and answered that "always", "almost always" and "sometimes" use the possibilities of interactive teaching. Firstly, kindergartens and schools neither have digital tables nor video-conference system. Secondly, this level of competences requires a number of skills and knowledge, covered by the previous questions, when the participants showed that they are not qualified enough.

Differences between teachers and educators

The ANOVA analysis was used to show how much the educational system, i.e. teacher-educator, influences the existing ICT competences. Table 13 presents the results based on this analysis:

Table 13. Differences in competences with regard to the educational profile

No.	Question	F	P
11.	Web-communication	3.108	0.048
25.	Using video-conferences	3.19	0.044

The results in Table 13 show that, with regard to the educational profile, there is statistically significant difference in the skill of communication on the Web ($F=3.108$, $p<.05$). Here, teachers show that they use the modern ways of communication which helps them to communicate with people who are geographically distant. The result cannot be explained by the different educational system of teachers and educators because this skill is not learnt at the higher education level. Besides, the result cannot be explained by some

better training in the sphere of using the Internet as a major condition for using Web-communication.

The possible explanation of this difference between teachers and educators in using Web-communication refers to their personal situation because most of the teachers have some relatives and friends in other countries. That is why they use the Internet for the most economical way of communication (Soleša, 2010).

The second difference, in relation to the educational profile, should be found in using the video-conference. It is hard to find the reason for this difference, except for generally better results of teachers considering the basic competences in the sphere of information and communication technology. Despite the differences, it can be concluded that the basic training on ICT competences is needed.

CONCLUSION

The information society requires teachers and educators to take over some new roles among which the main ones consider the usage of information and communication technologies, competence for working with different students, necessity of collaboration with other teachers and educators, collaboration with specialists and parents, ability for reflecting, studying and evaluating their own work. To be efficient in this, teacher and educator must be open for changes and motivated for life-long learning as well as for continuous professional development.

As much as the obtained results are unexpected, it can be concluded that teachers and educators do not have the ICT competences developed as well as that their basic knowledge acquired during the education is very poor. As for their readiness to adopt some new competences required in the information society, the results show that the majority of teachers and educators are really motivated for this.

The research presented in this paper points to several action lines, one is possible and the authors suggest it as follows: all teachers and educators in Serbia should finish ECDL courses until the end of 2011 just as all teachers and educators should finish a basic e-learning course until 2012. In addition, all faculties where the future teachers are educated should include e-learning courses in their curriculum (Soleša, 2008)

It is necessary to suggest all the criteria which include e-learning in the programs of professional training. It is also required to gradually integrate all the elements of e-learning into teaching school subjects and other forms of school activities and to evaluate the results very carefully, to develop innovative resources and services for e-learning which will help children to

master the most complicated areas of curriculum. It would be also very desirable to involve teachers and educators in improving the process of learning, primarily in preparing on-line teaching materials, educational Web portals, information and school management system, and alike.

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ICT KOMPETENCIJE UČITELJA I ODGOJITELJA

SAŽETAK

Informacijsko društvo zahtijeva promjene na svim razinama, počevši od obrazovnoga sustava. Da bi se obrazovni sustav mijenjao, mora se znati odakle početi, a početak se nalazi u radu s najmlađom djecom, u predškolskim ustanovama i osnovnoj školi. Da bi dijete usvojilo potrebna znanja i vještine, mora naučiti kako učiti i komunicirati u informacijskom društvu. Upravo u ovome se sastoji uloga odgojitelja i učitelja u predškolskim ustanovama i osnovnim školama.

Cilj istraživanja je bio da se utvrde sadašnje ICT kompetencije odgojitelja i učitelja te njihova spremnost na usvajanje novih kompetencija koje daje informacijsko društvo. U radu će biti prikazani rezultati dobiveni istraživanjem odgojitelja (N=59) zaposlenih u predškolskim ustanovama i učitelja (N=92) zaposlenih u osnovnim školama u Republici Srbiji. Obje ciljne skupine su ispitane upitnikom strukturiranim specijalno za ovaj istraživački rad.

