

SCIENTIFIC WORK REVIEW**SCIENTIFIC WORK REVIEW****Danijela Cicović,****Faculty of Physical Education and Sport Istočno Sarajevo****UDK: 371.3:004.7**

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THE POSSIBILITIES AND EFFECTS OF INCORPORATING MULTIMEDIA INTO TEACHING***Abstract:***

The aim of this paper is to point out the general characteristics of the modern age and the development of information technology as well as the possibilities of computer use in teaching. Man's needs, the way of life and working environment have changed, as a result/consequence of the technological revolution so it is necessary to change the teaching process as well. The development of information technology asks for a greater use of computers in teaching. This opens the question of the teacher's role, for s/he should use information technology to a greater extent. The topic of this paper is the research of usefulness of the multimedia for the development of the overall teaching process, that is, what are the effects of the application of the multimedia to the traditional teaching. Theories and researches, examining the multimedia in teaching, from a broader interest area of teaching development, and applied in our country, as well as foreign ones, have been discussed.

Key words: student, teacher, classes, multimedia, teaching methods, innovations, information technology, computer

INTRODUCTION

The quality of the work of a traditional school cannot satisfy the needs of the contemporary society. The modern society demands that the individual gathers information on his/her own, manages them, analyses them and transforms them into useable knowledge. The downfalls of the traditional teaching are particularly noticeable in the area of the *individualisation of teaching and learning*, raising the inner and outer motivation and a more real and objective assessment of the students' knowledge. The traditional teaching method demands that the student reproduce the content of the subject, and not to be an active recipient of knowledge. The weakness of the traditional manner of teaching is evident in the inflexibility of the time and place of attending lectures. In this type of teaching it is paramount that all students be at the same place at the same time, a notion overcome in the application of information technology to teaching.

Expansion and development of the information and communication technologies (ICT) in the society has brought about their implementation in education as well. Contemporary education technologies have become a part of the teaching process, with a tendency to improve it and, basically, change it. Using multimedia

introduces changes into the teaching process. In this paper, we have tried to identify and analyse more important effects of the implementation of multimedia in teaching.

Multimedia has always raised interest among teachers, precisely because of their ability to make the communication between the teaching materials and students easier and better, as well as secure a more efficient learning. During the 80s and 90s of the previous century the concept of multimedia got a new meaning. New media with great possibilities were created. Combined with the advanced hardware and software that multimedia are capable of offering an improved, rich learning, with a special focus on the specific needs of every student. While defining the term multimedia different interpretations appear, depending on the perspective/approach. The general point of view that defines the term multimedia is that multimedia represents the integration of more than one medium (text, sound, video, animation etc) which complement each other and enable a greater transfer of information. The gist of multimodality is interactivity as the main characteristic of media. When it is applied to the field of teaching it could be concluded that using multimedia in teaching is broadcasting, that is, a display of educational, and teaching content through the interconnected, interactive media and that it enables different methods and forms of learning.

1. TRADITIONAL TEACHING METHODS

In the history of didactics a range of different teaching methods have appeared and we will briefly define the most commonly mentioned ones: frontal work, group work, pair work and individual work.

Frontal work is most common one in our educational system. Experts believe that the reason of its popularity is the comfort and experience of the teacher. Comfort in the sense that this is the shortest and simplest way of teaching and it takes the least time for preparation. This method has been used in achieving the greatest number of teaching goals. Using software in frontal work is possible by using the BIM projector, a digital blackboard or a big screen so the whole class could see it.

Group work is done in such a way that one group of students works on one computer or individuals (and computers) work coordinated on one task. The connection between the individuals is secured by the school network, which could be a local one or the Internet.

Pair work can be achieved through pairs working on one computer or individual students (and computers) working coordinated on one task. The connection between the individuals is secured by the school network, which could be a local one or the Internet.

Individual work is in the greatest number of cases done by using software during the class on one computer (one student-one computer). Individual work can be incorporated by “stopping” the frontal work (solving the problems – using software individually on the computer or by the board, electronic blackboard or computer).

