



## Application of modern educational technology in teaching technical and IT education

Dragan Grujić<sup>1</sup>

<sup>1</sup>Elementary School "Sveti Sava", Požarevac, Serbia

e-mail [gruji.dragan7@gmail.com](mailto:gruji.dragan7@gmail.com)

**Abstract:** *This paper presents examples of application of modern educational technology computer assisted, in the implementation of the contents of teaching technical and information education, from the fifth to the eighth grade. This methodical approach in teaching technical and IT education, aims to develop the students' interest in the use of modern information - communication technology for learning. The paper presents the finished software tools which, as part of modern information - communication technologies, we successfully applied in the actualization of content of technical and computer education. Teaching enriched ready software tools and the Internet provides an opportunity for students to acquire teaching content in an interesting and entertaining way, and can positively influence the motivation to learn.*

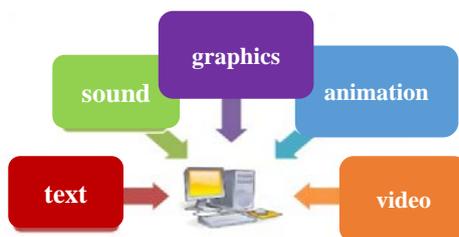
**Keywords:** *multimedia, internet, e-learning*

### 1. INTRODUCTION

Classical teaching technical and information education in which the teacher presents frontal teaching unit is obsolete forms of labor, dysfunctional and does not correspond to the requirements of the digital environment in which we live. Application of new information - communication technologies, a new way to access and process information with the help of ready-made software tools and the Internet, directly changing the position and the role of teachers, students and teaching content, so now we have a triangle rather than didactic didactic rectangle, with the obligatory presence of new educational technologies. Modern demands to improve the teaching of technical and computer education are focused on methodological innovation supported by information and communication technologies. New methods relate primarily to the use of user software and the Internet, which will significantly improve the traditional system of teaching. Use of computers, educational software and the Internet enables a completely different content actualization of technical and IT education and teaching is adapted to the abilities and interests of students, to acquire new knowledge with personal experience in an interesting and entertaining way. The curriculum of the Technical and IT education is realized in the form of lectures and exercises. It is essential that the teaching of this subject in the future increasingly implemented using methods of visual and practical presentation, using modern teaching aids (computers, projectors, interactive boards ...) and interesting software solutions that the fabric of this case make learning more interesting and easier for adoption.

## 2. MULTIMEDIA IN TEACHING TECHNICAL AND IT EDUCATION

Multimedia term comes from the Latin *multus* (many) and *medium* (media or agent). Multimedia is a combination of text, image (movable and immovable), sound, animation, video content, integrated with a computer and related mainly to the media, which are by their nature non-text. Multimedia is a concept that is a combination of software and technical dimensions. The main objective of the introduction of multimedia as a modern information technology in teaching technical and information education is primarily to facilitate students to acquire new knowledge and that this knowledge can be applied in everyday life situations. Using multimedia enriches the learning process by providing multiperceptiju. It represents the integration of more than one media - text, audio, video, image, animation, etc. (Fig. 1), which complement each other and enrich the information transfer.



**Figure 1.** The basic elements of multimedia to be applied in the classroom

- ✓ Using multimedia software in teaching technical and inf. education, it is possible to prepare and implement the teaching according to individual abilities and previous knowledge of students (Krneta, 2007). Also, teaching becomes apparent, dynamic, increasing internal and external motivation of students, a knowledge of the students are becoming more permanent (Kljakić, 2003). Multimedia presentation as one of the segments of multimedia, contributes to easier maintenance of discipline in the classroom and the creation of teaching situations in which will increase the activity of students and thought to come to the fore their responsibility for the success of learning (Mandić, 2003). Multimedia in teaching technical and IT education can be applied during the implementation of the course content as follows:
  - ✓ The analysis of lessons through multimedia presentations,
  - ✓ Creating and displaying animation and simulation of various machines, tools and equipment,
  - ✓ Creating and using interactive content for students,
  - ✓ Creating and using video and audio tracks,
  - ✓ Using interactive whiteboards.