***Ključne riječi**: Informacijsko društvo, obrazovni sustav, promjene*

UVOD

U skladu sa zahtjevima za kompetencijama koje suvremeno društvo, odnosno društvo znanja, postavlja pred odgojitelje i učitelje, uveden je projekt pod nazivom *ICT kompetencije učitelja i odgojitelja za društvo znanja.* Dugoročni ji cilj projekta je prilagoditi obrazovne sustave, od predškolske k višim razinama, tako da učinkovito i kontinuirano povećavaju obrazovni i intelektualni potencijal učenika i studenata te pripremiti ih za novi način komunikacije i poslovanja u svijetu, kao i za razumijevanje i prilagodbu promjenama što ih donosi društvo znanja.

Prvi je korak u prilagodbi obrazovanja učitelja i odgojitelja odrediti realno stanje među njima u praksi (Soleša-Grijak, 2010). ICT kompetencije kojima trenutno raspolažu su realnost, ali postoji također spremnost, odnosno fleksibilnost i prilagodljivost samih učitelja i odgojitelja na cjeloživotno učenje s ciljem stjecanja novih kompetencija.

Pri definiranju kompetencija korištena je analiza Eurydice (Eurydice, 2000), a ona predstavlja komparativni opis ključnih kompetencija koje svaki

građanin EU treba imati tijekom obveznog obrazovanja, nastojeći ih primijeniti na učitelje i odgojitelje. Day (1999) definira kompetencije kao sposobnost obavljanja zadataka i uloga potrebnih za postizanje očekivanih standarda, pri čemu je vrlo bitno paziti tko određuje standarde te da je njihovo postizanje uvjetovano kontekstom.

Kada govorimo o kompetencijama učitelja i odgojitelja, dolazimo do shvaćanja autora dokumenta Ključne kompetencije (Eurydice, 2002), a ono se odnosi na stjecanje kompetencija promatrano kao usavršavanje pojedinca za mobilnost, primjenu i integraciju usvojenoga znanja u složenim, različitim i nepredvidivim situacijama, što navodi na definiciju kompetencija shvaćenih kao sposobnost za učinkovitu aktivnost u brojnim situacijama, polazeći od usvojenoga znanja, ali njime neograničenu (Eurydice, 2002). Takvo je znanje dovoljno široko i donekle odgovara opisu zahtjeva što ih suvremena škola postavlja pred učitelje i odgojitelje, a također obuhvaća stalno stručno usavršavanje jer znanje koje usvajamo tijekom usavršavanja nikada nije dovoljno (Jacques, 2002).

Analiza proizašla iz sustava Eurydice pokazuje da se danas ni u jednoj zemlji, postavljajući zahtjeve pred učitelje i odgojitelje, više ne misli na klasične (specifične) kompetencije povezane s radom učenika, učenjem i poučavanjem. Osim tih klasičnih zahtjeva ova je analiza utvrdila pet područja novih kompetencija (novih kompetencija koje se sada očekuju od učitelja), a to su (Eurydice, 2000):

- poučavanje uz primjenu informacijsko-komunikacijskih tehnologija (ICT),
- uključivanje djece s posebnim potrebama,
- rad u skupinama s različitom djecom, također u multikulturalnim skupinama,
- upravljanje školom i različitim administrativnim poslovima,
- rješavanje svih vrsta konflikata.

Dakle, zaključak je da u slučaju ovoga popisa govorimo o više-manje prenosivim područjima kompetencija odnosno predmetno-neovisnim kompetencijama. Usvajanje i stjecanje prenosivih kompetencija zahtijeva, međutim, promjenu metoda poučavanja (pomak od metodike s predmetom i učiteljem u središnjoj ulozi k onoj u čijem se središtu nalazi učenik). To znači aktivniji rad učenika, više kritičnih i kreativnih mišljenja, rješenje problema, više vođenja kroz primjenu znanja u novim situacijama, a manje klasičnoga poučavanja (Soleša-Grijak i sur., 2009). Usvajanje kompetencija nije moguće bez aktivne uloge samih učenika (Definicija i odabir kompetencija: teorijske i konceptualne osnove (DeSeCo), 2001).

Premda je naš obrazovni sustav prihvatio informatičku pismenost kao obavezno znanje te se vještine za to potrebne stječu tijekom obrazovanja, danas čak ni u osnovnim školama rezultati nisu potpuno zadovoljavajući. Osim toga, svi oni koji su se ranije obrazovali nisu uopće kvalificirani u tome smislu, odnosno nisu informatički pismeni, stoga postoji jasna potreba za njihovim dodatnim obrazovanjem ili, bolje rečeno, usavršavanjem za rad na računalima na svim profesionalnim razinama (Soleša, 2008).

