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Virtual study environment as an innovational element in education

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Abstract

Significance of information-communication technologies (ICT) in education at present significantly occurs in the context of innovation of educational system. Education with electronic support generally penetrates into education, particularly in distance form of study. Changes related to distance learning with electronic support should be incorporated into educational process with focus on target groups of people and their specifics. In teaching it predominantly should show positive effect on education and thus convince teachers as well students about its importance. To conclude, specifics of learning as well as in general open up more question. The following papers deals with them.

Keywords: virtual study, education, information-communication technologies;

1. Introduction

Information and communication technologies have penetrated into all spheres of life. Their existence has also largely influenced the educational process in all its areas. Under their influence, the way of education established so far is getting changed, as is most visible in the case of distance learning or education, which is supported by electronic teaching materials.

Traditional methods of education are changing; university loses its privileged positions as a source of information; education in the "stone institutions" acquires another dimension also because of technology. Information technology, Internet, and mobile communications are changing the human life already in its early stages. Children growing up in the information society show increasing curiosity about ICT and an interest in use of their opportunities.

Today we can say that the first contacts with ICT develop in them the first user skills, which are in many cases surprisingly good in children of elementary schools. This fact too puts pressure on the school practice to provide

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further information about ICT possibilities in the educational environment, especially through teaching aids utilizing the potential of ICT.

It is also an opportunity for the "school" to demonstrate a meaningful use of ICT to the students, to guide younger generations through experts in the deployment and use of technology, which is often spontaneous with a negative impact on a development of personality. This strategy is a challenge for creative teachers, with ICT providing them with significant opportunities to optimize the learning process of students. It is therefore important to carry out the educational and scientific research in this area in order to provide the educational practice with valuable information about the application of ICT in education, i.e. on the results of education thus carried out.

2. Recent Trends in ICT and Education

According to www.teachertechnologies.com (2010) Internet portal states that the education in the 21st century should be implemented according to the following chart (see Figure 1):

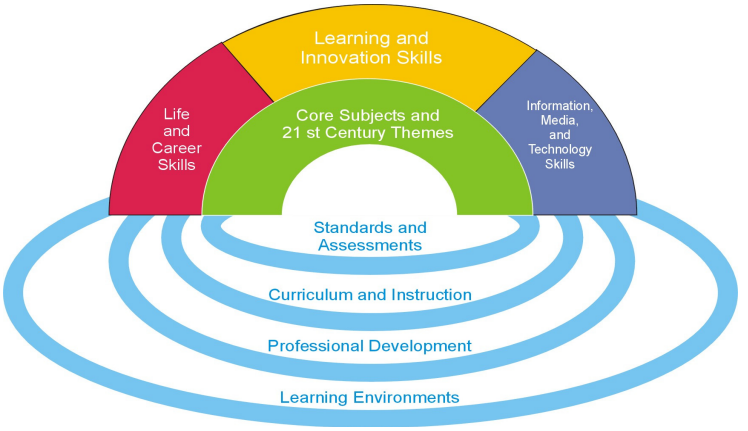

Figure 1. The 21st Century Education Chart (Putland, 2010)

According to Hawkins (2010), agrees with this chart, while offering 10 recent trends in ICT and education:

1) Mobile Learning. Advances in software and hardware have enabled mobile phones to become indispensable aids. As the use of mobile phones started prevailing over the use of the standard phone lines in the telecommunications industry, it is likely that mobile phones with the Internet access overtake PCs as a source of information retrieval in classrooms.

2) Cloud Computing. The use of computer applications is transformed from a solid desktop computer to the use of different servers accessible via the Internet. This will allow using cheaper devices that do not require such power to operate and such sized devices as desktop computers.

3) One to One Computing. Global trend in the use of computers is to provide each student with a Computer with an access to the Internet to ensure he/she alone adopts new skills using own computer.

