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APPLICATION OF COMPUTERS IN TEACHING AND LEARNING FROM THE TEACHER'S POINT OF VIEW

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Abstract

This paper analyses the possibilities that teaching with the use of the computer has to offer. The purpose of this research is to determine the effects of using computers in teaching according to teachers, ie. to which extent computer-based learning is easier compared to traditional learning.

In this study, the Survey method of descriptive scientific-inquiry was used, in its analytical variant. The technique of questioning, scaling and interviewing was used in the research. The sample of examinees consisted of primary school teachers from Vranje, and it was of stratified simple-random sampling.

The conclusion is that teachers agree that the use of computers in teaching increases students' motivation, facilitates monitoring and the assessment of the students' performance, increases academic achievement of students and enables the actualization of the teaching material.

Key words: computer, teaching, learning, teaching technology, teaching material.

ПРИМЕНА КОМПЈУТЕРА У НАСТАВИ И УЧЕЊУ ИЗ УГЛА НАСТАВНИКА

Апстракт

Предмет рада су предности које нуди настава помоћу рачунара. Циљ истраживања је утврдити ефекте коришћења рачунара у настави према мишљењу наставника, тј. у којој је мери учење употребом рачунара олакшано у поређењу с традиционалним учењем.

У раду је коришћен поступак дескриптивне научноистраживачке методе у његовој наглашеној аналитичкој варијанти. У истраживању је коришћена техника анкетирања, скалирања и интервјуисања. Основни скуп истраживања чинили су наставници основних школа из Врања. Узорак испитаника био је стратификованог једноставнослучајног карактера.

Закључак је да су наставници сагласни да коришћење компјутера у настави повећава мотивацију ученика, олакшава праћење и проверу њиховог постигнућа, повећава академско постигнуће ученика и омогућује актуелизацију наставних садржаја.

Кључне речи: компјутер, настава, учење, наставна технологија, наставни садржај.

INTRODUCTION

The contemporary teaching process cannot be considered as such without the use of computer technology, i.e. without the use of computer in teaching, which has various functions in the educational process: the subject of studying, as a tool in the teaching process, the component of pedagogical management system, the component of the management of the educational facility, as a tool in the scientific-pedagogical field.

Various studies about the use of computers in teaching indicate positive attitudes of teachers toward the use of computers (Keengve & Onchvari, 2008; Voogt, 2010; Martinovic & Zhang, 2012; Linberg et al, 2016; Baş, Kubiatko & Sünbül, 2016). However, certain studies have shown that despite the increase of ICT, teachers have been using computers in teaching only at the elementary level (Wachira & Keengwe, 2011; Barak 2014). In the studies 'Are students ready for a technology rich world' (OECD, 2004), 'The Becta Review' (Becta, 2006), 'Benchmarking Access and Use of ICT in European Schools' (Empirica, 2006) it is pointed out that the computer is the most used ICT in teaching. In his study, Sipila (2014) encountered gendered-based differences in use of computers in teaching. ICILS – international educational research (Braš-Roth, Markočić-Dekanić & Ružić, 2014) pointed out positive attitude toward use of computer in teaching, as well as differences among attitudes of older and younger teachers. Younger teachers show a more positive attitude than the older ones. A study on attitudes toward teachers' and students' use of ICT in teaching process (Džigurski, Simić, Marković, Šćepanović, 2013) indicated a significantly more positive attitude toward the use of computers among younger teachers. Another study (Andevski, Vidaković, Arsenijevič, 2014) shows that 80% of teachers are using computers in teaching, and yet another (Lindberg, Olofsson, & Fransson, 2016) shows that the use of computers provides time and space flexibility which is why the computer has been used in teaching.

COMPUTER IN TEACHING PROCESS

Computers open new and vast opportunities for the improvement of the educational process, and partake in numerous important roles: posing questions, evaluating students' answers, providing feedback, evaluating students' progress, presenting information, enabling corrective instructions, summarizing key points, the storing of records and data, raising issues, manipulating data.