Razvijajući informacijsko-komunikacijske tehnologije, sve više smo suočeni s pojmom računalne pismenosti, ali i širim pojmom informatičke pismenosti koja se smatra temeljem razvoja suvremenoga društva. Računalna pismenost se definira kao sposobnost uporabe računala i računalnih programa, a informatička pismenost obuhvaća sljedeće sposobnosti: prepoznati potrebu za informacijom, pronaći informaciju, analizirati i vrednovati informaciju, koristiti se informacijom i objaviti informaciju. Ukratko, informatički pismena osoba je osoba koja je naučila kako učiti. Ona zna kako učiti jer zna kako je znanje organizirano, kako pronaći potrebnu informaciju te kako reciklirati i primijeniti informaciju tako da ostali mogu iz toga učiti. Takva je osoba spremna na cjeloživotno učenje jer uvijek može naći informaciju potrebnu za bilo koji zadatak ili odluku s kojom je suočena (Gerlič, 2004).

METODOLOGIJA ISTRAŽIVANJA

Cilj istraživanja je utvrditi koliko su današnji učitelji i odgojitelji kompetentni u sferi informacijsko-komunikacijskih tehnologija te koliko mogu ispuniti sve zahtjeve suvremenoga društva. Sljedeći zadaci proizlaze iz tako postavljenoga cilja:

1. utvrditi ICT kompetencije učitelja i odgojitelja potrebne za obrazovanje u informacijskome društvu;
2. utvrditi spremnost na promjenu dosadašnje uloge učitelja i odgojitelja u sferi informacijsko-komunikacijskih tehnologija u obrazovnome sustavu;
3. predložiti moguća rješenja kako pripremiti učitelje i odgojitelje za obrazovni proces u društvu znanja.

Istraživanje, prikazano u ovome radu, provedeno je na uzorku odgojitelja u predškolskim ustanovama i učitelja u osnovnim školama (N=160). U istraživanju je korišten upitnik kojim su se testirale ICT kompetencije kroz računalne pokazatelje, informacijsko-komunikacijske vidove ICT kompetencija. Upitnik je sadržavao 25 pitanja. Istraživanje je provedeno u razdoblju od svibnja

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do srpnja, na Pedagoškome fakultetu u Somboru, OŠ Nikola Vukićević i OŠ Avram Mrazović u Somboru, OŠ Petar Kočić u Beočinu te predškolskim ustanovama Vera Gucunja u Somboru, *Radosno detinjstvo* u Novom Sadu i *Kolevka* u Subotici.

REZULTATI I DISKUSIJA

Uzorak se sastojao od učitelja s određenim iskustvom u radu s djecom. Oni koji nisu imali nikakvo iskustvo poučavanja u školi nisu uključeni u analizu, bez obzira rade li negdje na drugom mjestu ili nisu zaposleni. Tablica 1 prikazuje strukturu uzorka prema dužini radnoga staža provedenoga u obrazovnome procesu:

Tablica 1.

Kao što pokazuju rezultati, najveći je broj ispitanika s desetogodišnjim radnim vijekom, manji je broj učitelja zaposlen i do 20 godina, a najmanje je onih koji poučavaju više od 30 godina. Riječ je o relativno mladim ispitanicima, ako uzmemo u obzir da njihova prosječna dužina radnoga vijeka iznosi 14 godina. Objašnjenje se može pronaći u činjenici da se najveći broj ispitanika obrazovao pri Odsjeku za razrednu nastavu.

Uzorak su činili odgojitelji sa stanovitim iskustvom u radu s djecom. Oni koji nisu stekli radno iskustvo u predškolskim ustanovama, nisu uzeti u obzir, bez obzira rade li negdje na drugome mjestu ili nisu zaposleni. Tablica 2 prikazuje strukturu uzorka prema dužini radnoga staža u obrazovnome procesu.

Tablica 2.

Podatci u Tablici 2 pokazuju da je najveći broj ispitanika proveo do 10 godina odgajajući djecu. Riječ je o mladim ljudima jer aritmetička sredina pokazuje da su u prosjeku proveli 6.54 godina u radu s djecom, dok se najveći broj ispitanika nalazio na stručnome usavršavanju u trenutku provedbe istraživanja.