The most efficient methods of learning are those that put the student in an adequate position in the process of knowledge acquisition. Situations of learning in which different activities of the students, which encourage different ways of learning, are promoted should be created.

2. USING MULTIMEDIA IN TEACHING

The production of professional and scientific information has brought about an ever growing need for their adoption (implementation) and use, as the teacher and teaching material (books), under such circumstances, are not the only source of information. There is a greater need in teaching for the application of information-communication technology and multimedia in order to provide for the student the ability to gather knowledge in a media enriched environment, which involves a number of receptors during the reception of information, individualises the content and the way of learning, which ultimately makes the effects of the teaching process greater. It should be emphasised that during the application of multimedia in teaching care should be taken that the information that those media deliver is not repeated in an unplanned manner. Each media's advantage should be used, so that during the delivery of the content the medium that can perform the given task in the most quality manner is intensified. Multimedia in teaching should bring about the emphasis, development and rationalisation of the process of teaching and learning. The teaching helped by the use of multimedia becomes easily understandable, more convincing, which is achieved by connecting the written word, pictures, sketched, sound, animation during the work with the teaching materials. The implementation of multimedia in teaching has disposed of the traditional teaching methods (monologic, dialogic, textual) but, for such a method, audio and visual elements are included and they are more important. The students of the 21st century differ from those generations before them in the life and work styles. They are surrounded by media on a daily basis and the information flow is greater than even which means that even children are more informed than in the past years. They seek and use information daily. The students are skilled with computers, mobile phones, DVD and other multimedia. Precisely because of that, their needs are greater than what the traditional teaching methods can offer. New technology is a part of various human activities so they have a use in education from the preschool age up to faculty (see D. Mandić, 2010: 34)

Technical and technological progress, after it has been successfully implemented in all the segments of a society, is reflected in the teaching and changes it unavoidably. Unfortunately, those changes in education not rarely come late. However, even though slowly, the teaching process is being modernised, by training the employees as well as using media and multimedia when the technically more modern means take place of the outdated ones. However, it should be pointed out that even though a school is equipped with the most modern multimedia it does not guarantee the functional use of those multimedial devices in teaching. In order to do that, personal and professional competence of the teacher is important, because whether the multimedia will be used in a traditional sense or the developmental one depends on it. The main goal is that the multimedia are used and implemented in teaching in order to achieve the emancipation and development of the students and the focus on the quality of teaching. Therefore, new teaching strategies are formed, which are focused on the students. The thesis that has been scientifically proven is that a student, of average abilities, can remember 10% of the read content, 20% of the one s/he heard, 30% of the seen one, 50% of the one s/he heard and saw at the same time, 70% of the one s/he can dramatise and write himself/herself and even 90% of the one s/he can think up, say, realise and do. These results must have an effect on the teachers to have them provide such a teaching concept, a good teaching environment that would involve all the student's senses along with the participation of the student's mental, cognitive and psychomotor capabilities. Without doubt, this is achieved through the use of multimedia in the teaching process.

The demands of the modern age and the development of the information technology ask for the changes in the whole society, including the teaching process. Incorporating information technology into the teaching process the weaknesses of the traditional methods are overcome. Apart from numerous downfalls of the traditional methods we must not forget its advantages. A positive characteristic of the traditional method of teaching is the development of the individual in a social environment, which must not be overlooked with the application of information technology to teaching. Vilotijević, speaking of traditional teaching with frontal work, says “That concept has been used to the maximum and it cannot be expected to bring new qualities. When one technology is exhausted, new ones must be introduced because teaching methods cannot remain at the already achieved“(M. Vilotijević, 2003: 18). Information technology offers numerous possibilities of innovating teaching and the society must use them to overcome the downfalls of the traditional method of teaching. The use of information technology can improve learning of all students, those with lesser capacities as well as those with the extraordinary ones. Using different media in the teaching process could make information much more attractive to the students. One of the basic characteristics of modern teaching which uses information technology is the opportunity for activation of the students and their individuality. Information technology allows the student to use a greater number of sources of information and do individual research as well as test their hypotheses. The students are no longer objects in the process of teaching but they are mentally active and they participate in their education. Contemporary information technology and its gradual implementation in the teaching process overshadows the traditional method in which the teacher and the book are the only source of information. The role of the teacher in the teaching process is significantly changed by it. The teacher becomes the organiser, counsellor and the one who evaluates. The change of the role demands the teacher to gain knowledge and skills in the area of using new technologies, all with the aim of raising the quality of the teaching process.