4) Ubiquitous Learning. With increasing connectivity infrastructure and cheaper computers, there is an ever-expanding world-wide trend to have an access to the information anytime and anywhere, at different times and in different places. In addition to the hardware and Internet connections, this trend also requires the availability of virtual mentors or teachers.

5) Gaming. Recent surveys are reporting that playing the computer games and other experiences with online applications are very widespread among young people. Games can also attract the interest of learners, thus offering a possibility of improving social interactions. The huge success of games aimed at active incentive-based

participation and interaction shows that the current educational methods are not interesting enough to motivate students.

6) Personalized Learning. When using the educational applications, their use in the educational process is constantly addressed in relation to the knowledge of students. Key points include a link to the previous curriculum, the way how to deal with different levels of information literacy of students in a class and a certain grade, as well as acceptance of different learning styles of each student.

7) Redefinition of Learning Spaces. A class full of desks with a high number of students is a relic of the past. Schools and educational institutions around the world are trying to create such learning environment that will ensure a better cooperation between learners.

It concerns, for example, the use of lights, colors, roundtables, with an individual spaces created for students and teachers.

8) Teacher – Generated Open Content. The OECD education system supports all teachers and their collaboration, so they identify and create the learning resources they consider most effective in the classroom environment. The online learning materials and textbooks allow teachers to create the new and add or otherwise modify and adapt the original material to their own purposes so that students obtain always a version that accurately describes a desired style and pace of learning.

9) Smart Portfolio Assessment. Collecting, processing, selecting and obtaining the learning process-related data allows the teachers to better understand gaps in learning and adjust the teaching content and approach. Today yet, the students have the option to create their own online portfolio to place their own work and outputs there, thus creating own personal portfolio, which can be assessed by the teacher alone and other students.

10)Teacher, Managers – M**entors**. The role of the teacher in the classroom has been transformed into the one that, in addition to own knowledge, also disposes of a role of a manager and mentor who helps guide students to individual learning, identify suitable learning resources and use ICT in the teaching process (Putland, 2010).

3. VLE – Virtual Learning Environment

In the current educational trends, the Virtual Learning Environment (VLE) is gaining an important position in Slovakia. It is the electronic environment, in which teaching is organized and managed in certain and goal-directed ways. Electronic support of learning requires not only a basic knowledge of the design, implementation, and forms, but also the ability to comment on the effectiveness of a newly drafted process of acquiring expertise and scientific knowledge (Kalaš, 2008).

The current technological equipment of users in our region is greatly complicating the use of online tools. The problem is particularly in the poor Internet connections that can not sufficiently well and faithfully transmit spoken communication, as well as in the learning software demanding the hardware requirements of user computers.

In general, it is possible to distinguish two forms of teaching at the Slovak universities and colleges – a presentation (face to face) and a distance one (e-Learning). The ICT application in the presentation form is becoming more significant, particularly because of the ever-improving infrastructure of classrooms (whether in terms of computers, Internet connection, projectors or interactive smart boards). There is no comprehensive methodology that would incorporate ICT into teaching and the extent these options are used is therefore up to the teachers alone.

In the period of 2009-2011, the Computer Centre of the Technical University (CC TU) in collaboration with other University ICT departments became involved in the EU-funded project called the ICT and Infrastructure Upgrade at the Technical University. In this project, CC TU has addressed and addresses the following main activities:

- Complete installation of Wi-Fi networks (once launched, the wireless network allows a free public access to the information services of the University to all interested and visitors and, after an authorized user, student or the employee makes a registration, also a full access to the Internet; the network works the same way in all buildings without a need to change login);
- Upgrade and integration of tools of the information and communication technologies and the integration of systems used in the educational and studying process via implementation of web conferences;

- Modernizing and computerizing the seminar, lecture and teaching classes;
- Introduction of multimedia information panels and a video portal.

The LCD screens - multimedia information panels - have been placed at selected locations in several University buildings, where programs are broadcast over a computer network using the broadcast video and text information. The activity also comprises the implementation of the video portal – a web page, where the students can find video recordings of lectures, tutorials, and records from the University environment.