In traditional education, students mostly communicate with the teacher and use textbooks, which are the two main sources of information that regulate their activity. By using a computer program, a student is personnally interacting with large number of people engaged with the same. In that manner, the didactic process becomes a multidisciplinary

one, involving a multitude of persons. Such a process is essentially accelerated via telecommunication networks. Contrary to traditional education, where the student follows one path of events with the simple elaboration of events and a unique view of the world (that is being presented to a student), by using computer programs, dealing with various sources of information, the student is familiarized with many different, often contradictory attitudes and opinions.

What is raised as the most significant issue is the problem of teachers' competence to apply new information technologies in the teaching process, such as electronic mail, DVDs, multimedia systems etc. It is necessary to reorganize the forms of teaching process, through larger individual and collective participation and engagement of students in practical and laboratory research, and wider application of individual activities. The aforementioned would compel society and pedagogues to accept the necessity for changing the educational paradigm. The aim should be that students stop passively receiving the presented facts, laws, concepts, attitudes, and more frequently be in a situation to independently solve problem-based tasks. The introduction of new information technology into the teaching process leads to thorough change of the teachers' functions, which will be, along with the students', becoming more and more focused on exploring, programing, organizing and consulting.

New teaching technologies are neither, nor can they be, a complete negation of the existing practice, they cannot be promoted on the ruins of verified values, but through the creative synthesis of the existing and new teaching technologies (Vasilijević, 2017).

Developed countries continue to introduce multimedia computer technology in schools, which enables the unification of text, sound, video and graphic display, and animation within the computer system, thus creating the language of modeling of virtual reality. The use of virtual reality (integrative techonologies that create an illusion of reality in computer simulated environments, by means of universality of program tools and diversity of technical mechanisms, and enable user's active aprticipation in it) in educational process creates an effect of active engagement which enables the changing of a complete system of teaching and learning. There is a possibility that various information materials are provided to the student, through his immediate contact with studied topics and situations, and the possiblity of projecting educational situations in which the student can accept some solutions and opt for certain activities.

> As technology continues to bring changes in education, institutions for the improvement of teachers' computer competency skills should develop incentives for facilitating of introduction of the role of new technologies in education and provide the possibility for experimenting with the new practice in order to further integrate technology into processes of teaching and learning (Hu, Gong, Lai & Leung, 2018).

Computer-aided Learning

If computer-based teaching is organized starting from its specificities and possibilities, it cannot be observed only as instrumentally-technological or oversaturated with information sources on which the foundation the pedagogical intrumentarium is based on. It is time to raise the issue of changing education goals that would be harmonized with information civilization. The entire educational system should be based on principles of informatization. Information technologies should become means of support in the teaching process in all types of schools. Information society enables easier access to data and information, therefore schools should teach and capacitate each student to collect, select, classify and use this information.

Learning aided by computer technologies has, according to Mandić, three basic components: computer-aided learning, computer-aided research and long-distance learning (Mandić, 2010, p.123). Computer-aided research presents rather suitable grounds for achieving interaction between the student and computer, which makes teaching itself more transparent, dynamic and more interesting, since it engages more senses in the cognitive process. Advantages of such learning are individual acquiring of knowledge, constant feedback and the monitoring of progress and assessment of the student's performance. Computer programs direct the student toward using other didactic media as well. Three-dimensional virtual reality achieved through educational software raises the learner's inner motivation and interest. Computer-aided research enables educational facilities to theoretically explore literature of various fields, and, moreover, it is successfully practiced in the empirical explorations by using appropriate statistical software, having in mind that nowadays almost all of significant books, papers, studies and anthologies from professional meetings are being converted into digital editions and uploaded on the Internet. Long-distance learning, with the help of computers, telecommunications and cable television, enables that instead of people, information and ideas are travelling in a time, space and cost-efficient manner, and such learning also allows that lecturers be the most prominent experts.

Mandić points out several forms of learning with the use of the computer a) at the same time and at the same place, b) at the same time in different places, c) at different time period and at the same place, d) at different time period and in different place (Mandić, 2010, p.57).