3. MULTIMEDIA “DIDACTIC TRIANGLE”

Teaching factors in the didactic sense are represented by the so-called didactic (teaching) triangle: teaching materials, student, teacher. In the present moment it might be possible to talk about the didactic quadrangle where the medium would be the fourth factor. This point of view is the result of a growing need for the informatisation of the teaching process, which has been set up in schools gradually. It is a matter of time and means of having enough technical and technological conditions in the schools as well as the education of the employees before this process is undertaken in all schools.

Many benefits come from the use of multimedia in teaching:

- The teaching materials are brought closer to the students by presentations, interactive software pack, the Internet;
- The learning and working environment is enriched and a greater number of senses is activated in contact with the teaching materials;
- The content is enriched, an easy and continuous connection and parallel making between the content of different subjects is possible.

Implementation of multimedia is an imperative in the contemporary teaching. The effects that it has on the teaching process depend on its use. If they are implemented in the right way multimedia has the capacity to enrich and promote learning in a way that is comfortable for the students. The potential of multimedia in the teaching environment is great. However, even the most contemporary multimedia

can lead to a didactical failure. Therefore, it is especially important to choose correctly, to organise and apply multimedia in teaching according to the needs, possibilities, goals present at the time in the teaching process. It is obvious that multimedia have important effects on the teaching process. Yet, we should not approach their use in a limited way. It would be best to combine multimedia with other devices, sources and the teacher should organise them, follow the effects of teaching and correct them, all by deciding which and to which extent to use certain multimedia.

The teacher must be didactic, must act methodically and must know the possibilities multimedia offers, for only then would s/he be able to create a teaching process supported by multimedia that will use all the capacities of the chosen multimedia, and their weaknesses reduce or even overcome. This would result in a more efficient teaching process. The teacher must be the carrier of the process, the creator and manager of his/her work. The teacher, before the multimedia had their place in the classroom, the leading (apart from the book) source of information. The role of the teacher has undergone many changes, under the influence of the application of multimedia to teaching. However, in order for multimedia to have a positive influence on the teacher, s/he must be trained for their use. An organised and thorough training is needed, without any unorganised implementation of multimedia. Contemporary school demands teachers who possess a high pedagogical, technical and technological knowledge, capable of organising, managing and ensuring teaching communication supported by the multimedial electronic technologies.

The role of the student in the teaching process changes with the arrival of the multimedia in the classroom. Instead of remembering, s/he, as a part of the teaching process that learns, must be capable of activating the learning system and to use the best, most important and complete information from the presented content. On the level of his/her potentials and abilities (intellectual and physiological) the student has the systems of information, facts, terms of different levels of generality at its disposal, while being surrounded by the environment that is multireceptive, and on top of that, the teacher who guides and supports him/her in the process of learning (see. N. Šoljan, 1972: 72).

4. OVERCOMING THE DOWNFALLS OF THE TRADITIONAL TEACHING METHODS

As one of the negative characteristics of the traditional ways of teaching is the low level of student motivation. Their motivation is the factor that affects the learning process the most. External motivation dominates in the traditional teaching. The students are usually motivated because of the wish to live up to the expectations of the teachers, parents, to get good grades for future education, and not rarely their wish not to embarrass themselves in front of their peers. In the traditional teaching the development of the inner motivation is not a goal per se. The students are very passive, their activity reduced to following the teacher's lecture. The students rarely accept that they are responsible for their learning, because most often they do not have an active role in doing the tasks. The inner motivation of students is becoming weaker due to the discord between the teaching content and the needs and possibilities of the students. Learning from books is favoured in the traditional teaching, as well as mere mechanical memorisation, instead of insistence on the individual information gathering and their analysis in order to arrive to the knowledge that could be used for