Digital boards provide the following benefits:

- Prompt reporting of notices of the Rector's Office, Dean's Office, academic department and teachers to the entire academic community.
- Visual form with a logo and design of the University, displayed in public areas of the school.
- A combination of multimedia content such as video, texts, and web pages with dynamic content or sliding text messages.
- Central management of the contents with addressable display of this type of information that is intended for a specific recipient.

Video Portal:

- The module offers the centrally managed and stored multimedia content; the video recordings will be published through the web to the students who not only monitor the bulletin boards, but also directly select lectures or video recordings via a web browser on their own computers – a PC, laptop, mobile phone with an Internet connection, and so on.

University TV:

- The module offers a possibility to prepare thematic play lists to select the content for a specific display via the remote controller, just like when switching the TV programs.

4. Development of Appropriate Multimedia Study Materials

Different tools for e-Learning are used at universities. One of possibilities is the e-Learning Portal that provides three levels of e-Learning support. The basic level of the class e-Learning support means that the teacher places all its e-Learning materials on the e-Learning Portal and published notices there for students (Šolc et al., 2012). Students of the class have one universal login and password published by the teacher for all students at the beginning of the semester. The medium level of the class e-Learning support extends the basic level the way that each student has its own login and password, which allows the teachers and students to contact each other electronically, transmit assignments and tasks electronically, assess the student work, discuss chosen topics, etc. The full level of the class e-Learning includes the previous two levels, but in addition it is assumed that the teacher has multimedia study materials and uses electronic tests to assess students.

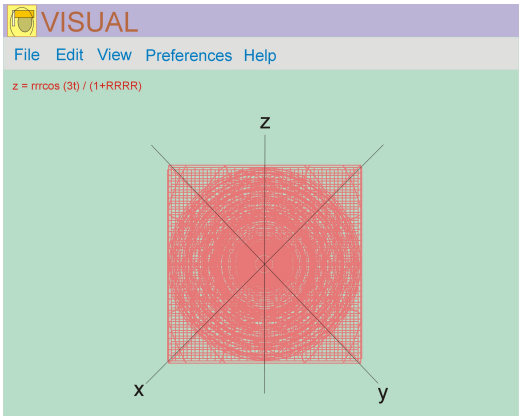

Figure 2. Software Use of e-Learning as One of its Possible Visual Applications

The e-Learning support is beneficial for students as the opportunity to study the issues on the Internet, to have access to study materials, to be able to test own knowledge via assignments or tests or have some case studies, videos, and animations of the manufacturing processes available, etc. The whole principle of operation consists in the fact that the teacher prepares multimedia learning materials and places them in the multimedia warehouse on the e-Portal (see Figure 2). Students have an open access to the materials, which they may use in their study, through their passwords.

In this multimedia environment, some one-dimensional but also multidimensional economical and statistical variables may be simulated depending on the course of study (Antošová & Csikósová, 2012).

This is more interesting for students for its visual representation when entering, calculating and plotting the graphs of functions, or using it in the economics and statistical analyses.

The correct implementation of VLE and e-Learning can result in reducing the costs of education, faster teaching of students through case studies, improved ability of students to apply the acquired knowledge in theory and practice, lower fluctuation of students in lectures and seminars, increased satisfaction and productivity due to increased motivation of students and finally time savings. This, however, requires technical equipment and good knowledge of the real needs of students.

The advantage of e-Learning as mentioned above is in the time saving - students can learn anytime and anywhere because materials are available through the Internet. All students have largely the access to the Internet either at school or at home, so they could study peacefully in the comfort of their homes.

5. Conclusion

The development of information technology is not just a one-sided matter. Always look for a man behind all the techniques and technology, whose leadership and contribution makes it possible to use the potential provided by the ICT tools. Development in this area is so unexpectedly fast that we cannot manage to perceive it in its entirety. Teaching staff are obliged, however, to maintain the trend in this area, because the modern society is based primarily on the abilities to acquire, reinforce and pass on the necessary information.

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