Na temelju rezultata koji prikazuju strukturu uzorka prema broju godina provedenih u radu s djecom i učenicima, te osobito prosječnoga radnoga staža, može se zaključiti da su danas brojni učitelji i odgojitelji spremni započeti svoje profesionalno i osobno usavršavanje. Zapravo, taj osobni, odnosno profesionalni razvoj predstavlja najvažniju kompetenciju potrebnu u društvu znanja. S obzirom na to da suvremeno društvo zahtijeva stjecanje novih znanja i

vještina, naš uzorak pokazuje da postoji dobra osnova na koju se nove kompetencije mogu nadograditi.

Znanje o računalu kao stroju za obradu podataka

Prva dva pitanja (1-2) u upitniku služe da bi se provjerilo koliko ispitanici razumiju i poznaju računalo kao stroj za obradu podataka. Ponuđena im je Likertova skala sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, i 5) nikada. U Tablici 3 možemo vidjeti rezultate dobivene deskriptivnom analizom.

Tablica 3.

Prva razina ICT kompetencija odnosi se na znanje o računalu kao stroju za obradu podataka. Tablica 3 pokazuje da najveći broj učitelja ima dvojbe oko znanja o računalu i čimbenicima koji utječu na obilježja računala. Poticajna činjenica koja ukazuje na postojanje određene iako slabe osnove kod nekih učitelja jest ta da je njih 11 odgovorilo da ,,uvijek'' ili ,,skoro uvijek'' zna da je računalo stroj za obradu podataka.

U usporedbi s učiteljima, odgojitelji su pokazali slabu razinu znanja o računalu kao stroju za obradu podataka. Rezultati u Tablici 3 pokazuju da najveći broj odgojitelja ,,nikada'' ili ,,skoro nikada'' ne razumije računalno sklopovlje; to se također odnosi na sve one čimbenike koji mogu utjecati na obilježja računala. Za razliku od prethodnoga slučaja s učiteljima, ovdje govorimo o vrlo ozbiljnoj situaciji i hitnoj potrebi za usavršavanjem odgojitelja s ciljem stjecanja osnovnih ICT kompetencija.

Postojeća razlika među rezultatima može poticati od činjenice da su učitelji, tijekom obrazovanja, imali više predmeta u kojima su učili o temama iz područja informacijsko-komunikacijske tehnologije. U planu i programu za odgojitelje ti su sadržaji zastupljeni u manjoj mjeri. Drugi uzrok jest činjenica da se učitelji više koriste računalima u pripremi i provedbi nastave nego što je to slučaj s odgojiteljima.

Različita primjena programskih aplikacija

Druga dva pitanja (3-4) u upitniku služe da bi se provjerilo koliko se uspješno ispitanici koriste različitim aplikacijama. Ponuđena im je skala Likertova tipa sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3) ponekada,

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4) skoro nikada, i 5) nikada. Tablica 4 prikazuje rezultate proizašle iz deskriptivne analize.

Tablica 4.

Poslije prihvaćanja računala kao stroja za obradu podataka, sljedeća razina ICT kompetencija odnosi se na poznavanje i primjenu različitih programskih aplikacija. Rezultati u Tablici 4 pokazuju da se učitelji koriste informacijsko-komunikacijskom tehnologijom u svakodnevnome životu. Iako ima ispitanika koji se nikada njome nisu koristili, čak 34% njih se ,,uvijek" ili ,,skoro uvijek" koristi programskim aplikacijama, što znači da učitelji imaju znanje o programskom dijelu računala.

Skoro 34% odgojitelja također se koristi različitim programskim aplikacijama. Kao što se vidi u Tablici 4, učitelji i odgojitelji su međusobno usklađeni u pitanju druge razine ICT kompetencija o primjeni informacijsko-komunikacijskih tehnologija u svakodnevnome životu. Polazeći od tih rezultata, zaključak je da učitelji i odgojitelji imaju dobru osnovu za usvajanje ICT kompetencija.

Razumijevanje funkcija aplikacija i znanje o njima

Pitanja 5-9 u upitniku služe da bi se provjerilo razumijevanje značajki programskih aplikacija i znanje o njima. Ispitanicima je ponuđena skala Likertova tipa sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, 5) nikada. Tablica 5 sadrži rezultate dobivene deskriptivnom analizom:

Tablica 5.