The basic charactersitics of learning at the same time and at the same place are: teaching is common for all students in the class and is performed in a classroom or office; such form of computer teaching is efficient if being realized in multimedia classrooms equipped with a multimedia teacher's desk, closets for the teaching material and projector canvas screen. Learning in different places and at the same time is put into realization through teleconferences with the help of a computer and camera which record the leacturer, and students who are in different

locations. Sound is being transmitted via microphones and speakers. Teleconferences are form of synchronous exchange of messages and information between geographically distant indiviuals and groups, by which time and money are saved. Learning at different time periods and at the same place is possible to be organized if the school is equipped with moden media center. Students from the same location, if unable to attend lectures, learn at the period of time most suitable for each of them. Learning via the computer at different time periods and in differ places is the most complex one. It is distinctive for the fact that students follow the lecture in their apartments, asking explanations from the physically remote teacher, who provides information, and students evaluate themselves as to whether they learnt the teaching material or not. The user receives audio-visual information from remote geographical location at a place of his selection. Such information can be saved and used by the user when the class is over. This is the case of asynchronous communication.

METHODS

The subject of this research was to examine the impact of computers on the teaching process and learning. The purpose of this research is to determine the effects of using computers in teaching according to teachers, i.e. to which extent computer-based learning is easier compared to traditional learning. Considering everything mentioned earlier, the tasks of the research were set as follows: to identify the differences in the teachers' attitudes about using computers in the teaching process in relation to gender and years of work.

The research started from the general hypothesis that teachers perceive and emphasize the key benefits of computer-based teaching over traditional teaching, and from the sub-hypothesis that there is no statistically significant difference in teachers' attitudes in relation to gender and years of service.

In this study, the survey method of descriptive scientific-inquiry was used, in its analytical variant. That method implies the use of various instruments for collecting adata, and afterwards for their thorough analysis and detection of cause and effect relationships. By using such a method, empirical data of attitudes and opinions of teachers was collected. The complexity of the subject of the study required the use of various research instruments for data collection. The technique of questioning, scaling and interviewing was used in the research. The following instrument was used: Scale EŠ-1, Questionnnare for teachers about their attitudes and opinions regarding use of computers in teaching. Methods used for statistical processing of data were – measures of central tendency: artithmetic mean (M), Variability measures: standard deviation (SD), Frequency analysis, single-factor ANOVA. Main sample (population) comprised of 320 teachers of primary schools on the territory of the Pčinja District. The examinee sample was of stratified simple random sampling.

RESULTS AND DISCUSSION

Within the hypothesis the examinees (teachers) point out important features of teaching with the help of computers. It is assumed that there is significant level of the same opinion among teachers regarding teaching with the use of computers; therefore, descriptive statistic values have been evaluated for each of the total of 12 indicators that the EŠ questionnaire contained. In that manner, data about basic tendencies of answers of the sample of examinees were obtained, as well as the level of mutual concurrence among the examinees. The basic indicatiors for the use of the computer in teaching were obtained by the analysis of selective sources. Results related to attitudes and opinions of examinees on indicators of teaching with the use of computers are presented in table 1.

Table 1. Descriptive statistics values for scale of examinees EŠ-1

Indicators	M	Min	Max	SD	Sk	Ku	K-S	p
Computer helps students to understand abstract contents	3,96	2	5	0,85	-0,32	-0,76	3,04	0,00
Computer helps teachers to develop the curriculum	18,98	11	24	2,89	-0,63	-0,15	2,15	0,00
Computer helps in finding multimedia teaching material	15,31	8	20	2,78	-0,58	-0,33	2,30	0,00
Use of computer in process of learning makes students more motivated	34,33	15	65	5,99	-0,59	6,76	2,12	0,00
Use of computer enables actualization of teaching materials	19,38	9	24	2,82	-0,87	0,88	2,01	0,00
Use of computer facilitates monitoring and assessment of students' performance	22,13	10	28	3,56	-0,76	0,78	1,71	0,01
Use of computer in teaching process provides larger possibilities for students' participation in learning process	11,34	4	15	2,21	-0,70	0,17	2,06	0,00
Use of computer makes teaching more interesting	11,30	5	15	2,11	-0,68	0,29	1,97	0,00
Use of computer increases academic achievements of students	19,86	14	25	2,62	-0,13	-0,56	1,31	0,07
Use of computer in teaching makes communication more functional	11,36	6	15	2,17	-0,53	-0,24	1,84	0,00
By using computer, learning process becomes more flexible	11,64	3	15	2,37	-1,10	1,29	2,56	0,00
Computer simplifies access to information	11,46	5	15	2,05	-0,80	0,61	2,36	0,00