creating. In the traditional teaching there is not a possibility of observing information in different ways, which cause one of the main didactic principles to be overshadowed, and that is the principle of obviousness which insists on learning using different senses. The basic method of the traditional teaching is giving lectures, that is, the verbal teaching. In the traditional teaching the course book is the basic and often the only source of knowledge/information. Course books are the systematically organised knowledge available to the student at all times. This method is economical and it develops individuality and interests. However, the method of dealing with the text is not suitable for the individual abilities of the students because the content is the same for all. In the process of education, in a traditional school it is necessary for all the students and the teacher to be at the same time at the same place. In the traditional teaching there is no possibility of organising studying time on your own. Traditional education is also limited by the time periods. With the development of new technologies as well as identification of the downfalls of the traditional methods of teaching a need for using information technology during teaching has formed. Given that the information technology is present in all social spheres, training teachers for using new technologies must be done in relation to the demands of the modern society. The most common problem of innovation in the teaching sphere is inadequately equipped schools with new technologies. If the schools have the conditions to use new technologies an insufficient training of the employees poses a problem.

5. COMPUTERS IN TEACHING

Children in primary schools have a good knowledge of using a computer. The students are open to new knowledge. They usually do not encounter a failure when using a computer and their attitude towards the computers is a positive one. They (especially in the first and second grade) perceive everything as means for playing. It is not different for computer, either. A skilled teacher plans and executes learning with computers and (introductory) classes of IT in order for the student to accept them as a new and interesting game. In the lower grades of primary school, it is important for the students to (through play) get to love the computer and use it for learning as well as perceive its vast possibilities (those of the computer and the network).

It is important for the students to know the educational software and multimedial learning (learning by using more senses). The students should learn the basic IT terms (mouse, screen, printer, to recognise the elements of the hardware etc). The essence of such learning is to be almost unnoticeable and that it is based on play as a natural activity of a man. We know that people (especially children) who use computers regularly are alienated from the world around them. At the same time we are aware that banning the use of computers brings poor results and often has an adverse effect.

Apart from many positive characteristics, the Internet has a few negative, dangerous and harmful ones. Computers and the language of computers have a negative on the language of the child. The language of the Internet is a poor version of English language, filled with abbreviations and emoticons. The users are trying to be as succinct and that is the reason why they use simple sentences and the variations of words, sentences and the whole language are disappearing from the language of the Internet. This way the language of communication becomes more primitive. The students use computers for various games. On a larger scale the most popular ones are aggressive. Other popular games are strategies, where the whole army is controlled by

the user. The goal is victory at all costs (even if one out of hundred survives). It is not our goal to analyse the way these games affect the personality development. Unfortunately, games of logic are not nearly as popular as the previously mentioned ones. One of the aims of the IT teacher should be the finding of alternative solutions compared to the aggressive software (which is the case in other developed countries).

When dealing with children, the computers are usually presented as a threat and a source of many dangers. In doing so, many benefits it has in the process of education of children and the development of skills and the sense of self-confidence are often overlooked. The computer and the internet are present and won't disappear from the educational system but will develop and grow. Children should not be isolated from new technologies that they will use in their private and professional life but observe their use of computers and teach them to be careful, to use computers as tools for learning and the tools which would make their task solving quicker, more interesting and correct. Children should not be frightened by computers but helped to become familiar to it as well as gain the knowledge and skills needed for the use of it. There are many benefits of the computer use if a child uses it wisely. Parents must observe the child and make sure that the computer use is before all safe. It is important to choose the programmes according to the child's age and check, at least occasionally, what the child is doing on a computer.

It is physically impossible to ensure that every child has his/her own teacher, but, in our contemporary society, we have the chance to use computers in teaching. Doing so, every student can develop according to his/her abilities. Using computers in teaching should make the lessons much more interesting to the students and thus promote active learning, as well as greater student motivation. Information should be more interesting, lessons adapted to the needs, abilities and interests of the students as well as their working tempo (see. N. Šoljan, 1972: 23).