Kao što se vidi u Tablici 5, učitelji se uglavnom koriste programima za izračune i prezentacije. Pokazali su tako da njihovo znanje o primjeni programa funkcionira, to jest da se koriste računalom u svome radu.

Ista tablica prikazuje nešto slabije rezultate odgojitelja kada je riječ o poznavanju karakteristika aplikativnoga softvera. U svome radu odgojitelji se, naime, uglavnom koriste programom za izračune. Objašnjenje zašto se odgojitelji ne koriste drugim aplikacijama može se naći u činjenici da oni rade s najmlađom djecom, u dobi od 3 godine naviše, koja obično nisu prikladna publika za prikazivanje bilo kakvih prezentacija, osim možda animiranih filmova. Međutim, to naravno nije razlog da se odgojitelji u svome radu ne koriste čak programom za obradu teksta, osobito bazom podataka. Onoliko koliko su

dobiveni rezultati u slučaju odgojitelja iznenađujući, toliko su u skladu s onima prijašnjima te potvrđuju prethodne zaključke o tome da odgojitelji nisu razvili ICT kompetencije, kao i to da je njihovo osnovno znanje usvojeno tijekom obrazovanja vrlo skromno.

Korištenje Interneta

Pitanja 10-12 u upitniku služe da bi se provjerilo koliko se ispitanici koriste Internetom. Ponuđena im je skala Likertova tipa sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, i 5) nikada. Tablica 6 prikazuje rezultate dobivene deskriptivnom analizom.

Tablica 6.

Sljedeća se razina ICT kompetencija odnosi na korištenje Interneta, što podrazumijeva korištenje programa za internetsko pretraživanje, komunikaciju na web-u i putem elektronske pošte. Rezultati u Tablici 6 pokazuju da učitelji komuniciraju na web-u, ali rijetko putem elektronske pošte. Takav rezultat vjerojatno podrazumijeva korištenje društvenih mreža kao što su Facebook, razni forumi, chatanje, Skype, itd. Navedeni su oblici sve popularniji zbog brzine komunikacije među sudionicima koji su geografski udaljeni jedni od drugih. Polazeći od potreba suvremenoga društva za vještinama potrebnima za brzo pronalaženje i dobivanje novih informacija, rezultat o rijetkoj uporabi programa za internetsko pretraživanje među učiteljima je vrlo nezadovoljavajući.

Rezultati odgojitelja su identični gore navedenima, iako su oni uglavnom odabrali odgovor ,,skoro nikada". Samo ih je nekolicina odabrala ,,uvijek" ili ,,skoro uvijek". Odgojiteljima je potrebna, osim nekih temeljnih ICT kompetencija, dodatna poduka o korištenju Interneta kao glavnoga izvora informacija u svijetu.

Korištenje obrazovnih programa i obrazovnih web-portala

Pitanja 13-15 u upitniku služe da bi se provjerilo koliko se ispitanici koriste obrazovnim web portalima i programima. Ponuđena im je skala Likertova tipa sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, i 5) nikada. Tablica 7 sadrži rezultate dobivene deskriptivnom analizom.

Tablica 7.

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Tablica 7 sadrži rezultate koji pokazuju osposobljenost učitelja i odgojitelja za korištenje obrazovnoga programa. Prvi je korak, dakako, motivacija za sam početak potrage za takvim programom te sposobnost, znanje i vještine nužne pri odabiru takvoga programa za određeni predmet. Nakon toga važna je sposobnost učitelja i odgojitelja da samostalno pripreme obrazovne sadržaje te da ih postave na obrazovne web-portale.

Rezultati pokazuju da su učitelji i odgojitelji jednako osposobljeni za korištenje obrazovnih programa i web-portala. Ispitanici će prije odabrati način kako samostalno pripremiti programe da bi ih postavili na obrazovne portale, nego što će se koristiti već pripremljenima. Ti rezultati, iako ohrabrujući, ne odgovaraju prethodnim rezultatima o rijetkome korištenju programa za internetsko pretraživanje. Moguće objašnjenje leži u činjenici da ispitanici donekle raspolažu znanjem o tome i svjesni su koliko bi bilo važno da se sami koriste takvim programom.

Zašto?