M – Arithmetic mean, R – Range of values (Max-Min), SD – Standard deviation, Ku – Kurtosis, Sq – Skewness, K-S – Kolmogorov–Smirnov test, p – level of statistical significance

The first thing that can be noticed in the table 1 is the fact that arithmetic mean values for all scales are closer to the upper than to lower limit of obtained range of values. That fact clearly suggests that values are systematically moved towards the part of the scale with higher values, and

we have to stress that the presented arithmentic means have rather different values for 12 different scales. However, the number of items per scale is significantly different, thus by no means the values of arithemtic means of different scales should be compared, but only the behaviour of the value within each separate scale. Therefore, the first observed conclusion is that the arithmetic means of the obtained values are moved towards the part of scale with higher values. In practical terms, teachers agree that the presented statements give connotations on the use of computers in the teaching process.

The observed shifting of the distribution of values towards the higher scores is another addition to the previous statement. All Skewness values have a negative sign which indicates that most of the examinees achieved values higher than the arithmetic mean. That is also shown by Kurtosis values. Vertical deviation from regular distribution is in this case shown through an observation that examinees mostly agree that the use of computer in the process of learning makes students more motivated (Ku= 6,76). The values of the Kolmogorov–Smirnov test were applied to check if these are normal distributions of values or our distributions of values devatied from the usual ones. All of obtained values are statistically significant on value 0,01 which points out the fact that they do not deviate from normal distrubution.

The teachers' opinion that the use of computers in teaching increases motivation of students (Torff & Tirotta, 2010) has value of M=34,33. She and Lee claim that "use of computers in teaching can significantly increase motivation of students, since modern teaching materials are more apparent, interesting and alluring, and therefore are more effective in attracting students' attention. Images, sounds, animations, hypertext are often much more interesting than teacher's monologue" (She & Lee, 2008, p.729). The use of computers facilitates the monitoring and assessment of students' performance (Džigurski et al, 2013) with value of M=22,13. "There is optimal individualization of student's work, progress of learning and increased performance largely depends from student's knowledge and abilities, and at any time student knows what he had and what he had not learned, what mistakes he has made and how to correct those errors" (Arsović, 2006, p.570). Teachers consider that the use of computers in teaching would increase the academic achievement of students (Mercier & Higgins, 2013) with M=19,86. The use of computers enables the actualization of teaching materials (Džigurski et al., 2013) has value of M=19,38. Use of computers enabled overcoming of similar problems related to the curriculum. (Džigurski, 2013; Liu, Hasson, Barnett & Zhang, 2011; Agrawal & Mittal, 2018) has value of M=18,98. Teachers recognize the finding of multimedia teaching material, M=15,31, as one of possibilities of computer uses. Multimedia software enables the browsing of relevant data base and finding of solutions for certain problems, tasks, answers to questions and similar issues, but at the same time possibility to in parallel enable students to check accuracy of their answers. The possibility of students'

active participation in the processes of learning can significantly influence their interests and efficiency of learning (Chi, 2009; Džigurski et al., 2013).

On the penultimate position are statements: use of computers in teaching makes communication more functional, with use of computers, the learning process becomes more flexible, the computer makes access to information easier, use of computers makes teaching more interesting, and on the last place with value of M=3,96 is a statement that computers help students to understand abstract notions.