The downfalls of the traditional teaching are overcome by using computers: frontal work, the lack of return information, knowledge is more easily forgotten, no connection between the theory and real life. Information technology allows for innovation of teaching organisation, use of new methods, forms of work and didactic media. The lacks of traditional teaching is seen in the teaching aims and tasks that are adapted to an average student. The use of information technology means that teaching aims and tasks can be set based on the individual abilities of the students and that the content can be chosen based on the previous knowledge, abilities, capabilities and interests of individuals. The teaching process is thus individualised, it is not adapted for an average student, ignoring the students with greater and lesser abilities. The students can learn at their own speed, regardless of other students. One of the characteristics of the traditional method of teaching that has been objected to is the use of frontal work. Using the computers in teachings brings about the individualisation of teaching. Doing so, one's learning process would not be limited by the abilities or weaknesses of another student. The student loses his/her role of an object in the teaching process and becomes an active subject, thus strengthening his/her attention span and motivation. Motivation is most often in correlation with the return information. Information technology allows the division of content to smaller segments and the students can learn "step by step". It gives the students a goal that is attainable and they see the possibility to achieve it. This improves students' motivation significantly. The return information can occur after any, even the smallest, step in the process of learning. Both the student and the teacher gain insight into each student's achievements which further strengthens motivation and encourages the student to continue with his/her work. The students, using information

technology and didactic media, can acquire knowledge “step by step” and receive the return information after every step, thus allowing the teachers, as well as students, gain insight into the knowledge of every student. There is interactivity between the teachers and students, students and their peers, students and the teaching content with the use of information technology (D.Mandić, 2010: 112)

The teaching method that is present in the traditional teaching is almost completely lost with the use of information technology. The teacher is not the lecturer anymore, but a counsellor and a co-worker to the students who are active and acquire knowledge at their own speed. The teacher will better his/her role of the evaluator and will have more time for planning and organising students’ free time. Insufficient use of different didactic media and the inability to show information in different ways is one of the problems of the traditional way of teaching that is overcome with the use of information technology. The development of science and technology has brought many new didactic media whose use enables the students use all senses. The students find that way far more interesting. One of the didactic principles usually overlooked in the traditional teaching is the principle of obviousness. This happens most often because of the lack of possibility to obtain certain educational material necessary for covering certain content. Information cannot be given in different ways, but most usually it is done using the lecturing method. The students’ motivation descends drastically in such a case. Information technology enables the making of multimedial presentations. Through them the students find the information more interesting, they are active participants in the process of learning and their motivation grows. The students are involved in learning and become responsible for it and the curiosity and willingness to learn grows. The student will, using information technology, gather information himself/herself which alleviates his/her activity. The books and teachers are no longer the sole sources of information. The students gather information from different sources, analyse them independently, make conclusions and acquire knowledge that is not at the level of reproduction but the students can use it. The students have the sense that the knowledge they have is in connection to the real life, that theory is connected to practice which all results in the longer duration of knowledge. Inflexibility of the time and place used for teaching is overcome by the use of information technologies because the students get the chance to learn at the same time at the same place, at the same time but at different places and at different times and different places. That way the students are not limited by the condition to be at the same time at the same place. This is particularly suitable for the students who are not in school because of an illness and who miss a lot of classes, and found it hard to catch up on the taught content. Now they are in the position to learn from home.

The need for acquiring new knowledge, skills and attitudes, that is the need for quick changes, defines the changes in the education composition as a very important social task. Managing the changes asks for a set of “well” done steps: analysis, planning, implementing and, most importantly, people who will manage the changes. The changes that make the educational work in school better are called developmental, innovative changes – innovations. In order for a school to keep step with the fast social changes it is paramount that it develops its business/work. The quality dimension of the schools work is made up of pedagogical innovations. This precisely is why managing the innovations is an important factor of the inner reform of the school. An innovative school asks for an innovative teacher, which means that the relationship of the teacher to the changes is an important segment of managing innovations in schools (J. Đorđević, 1986: 26).