Obrazovni program i informacije koje sadrže razni web-portali su vrlo važni učiteljima za pripremu nastave. Različiti izvori informacija obogaćuju nastavno gradivo, osuvremenjuju ga i nude različite pristupe istoj temi. Tako se oba procesa, učenje i poučavanje, unapređuju, a osobito se to odnosi na kreativno i kritično mišljenje. Oni se, međutim, ne tiču samo učenika kao subjekta učenja. Suvremeno društvo promatra koncept cjeloživotnog učenja kao jednu od temeljnih kompetencija. Sposobnost pronalaženja, odabira, korištenja različitih obrazovnih programa i istraživanja te korištenje sadržaja dostupnoga na raznim obrazovnim web-portalima predstavljaju vrlo važne vještine za relevantno cjeloživotno učenje. Društvene promjene, u nekim područjima života i znanosti, događaju se naglo i brzo, što čini neprekidno stručno usavršavanje vrlo bitnim za uspješnu orijentaciju u suvremenome društvu. Osim toga, informacijsko društvo pripisuje glavnu ulogu informaciji i znanju tako da se brzo pronalaženje prave informacije smatra također primarnim za čovjekovo funkcioniranje u tome novome društvu.

Korištenje digitalnoga materijala

Pitanja 16 i 17 u upitniku služe da bi se provjerio stupanj do kojega se ispitanici koriste digitalnim materijalom u nastavi. Ispitanicima je ponuđena skala Likertova tipa sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3)

ponekada, 4) skoro nikada, 5) nikada. Tablica 8 sadrži rezultate dobivene deskriptivnom analizom:

Tablica 8.

Digitalizacija nastavnoga materijala podrazumijeva korištenje raznih slika, zvukova i ostaloga što čini multimedijsku prezentaciju nekoga sadržaja. Ta razina ICT kompetencija znači primjenu programa za izradu prezentacija kao osnovu za stvaranje multimedijskoga materijala. Nakon digitalizacije nastavnoga materijala slijedi njegovo korištenje u nastavi.

Kao što prikazuju rezultati u Tablici 8, učitelji i odgojitelji ponekada digitaliziraju nastavni materijal te ga koriste u nastavi. To pokazuje da većina ispitanika ima dobro polazište za tu razinu ICT kompetencija, ali potrebno im je i dodatno usavršavanje. Potpuno je usavršavanje nužno onim ispitanicima koji ,,nikada'' ili ,,skoro nikada'' ne primjenjuju takve programe. Digitalni materijali potiču učenike na učenje, osobito one mlađe kojima je potrebna animacija da bi zadržali pozornost za neku temu. Dobro je poznato da djeca predškolske i rane školske dobi najlakše uče kroz igru, a razne animacije im omogućuju upravo to.

Korištenje web-aplikacija i društvenoga softvera

Pitanja 18 i 19 u upitniku služe da bi se provjerilo koliko se ispitanici koriste web-aplikacijama i društvenim softverom. Ponuđena im je skala Likertova tipa sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, i 5) nikada. Tablica 9 sadrži rezultate dobivene deskriptivnom analizom.

Tablica 9.

Poslije digitalizacije nastavnoga materijala, što podrazumijeva uporabu različitih slika, zvukova i/ili animacija, na red dolazi korištenje web-aplikacije. To obuhvaća sliku, zvuk i animaciju postavljenu na mrežne stranice, to jest Internet. Postoji zaključak prema kojemu je ova razina ICT kompetencija izravno povezana s onom prethodnom, kao jednom od glavnih i polazišnih razina ICT kompetencija – korištenjem Interneta.

Rezultati prikazani u Tablici 9 pokazuju da se učitelji rijetko koriste već gotovim internetskim sadržajima, što odgovara rezultatima o njihovu vrlo rijetkom korištenju programa za internetsko pretraživanje. Odgojitelji se još rjeđe koriste takvim internetskim sadržajem. Može se zaključiti da je učiteljima i odgojiteljima nužno usavršavanje usmjereno na korištenje upravo toga

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programa da bi mogli unaprijediti kompetencije potrebne za primjenu gotovih internetskih sadržaja u nastavi. Rezultati ukazuju na to da se ispitanici više koriste nekim društvenim programom kao načinom komunikacije, nego gotovim internetskim sadržajima u nastavi.