Influence of Difference in Gender on the Attitudes of the Examinees

We also inquired whether there are differences in attitudes of examinees with regard to the independent variable of examinees by gender. Results are presented in table 2.

Table 2. Descriptive statistic values and t-test by gender

Indicators	Gender	M	SD	SE M	t	p
Computer helps students to understand abstract contents	Male	4,08	0,91	0,10	1,56	0,12
	Female	3,89	0,82	0,07		
Computer helps teachers to develop the curriculum	Male	19,13	2,90	0,33	0,58	0,56
	Female	18,89	2,89	0,26		
Computer helps in finding multimedia teaching material	Male	15,42	3,11	0,36	0,43	0,67
	Female	15,25	2,57	0,23		
Use of computer in process of learning makes students more motivated	Male	34,39	5,44	0,62	0,11	0,91
	Female	34,30	6,33	0,57		
Use of computer enables actualization of teaching materials	Male	19,45	3,03	0,35	0,25	0,80
	Female	19,34	2,70	0,24		
Use of computer facilitates monitoring and assessment of students' performance	Male	22,79	3,40	0,39	2,07	0,04
	Female	21,72	3,60	0,33		
Use of computer in teaching process provides larger possibilities for students' participation in learning process	Male	11,61	2,43	0,28	1,32	0,19
	Female	11,18	2,06	0,19		
Use of computer makes teaching more interesting	Male	11,58	2,06	0,24	1,46	0,15
	Female	11,13	2,12	0,19		
Use of computer increases academic achievements of students	Male	19,95	2,04	0,23	0,38	0,71
	Female	19,80	2,93	0,26		
Use of computer in teaching makes communication more functional	Male	11,42	2,11	0,24	0,29	0,77
	Female	11,33	2,22	0,20		
By using computer, learning process becomes more flexible	Male	11,79	2,36	0,27	0,72	0,48
	Female	11,54	2,39	0,22		
Computer simplifies access to information	Male	11,89	2,09	0,24	2,36	0,02
	Female	11,20	1,98	0,18		

In the testing of this auxilliary hypothesis, t-test for independent samples was applied, for each of the 12 evaluated indicators of teaching with the use of the computer. The obtained data show that there are statistically significant differences at only two features of teaching, i.e. Use of computer facilitates monitoring and assessment of students' performance, which is statistically significant among males (M=22,79) rather than females

(M=21,72), as well as the feature - Computer simplifies access to information - where examinees of male gender have average value of M=11,89 and females M=11,20. In both cases, statistically significant difference of 0,05 was obtained. It is important to note that this conclusion does not indicate that female examinees do not consider these two features important, but that male examinees are pointing out their importance and significance for successful teaching. Some studies show that there are gender-based differences regarding the use of computers in teaching (Schiler, 2003; Tondeur, Valcke & Van Braak, 2008; Alazam, Bakar, Hamzah & Asmiran, 2012; Džigurski et al., 2013; Sipila, 2014; Braš Roth et al., 2014) while some studies show that there are no gender differences related to the use of computers in teaching (Cavas, Cavas, Karaoglan & Kısla, 2009; Rana, 2012).

Based on tested differences it can be concluded that within the hypothesis, male and female examinees, generally speaking, do not have statistically significant differences with regard to attitudes and opinions on the sample of examinees of our study. Differences between examinees, based on their gender, were noticed only at two indicators, nevertheless only in strength of positive values which male examinees have toward those two features (Use of computer facilitates monitoring and assessment of students' performance and Computer simplifies access to information).

Influence of Years of Service on the Attutudes of the Examinees

Within the hypothesis, we explored whether years of service are a relevant factor that influences attitudes and opinion of examinees on indicators of teaching with the use of computers. Results are presented in table 3.

Sigle-factor analysis of variance was used in responding to the raised hypothesis. As can be seen in the obtained table, four features of the use of computers in teaching did not show any susceptibility to years of service. Those features are: Use of computer enables actualization of teaching materials, Use of computer facilitates monitoring and assessment of students' performance, Use of computer makes teaching more interesting, Use of computer in teaching makes communication more functional. Hence, regardless of teachers' years of service, these four features are always as equally important.