6. THE WAZS OF USING COMPUTERS IN TEACHING

Computer enables the use of simulation in teaching. Simulation (lar. *simulatio*) is imitation. Simulation is the process of building a model which stands in for the real composition in the process of education. The majority of the means of educational technology gives us static simulations. Film techniques were the first to enable dynamic models. Computer allows us the wanted sequence of presentation. Using simulation we can present a set of real models, especially the ones that are not accessible to the student (nuclear reactor, heartbeats ...). Simulation using a computer allows us to create educational games that educate students in the most acceptable way, through games. For example, learning how to write in a foreign language through the “hangman” game. It is a simple simulation of a game.

Presentations are programme tools that allow the realisation of an imagined scenario used to improve the teaching quality. Having in mind that, in our environment, there is not a great choice of educational content on the market, it is expected that every teacher is able to perform certain less complex tasks on his/her own or with the help of students assistants. The attempts to present the school, its activities and create presentations for competitions are worthy of praise. Exceptional achievements are done in such a way, though unfortunately they are not present in the majority of schools but represent a valuable experience for the students and teachers creating them.

It is possible to use already made multimedial content form a CD of the website on the Internet for the presentation. Computers allow the assessment of knowledge through different tests and quizzes. That way of assessment is objective, suitable for every student (because the time needed to finish it depends on the student), fun (something new in the teaching process) and adaptable to every subject. Today, we can do assessment and questioning using the web and distance learning. Such positive examples exist but they are not greatly present in schools.

All that has been previously mentioned should serve as motivation for the teachers to use computers in teaching. In our educational system a basis of the teaching content could be made using this approach, and it would be a basis in the information system of education. All the prepared material (encyclopaedia, atlases, history books, maths etc) are not suitable to the same extent in all grades, but it is easily adapted. Our educational programmes are not identical to the European or American ones. It poses a problem to an extent, that is, makes the use of the material harder. There are encyclopaedias that have a lot of content but we must choose and adapt them to our teaching methods.

FINAL DISCUSSION

The organisation of teaching in a contemporary school must unavoidably follow the changes that happen in the spheres of economy, politics, technology and the technical one. The question of vision, goals, growth and development of the school’s curriculum and the overall organisation of the school are always a continuation of the same questions in other segments of the social life.

Lectures in which new technologies, which are developed daily and create many possibilities in the process of teaching, are not used are unacceptable today. It is necessary to introduce the teachers and students to a new world of learning and teaching. New teaching materials ensure a quick and quality realisation of the goals and aims of education; they encourage a greater number of senses in students, develop

curiosity in further learning and acquiring of knowledge and skills, as well as ensure that students are active participants in the realisation of teaching.

The main goal of the new teaching technology is rejection of formalism from the area of students' knowledge and, in general, raising the quality of teaching to a higher level. It is achieved by adjusting the teaching technology to the needs of the teaching. It is changed and perfected according to the development of the pedagogical theory and practice, along with the changes in the ways of perception of teaching as an organised system of education. Teaching is raised to a higher level and thus continuity in learning is achieved.

Teaching, in which the modern didactic and information innovations would be included, should be individualised and the activity of the student in the process of learning greater, so that they can perfect their abilities and enrich their knowledge. In the contemporary teaching the group and individual form of work should dominate and the students should be given the assignments they could solve individually or in a group and then present their solutions to the others. Doing that, a critical attitude of the student to the content would be developed, creativity and the capability of analysing and deduction built.

Intensive changes in the society have put an imperative on the changes in the area of educational work. Implementing information and communication technology in teaching represents the agent of positive activities, focused on the raising of the quality of the educational process. The basis for a successful implementation is the good capacity of the teachers for the realisation of changes by introducing the contemporary media into teaching. In this paper, the application of computers to teaching and their possibilities to modernise the teaching process and overcome the downfalls of the traditional methods has been the focal point. It seems unthinkable today to organise a teaching process on any level of education without the use of computers whose possibilities are endless and which become richer and more applicable every day.

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