Sudjelovanje u on-line komunikaciji i on-line učenju

Pitanja 20-22 u upitniku služe da bi se provjerilo koliko ispitanici sudjeluju u on-line komunikaciji i on-line učenju. Ponuđena im je skala Likertova tipa sa sljedećim odgovorima: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, i 5) nikada. Tablica 10 prikazuje rezultate zasnovane na deskriptivnoj analizi.

Tablica 10.

Jedna od viših razina ICT kompetencija podrazumijeva sudjelovanje u on-line komunikaciji i on-line učenju. Na taj se način nekome omogućuje cjeloživotno učenje, u ovom slučaju to su učitelji i odgojitelji.

Kao što prikazuje Tablica 10, učitelji i odgojitelji se u nastavi koriste nekim oblikom on-line komunikacije kao što je Skype ili Messener. S obzirom na situaciju u vrtićima i školama te na fakultetima, kao što i prethodni rezultati u našemu istraživanju pokazuju, slijedi međutim zaključak da ti rezultati ne odgovaraju stvarnoj situaciji. Točnije, može se postaviti pitanje jesu li ispitanici razumjeli postavljena pitanja te razumiju li koncept on-line komunikacije i on-line učenja. Prema prethodnim rezultatima, može se zaključiti da se učitelji i odgojitelji koriste nekim oblicima on-line komunikacije. No ne koriste ih u svojoj nastavi. Stvarno stanje na terenu služi kao objašnjenje za to. Ni obrazovne ustanove, od predškolskih do fakultetskih, nisu opremljene za nešto takvo, niti učitelji i odgojitelji raspolažu tim vještinama.

Vještine on-line komunikacije i on-line učenja zahtijevaju najmanje korištenje programa za internetsko pretraživanje, mrežnu komunikaciju i elektronsku poštu. Ispitanici su, pak, pokazali vrlo loše rezultate u tom pogledu.

Dakle, slijedi zaključak da učitelji i odgojitelji ne shvaćaju koncept on-line komunikacije i on-line učenja, ali je prvi korak za stjecanje tih vještina usavršavanje u domeni temeljnih ICT kompetencija.

Razlikovanje nastavnoga gradiva u obrazovnom softveru

Pitanje 23 u upitniku služi da bi se provjerilo koliko ispitanici razumiju prepoznatljivost nastavnoga gradiva u obrazovnom softveru. Ponuđeni su im

sljedeći odgovori na skali Likertova tipa: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, i 5) nikada. Tablica 11 prikazuje rezultate dobivene deskriptivnom analizom.

Tablica 11.

Prepoznatljivost nastavnoga gradiva u obrazovnom softveru podrazumijeva vrednovanje sadržaja s pedagoškoga, psihološkoga, didaktičkoga i metodičkoga stajališta. Ta vještina zahtijeva ne samo ICT kompetencije učitelja i odgojitelja, već i opće kompetencije potrebne za rad s djecom. Na taj način moguće je objasniti rezultate u Tablici 11, koji pokazuju da većina ispitanika ,,skoro uvijek'' ili ''uvijek'' prepoznaje nastavne sadržaje u obrazovnome softveru. Nužno je pojašnjenje ovih rezultata jer je većina ispitanika ranije već odgovorila da ,,nikada'' ili ,,skoro nikada'' ne koristi obrazovne softvere u nastavi.

Korištenje mogućnosti interaktivnoga rada u nastavi

Pitanja 24 i 25 u upitniku služe da bi se provjerilo koliko se ispitanici koriste mogućnostima interaktivnoga rada u nastavi. Ponuđeni su im sljedeći odgovori na skali Likertova tipa: 1) uvijek, 2) skoro uvijek, 3) ponekada, 4) skoro nikada, i 5) nikada. Tablica 12 prikazuje rezultate deskriptivne analize.

Tablica 12.

Najviša razina ICT kompetencija predstavlja znanje i vještine nužne za korištenje pametne ploče pri zajedničkome interaktivnome radu uz primjenu obrazovnoga programa i video-konferencije. Rezultati u Tablici 12 pokazuju da ispitanici nisu razumjeli ova pitanja. Možda su pogrješno shvatili zadane koncepte te su odgovorili da ,,uvijek'', ,,skoro uvijek'' i ,,ponekada'' primjenjuju mogućnosti interaktivnoga rada u nastavi. Prvo, vrtići i škole uopće nemaju pametne ploče kao ni sustav za video-konferencije. Drugo, ova razina kompetencija zahtijeva brojne vještine i znanja o kojima je bilo riječi u prethodnim pitanjima, kada su ispitanici odgovorili da nisu dovoljno kvalificirani za tako nešto.