On the other hand, it was established that other eight indicators of the use of computer in teaching are susceptible to the length of years of service. Namely, arithmetic means are constantly the highest in the category of teachers with up to 10 years of service, and the lowest among the category of teachers with years of service of more than 30 years. This basically indicates that there is certain difference of opinion between examinees who are at the beginning of their careers and those teachers who are at the end of their years of service, which was also confirmed in other studies (Empirica, 2006; Cavas et al., 2009; Rana, 2012; Alazam et al., 2012; Džigurski et al., 2013; Braš Roth et al., 2014).

Table 3. Variance analysis with regard to years of service

Indicators	Years of service	M	SD	F	p
Computer helps students to understand abstract contents	– 10	4,13	0,80	1,56	0,20
	11 – 20	3,86	0,88		
	21 – 30	4,00	0,78		
	31 –	3,75	1,00		
Computer helps teachers to develop the curriculum	– 10	19,16	2,66	0,88	0,45
	11 – 20	19,14	2,91		
	21 – 30	18,71	3,24		
	31 –	18,00	2,92		
Computer helps in finding multimedia teaching material	– 10	15,65	2,61	2,80	0,04
	11 – 20	15,28	2,76		
	21 – 30	15,65	3,03		
	31 –	13,50	2,53		
Use of computer in process of learning makes students more motivated	– 10	35,19	7,69	0,98	0,40
	11 – 20	34,07	4,59		
	21 – 30	34,29	4,69		
	31 –	32,50	7,48		
Use of computer enables actualization of teaching materials	– 10	20,16	2,31	6,77	0,00
	11 – 20	18,98	2,77		
	21 – 30	20,06	2,16		
	31 –	17,13	4,43		
Use of computer facilitates monitoring and assessment of students' performance	– 10	22,97	3,32	5,37	0,00
	11 – 20	22,30	3,43		
	21 – 30	21,53	3,04		
	31 –	19,25	4,61		
Use of computer in teaching process provides larger possibilities for students' participation in learning process	– 10	11,84	1,95	4,25	0,01
	11 – 20	11,05	2,08		
	21 – 30	11,82	2,10		
	31 –	10,00	3,27		
Use of computer makes teaching more interesting	– 10	12,13	1,81	6,38	0,00
	11 – 20	11,12	1,92		
	21 – 30	10,88	2,63		
	31 –	10,00	1,93		
Use of computer increases academic achievements of students	– 10	20,26	2,26	1,51	0,21
	11 – 20	19,91	2,82		
	21 – 30	19,47	2,18		
	31 –	18,88	3,40		
Use of computer in teaching makes communication more functional	– 10	12,23	1,59	5,56	0,00
	11 – 20	11,07	2,00		
	21 – 30	11,00	2,70		
	31 –	10,38	2,83		
By using computer, learning process becomes more flexible	– 10	12,13	2,36	2,98	0,03
	11 – 20	11,74	2,08		
	21 – 30	10,94	2,68		
	31 –	10,63	2,08		
Computer simplifies access to information	– 10	11,68	2,12	3,11	0,03
	11 – 20	11,74	1,83		
	21 – 30	10,65	2,31		
	31 –	10,08	1,89		

From such a standpoint, the hypothesis cannot be accepted because the influence of years of service onto certain indicators of teaching with the use of computers has to be taken into account.

CONCLUSION

It is an indisputable truth that school is affected by socio-economic and technological changes, but it also cannot be denied that, at the same time, it has an effect on those changes by accelerating the development of civilization. Schools are a reflection of society. Weaknesses of schools are the weaknesses of the society. Every country tries to put education and schools on healthy foundations, starting from the notion that knowledge is the key factor of the development of each society, and especially of economy and culture.