### 2.1 Benefits of multimedia in teaching technical and IT educationednosti

There are many advantages of using multimedia in teaching, and these are just some of the positive effects of multimedia teaching:

- ✓ positive effect on academic achievement because it allows the use of various sources of knowledge base information;
- ✓ students acquire new knowledge in an interesting and entertaining way;

- ✓ multimedia allows engaging multiple senses of perception in students, which contributes to easier and simpler acquisition of knowledge;
- ✓ provides individualization of instruction;

### 3. APPLICATION OF INTERNET IN TEACHING TECHNICAL AND IT EDUCATION INTERNETA

The time in which we live is characterized by rapid technological progress and the digitization of society as a whole. At the present time the information - communication technology on the rise, the Internet has become the general needs of the people. Keeping this fact in mind we are aware that the use of the Internet - technologies in education has become commonplace, and the need to gain new knowledge and to help you come up with new information. Children in early childhood encounter with computers and the Internet, and is in line with their interests and the times in which we live is required for students to form and develop awareness that computers and the Internet is not used exclusively for fun and recreation, but can be very powerful and a useful tool in the learning of the content of technical and computer education. New knowledge in the application of these technologies is the result of students' activities, reconstruction of existing and construction of new knowledge based on what he already knows from the social environment, especially from peers (Mandic, 2010). Contemporary teacher scientific and technical progress require a search for new sources of knowledge, effective methods and forms of work, as well as modern teaching aids to improve and update teaching (Budimir - Ninkovic, 2005). One of the current a very powerful teaching tools, which provides great opportunities for learning, the internet. Internet is a global computer network that is available to most of today's students. One of the most widely used service on the Internet is the WWW (World Wide Web - World Wide Web), which represents an enormous database (texts, images, audio and video, animation ...) that students can use for independent learning and acquiring knowledge. Teaching and learning with the help of the Internet favor the development of abstract thinking, planning guidance and allow individual progression in the acquisition of knowledge (Blagdanić, 2007). Communication students and computers is direct and simple. The use of computers and the Internet in the classroom allows the development of memory, imagination, independence in learning, raising educational levels, builds sensitivity to the problems of flexibility and independence. Such knowledge can work successfully put into operation the development of human capabilities. Table No. 1 above are examples of educational sites and links that students from fifth to eighth grade, can be used to learn the content of technical and IT education.

**Table 1.** *Examples of links on the Internet that students can use to acquire knowledge in technical and IT education*

Red. num.	Teaching subjects:	Education link on the Internet:
1.	energetics	<a href="http://www.cnti.info/energija/page2.html">http://www.cnti.info/energija/page2.html</a>
2.	Technical drawing	<a href="http://www.tehnicka.edu.rs/cesta-pitanja/strucne-obuke/89-blog/opstestrucno-podrucje/495--sp-1569984462">http://www.tehnicka.edu.rs/cesta-pitanja/strucne-obuke/89-blog/opstestrucno-podrucje/495--sp-1569984462</a>
3.	Architecture &	<a href="https://sites.google.com/site/petarblagojevictehobrazovanje">https://sites.google.com/site/petarblagojevictehobrazovanje</a>

	Construction	<a href="/sesti-razred/uvod-u-arhitekturu-i-gradevinarstvo/1-1-arhitektura-i-gradevinarstvo">/sesti-razred/uvod-u-arhitekturu-i-gradevinarstvo/1-1-arhitektura-i-gradevinarstvo</a>
4.	Tech materials	<a href="https://sites.google.com/site/petarblagojevictehobrazovanje/peti-razred/tehnologija-materijala">https://sites.google.com/site/petarblagojevictehobrazovanje/peti-razred/tehnologija-materijala</a>
5.	Traffic	<a href="https://www.youtube.com/watch?v=dIB8h1ryFiQ">https://www.youtube.com/watch?v=dIB8h1ryFiQ</a> <a href="https://www.youtube.com/watch?v=pTwDcFipzQE">https://www.youtube.com/watch?v=pTwDcFipzQE</a>
6.	Information technology	<a href="https://sites.google.com/site/virtualnicas/racunarski-sistem">https://sites.google.com/site/virtualnicas/racunarski-sistem</a> <a href="https://www.youtube.com/watch?v=E4qUNM2JOE4">https://www.youtube.com/watch?v=E4qUNM2JOE4</a>
7.	Construction materials	<a href="http://digis.edu.rs/mod/book/view.php?id=1824">http://digis.edu.rs/mod/book/view.php?id=1824</a>
8.	Technical means in construction	<a href="http://digis.edu.rs/mod/book/view.php?id=1824">http://digis.edu.rs/mod/book/view.php?id=1824</a>
9.	Culture housing	<a href="http://digis.edu.rs/mod/book/view.php?id=1857">http://digis.edu.rs/mod/book/view.php?id=1857</a>
10.	Machines and mechanisms	<a href="http://natalijadikovic.weebly.com/105210721096108010851077-1080-108410771093107210851080107910841080---1079108510721095107711141077.html">http://natalijadikovic.weebly.com/105210721096108010851077-1080-108410771093107210851080107910841080---1079108510721095107711141077.html</a>
11.	Digital electronics	<a href="http://natalijadikovic.weebly.com/105410891085108610741080-10721085107210831086107510851077-1080-107610801075108010901072108310851077-10901077109310851086108310861075108011121077.html">http://natalijadikovic.weebly.com/105410891085108610741080-10721085107210831086107510851077-1080-107610801075108010901072108310851077-10901077109310851086108310861075108011121077.html</a>