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Razlike između učitelja i odgojitelja

Zahvaljujući ANOVA analizi utvrđeno je koliko obrazovni sustav, to jest učitelj-odgojitelj utječe na postojeće ICT kompetencije. Tablica 13 prikazuje rezultate ANOVA analize.

Tablica 13.

Rezultati u Tablici 13 pokazuju da, s obzirom na obrazovni profil, postoji statistički značajna razlika u vještini web-komunikacije ($F=3.108$, $p<.05$). U tome su pitanju učitelji pokazali da se koriste suvremenim načinima komunikacije koji olakšavaju komunikaciju između geografski udaljenih sudionika procesa. Taj se rezultat ne može objasniti razlikama u obrazovnim sustavima koji vrijede za učitelje i odgojitelje jer ta se vještina ne usvaja u sklopu redovitoga studija. Ne mogu se također objasniti ni boljim usavršavanjem u domeni korištenja internetom kao glavnim uvjetom za web-komunikaciju.

Možda se objašnjenje gore navedene razlike među učiteljima i odgojiteljima nalazi u osobnoj situaciji ispitanika jer učitelji uglavnom imaju rođake i prijatelje u inozemstvu. Oni se stoga koriste internetom kao najekonomičnijim načinom komunikacije (Soleša, 2010).

Drugu bi razliku u odnosu na obrazovni profil trebalo tražiti u području korištenja video-konferencije. Teško je otkriti razlog tomu, osim što je možda riječ o općenito boljim rezultatima koje učitelji pokazuju na primjeru temeljnih ICT kompetencija. Bez obzira na dobivene rezultate, zaključak je da je usavršavanje u domeni ICT kompetencija nužno od samih osnova.

ZAKLJUČAK

Informacijsko društvo zahtijeva od učitelja i odgojitelja preuzimanje nekih novih uloga među kojima glavno mjesto pripada primjeni informacijsko-komunikacijskih tehnologija, kompetenciji za rad s različitim učenicima, potrebnoj suradnji s ostalim učiteljima i odgojiteljima te stručnjacima i roditeljima, osposobljavanju za promišljanje, istraživanje i vrjednovanje vlastitoga rada. Da bi učinkovito preuzeli sve te uloge, moraju biti otvoreni za promjene i motivirani za cjeloživotno učenje kao i za kontinuirani profesionalni razvoj.

Onoliko koliko su dobiveni rezultati na primijenjenom uzorku učitelja i odgojitelja neočekivani, može se zaključiti da oni nemaju razvijene ICT kompetencije te da je njihovo osnovno znanje, usvojeno tijekom obrazovanja, vrlo slabo. Što se tiče njihove spremnosti na usvajanje novih kompetencija, u skladu sa zahtjevima informacijskoga društva, rezultati pokazuju da u redovima većine njih doista postoji pozitivna motivacija.

Istraživanje prikazano u radu ukazuje na nekoliko pravaca djelovanja, a jedno od mogućih koje autor predlaže je da bi svi učitelji i odgojitelji u Srbiji trebali završiti ECDL tečajeve do kraja 2011. godine kao i osnovni tečaj e-učenja do 2012. godine. Osim toga, na svim fakultetima na kojima se obrazuju budući učitelji trebaju se provoditi tečajevi e-učenja kao sastavni dio nastavnih planova i programa (Soleša, 2008.)

Moguće je nadograditi sve kriterije koji obuhvaćaju e-učenje u programe stručnoga usavršavanja. Nužno je, također, postupno uključivati sve elemente e-učenja u školske predmete i ostale oblike rada u školi te vrlo pažljivo vrednovati rezultate, razvijati nove izvore i usluge e-učenja koji će pomoći djeci da bolje svladaju najsloženija područja nastavnih planova. Bilo bi isto tako vrlo poželjno uključiti učitelje i odgojitelje u proces poboljšanja nastave, u prvom redu se misli na pripremu on-line nastavnih materijala, obrazovnih web-portala, školskoga sustava upravljanja informacijama i sl.