In traditional education, a student would be following a singular path of events, receiving a singular explanation of terms and events, acquiring a singular world view, etc. By using computer programs, and encountering various sources of information, the student comes in contact with many different attitudes and contradictory opinions. Students should be helped in chosing proper values.

If teaching with the use of computers is organized with the focus on its specificities and possibilities, it cannot be observed only as instrumentally-technological or oversaturated with information sources on which foundation the pedagogical intrumentarium is based on. The time has come to raise the question of changing educational goals that would be harmonized with the information civilization. The entire education system should be based on the principles of informatization. Information technology should become the supporting tool for the pedagogical process in all types of schools. Information society enables the easier obtaining of data and information; thus, schools should teach each student to collect, select, classify, process and use information.

In this paper we reached the conclusion that the use of computers in teaching has the largest effect on increasing student motivation and on facilitating the monitoring and assessment of students' performance, and has the least effect on helping students understand abstract content.

Based on tested differences, among male and female examinees, there are generally no statistically significant differences with regard to attitudes and opinion of the group of examinees in total of our study. Differences have been noticed only at two indicators, but only in strength of positive attitudes which male examinees expose toward two features (Use of computer facilitates monitoring and assessment of students' performance and Computer simplifies access to information). Furthemore, there are some differences among examinees at the beginning of their career and those teachers who are closer to retiring.

Limitations of this work is insufficient computer equipment, unsatisfactory teacher training and their inability to use computers at all times in schools.

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ПРИМЕНА КОМПЈУТЕРА У НАСТАВИ И УЧЕЊУ ИЗ УГЛА НАСТАВНИКА

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Резиме

Облици примене компјутера у школској пракси су многобројни. Компјутер се користи као средство у настави за савладавање наставног материјала, у наставничком раду за организацију, подршку и контролу наставног процеса, у организацији и управљању школом (распореди часова, вођење библиотеке, финансијско пословање, архивирање итд.), као подршка у раду са децом ометеном у развоју, за ванразредне и ваншколске активности ученика итд. Без компјутерске писмености, под којом се подразумева вештина да се проналазе, прихватају и користе информације, да се успостављају везе у текстовима, конструишу модели реалних догађаја помоћу компјутера, ово најмодерније информационо средство не може се користити у настави и учењу.

Једна од важних функција компјутера у образовно-васпитном процесу је посредовање између извора информација и оних којима су те информације потребне (наставници, ученици). Компјутер повезан са звучним и визуелним средствима у мултимедијски склоп може да се користи за електронске поруке, велике и мале дискусионе групе, велике видео-конференције, добијање информација из база знања, за учење на мрежи, коришћење програмираних архива података похрањених на мрежи (слика, звук, текст). На тај начин ученици добијају истраживачку слободу и развијају лични стил учења. У прилог овоме говоре и резултати добијени у овом истраживању. Коришћење компјутера утиче пре свега на повећање мотивације ученика јер су савремена наставна средства много интересантнија. Употреба компјутера олакшава праћење и проверу постигнућа ученика пошто ученик у сваком тренутку зна на чему је, шта је научио, а шта није, за разлику од традиционалне наставе у којој ученицима недостаје мотивација, а нема ни повратне информације.

Наставни садржај који треба савладати може се добити у различитим облицима, у било које време и било где. Највећа предност од коришћења компјутера у настави је општеприсутна информација и наставникова инструкција ослобођена временских и просторних ограничења. Настава добија у разноврсности – од прецизно структурисаних задатака, па све до пројеката у којима ученици слободно развијају свој стил у решавању задатака.

У раду се дошло до закључка да коришћење компјутера у настави највише утиче на повећање мотивације ученика, олакшава праћење и проверу постигнућа ученика и повећава академско постигнуће ученика. Употреба компјутера омогућава актуелизацију наставних садржаја, превазилажење специфичних проблема везаних за наставни план и програм и проналажење мултимедијалних наставних садржаја. Испитаници мушког и женског пола не разликују се статистички значајно у свом мишљењу, али постоји одређено неслагање испитаника који су на почетку своје каријере и оних наставника који свој радни век приводе крају.