#### 4. APPLICATION OF ELECTRONIC LEARNING IN TEACHING OF TECHNICAL EDUCATION AND INFORMATICS

One of the most important attributes of modern teaching is e-learning. It is an area that is slowly but surely becoming more and more an integral part of our system of education. E-learning can be defined as a way of learning with the help of information - communication technologies, as well as the performance of the educational process with the help of electronic technology - the most common ICT. In other words, the electronic learning (e-learning part, eng. "E-learning") is a very broad term that actually encompasses all the methods and techniques for computer-assisted learning. According to constructivist theory, teaching e-learning is a teaching system „ Keeping students in the process of constructing their own knowledge and increase awareness of the context of learning " (Schertler, 2006: 223) using modern information and communication technologies. In teaching, technical and IT education successfully can be applied e-learning system through various activities of students. The main objective of introducing e-learning in the process of education is teaching innovation, raising the quality of teaching and the achievement of the best possible learning outcomes. E-learning can be especially useful tool in working with gifted students in teaching technical and inf. education. For the purposes of e-learning can be used free of charge software package Moodle. It is safe to operate, adaptable to different needs of

students, flexible, and allows for the possibility of expanding and improving existing functions.

#### 4.1 Resources Moodle platform for e-learning

Moodle application allows teachers complete modular support in organization and realization of electronic teaching. Teachers of technical and computer education who want to use Moodle platform for the realization of on-line classes, among others, are also available the following resources and applications designed for e-learning:

- ✓ Planning dynamics of e-learning,
  - ✓ managing user accounts,
  - ✓ work with existing files and educational content,
  - ✓ fully monitor the activities of students,
  - ✓ tools for synchronous and asynchronous communication and teamwork,
  - ✓ forums: allow discussions, ask questions, notices,
  - ✓ Tests: This module allows the teacher to create a database of questions, based on which they can create a knowledge assessment tests with different types of questions,
  - ✓ Dictionaries: This activity allows students to create a list of lesser-known concepts in the form of a dictionary,
  - ✓ chat: allows users synchronous discussion in real time. It is especially useful for teamwork and the exchange of ideas and opinions on a particular topic,
  - ✓ wiki pages: represent an activity that is suitable primarily for teamwork, for the exhibition of works of students.
- dinamike realizacije e-nastave



*Figure 2. An example of using the system for e-learning in teaching technical and IT education*

## 5. CONCLUSION

The general conclusion of the paper is that it is the realization of the content of technical and IT education, may apply different educational technologies, such as multimedia, internet and e-learning. The paper gives examples of applying these methods. Their common goal is to teaching technical and information education and modernize the students, the easier and more interesting way, developing research skills, acquire new knowledge of computer use.

**REFERENCES**

- [1] Blagdanić, S. (2007). Methodical - IT aspects of using the Internet in preparation and realization of teaching. Belgrade.
- [2] Budimir-Ninković, G. (2005). Teacher and modern educational technologies. Belgrade: Institute for Educational Research.
- [3] Kljakić, D. (2003). Concepts of educational technology, Sarajevo: Academy of Education.
- [4] Krneta D. (2007). Learning methods in light of changes in education, innovation in teaching. Belgrade.).
- [5] Lalović, Z. (2009). Our school - methods of learning / teaching in the school, Podgorica Department of Education.
- [6] Mandić, D. (2003). Didactical and computer supported innovations in education. Belgrade.
- [7] Mandić, D, Ristić, S. (2006). Web portals and distance education in order to raise the quality of teaching. Belgrade.
- [8] Schertler, M. (2006). E-Teaching Scenarios, in: Carteli, A. (editor, 2006): Teaching in the Knowledge Society – New Skills and Instruments for Teachers, Hershey-London-Melbourne-Singapore: Information Science Publishing, 221-240