UNIVERSITY OF NOVI SAD
TECHNICAL FACULTY "MIHAJLO PUPIN"
ZRENJANIN
REPUBLIC OF SERBIA

INTERNATIONAL CONFERENCE ON

INFORMATION TECHNOLOGY AND DEVELOPMENT OF EDUCATION ITRO 2015

PROCEEDINGS

MEĐUNARODNA KONFERENCIJA

INFORMACIONE TEHNOLOGIJE I RAZVOJ OBRAZOVANJA ITRO 2015

ZBORNIK RADOVA

ZRENJANIN, JUNE 2015

Organiser of the Conference:
University of Novi Sad, Technical faculty „Mihajlo Pupin", Zrenjanin, Republic of Serbia

Publisher:
University of Novi Sad, Technical faculty „Mihajlo Pupin", Djure Djakovica bb, Zrenjanin, Republic of Serbia

For publisher:
Milan Pavlovic, Ph. D, Professor, Dean of the Technical faculty „Mihajlo Pupin", Zrenjanin

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Printed by:
Printing office DIGINET ProStudio, Djure Jaksica street, no. 14, Zrenjanin

Circulation: **50**

ISBN: 978-86-7672-258-7

By the resolution no. 114-451-352/2015-03, Autonomous Province of Vojvodina Provincial Secretariat For Science and Technological Development donated financial means for printing this Conference Proceedings.

The Conference is supported by the Autonomous Province of Vojvodina and the School Administration of Zrenjanin.

CIP - Каталогизација у публикацији
Библиотека Матице српске, Нови Сад

37.01:004(082)
37.02(082)

INTERNATIONAL Conference on Information Technology and Development of Education (2015 ; Zrenjanin)
Proceedings = Zbornik radova / International Conference on Information Technology and Development of Education ITRO 2015, [26] June 2015, Zrenjanin = Međunarodna konferencija Informacione tehnologije i razvoj obrazovanja ITRO 2015. – Zrenjanin : Technical Faculty "Mihajlo Pupin", 2015 (Zrenjanin : Diginet prostudio). – VII, 311 str. : ilustr. ; 30 cm

Tekst štampan dvostubačno. - Tiraž 50. - Introduction: str. VII. - Bibliografija uz svaki rad.

ISBN 978-86-7672-258-7

a) Информациона технологија - Образовање - Зборници b) Образовна технологија – Зборници
COBISS.SR-ID 297804295

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APPLICATION MODELS OF COMPUTERS AND EDUCATIONAL SOFTWARE FOR TEACHING

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Abstract - The intensive use of computers in everyday life and at schools started from 1990s. At that time use of satellite antennas started also, and next to the state channels also foreign channels appeared. Children were changing channels, culture, states by pressing the button and that was very attractive to them. Ideological and pedagogically useful emissions were replaced by aggressive and senseless emissions. Computer appeared in this environment and immediately received a significant position in education.

I. INTRODUCTION

Teachers reacted to this new assisting tool in three ways (Raschke, 1998):

- The first group was afraid of the new way of education. They felt that the computer could significantly change the role and relationship between students and teachers. They were against this sort of technique and against the computers. Reason for this kind of behavior was the great fear of handling the computer, which seemed very complicated. They thought they would never be able to learn to use the computer. Their knowledge will become obsolete and they will not be able to keep pace with modern educational processes, they will not have time to learn along with the obligations in the school.
- The second group was delighted with the appearance of the computers and computer systems in schools. They learned quickly (or already knew) to use computers and some programming language (at that time Basic ruled the market). From this group some individuals have constructed the first primitive educational software (Commodore computers were most frequently used).
- The third group was the largest. Passive expected if the implementation of computers in teaching would happen. They have already experienced programmed teaching, school television, and teaching reform. In addition, when it becomes clear that the computer is more than just a modern toy for children, others were far ahead in terms of knowledge.

A few years ago, the Commission for Education of the European Union carried out a survey on the application of computers by teachers. One set of the question requested the answer to the question: "Why teachers don't like computers?" The most common responses were:

- Fear of change and of new way of education
- "I am technically illiterate!" – spiritual barriers to learning
- "I am (maybe) unnecessary here?!" – the inability to adapt to the new role of teachers
- Computer competency – advantage of students seems unattainable
- "Everything is in English?!" – fear of domination of other languages and other cultures
- Fear of alienation of personality in education.

PC computers and educational software in schools is increasingly used not only as a teaching tool, but also as a learning environment. Teachers need to know how to use computers, not only when preparing for the class, but also during the class. They must possess basic IT and telecommunication knowledge. Only such teacher

can prepare student for the challenges of the information society in which he lives. The teacher must know how to use an endless amount of information. To collect this information, the primary mean is computer and modern telecommunication systems. In addition, the most significant source is the Internet, as a global computer network. The Internet is a source of endless information in the form of images, text, videos and multimedia, which can be used for teaching process.

The computer in the classroom has multiple functions. It can be used when practicing motor skills by using the mouse and keyboard. It is also used as multimedia and interactive teaching means. PC can replace the largest number of teaching aids (TV, VCR, overhead projector, pontiff, recording tapes) (Námesztovszki, 2006).

Educational software, which is used in teaching, can be divided into:

- Programs for motor skills development
- Programs for training – forming habits, abilities of students. Constantly inform students about the results, reinforce good answers, evaluate the success of students.
- Programs that impart new knowledge – learning programs
- Programs for solving various problems (detection programs) – the student works independently, and tries to resolve problems given by computer

Models of computer application can be conceptualized in education, with its peripheries, where the focus is the purpose of the application. In this division, the main models are:

- Application of the computer as assisting tool (for teachers): production and printing of tests, calculation of the averages, schedules production, calendars, etc.
- Application of computers as a source of information needed for maintenance of the class and independent learning (for students and teachers): the use of on-line encyclopedia, search sites. On the Internet most of the knowledge of known to the humankind is available, and above all the latest innovation-information. For the provision of these facilities hardware, software, Internet access, competence and knowledge of some foreign languages are necessary (English is the language of the Internet).
- Application of the computers as a tool for communication (for teachers): electronic mail, chat, video conference, distant learning.
- Application of computers as a means through which we achieve programmed teachin (for pupils and teachers): hypermedia software.
- Application of computers as a teaching tool (for students and teachers) by which we display images, sound, video, multimedia. The computer can be used instead of traditional teaching aids (slide projector, pontiff, overhead projector, tape recorder, CD player, DVD player).
- Application of computers as a tool for displaying multimedia presentations: which is a new form of communication in the classroom, and it integrates display of text, tables, graphs, images, sound, animation, multimedia, hypertext, interactive content and complete software tools.
- Application of computers as an interactive means: by which we realize interactive individual and group work, with the help of a projector and electronic table.

Another way of building models for the use of computers in the educational process is based on the extent and intensity of use. This division differs:

- The traditional model: dominated by classical methods, in most of the cases by frontal work. Classical teaching material with classical pedagogical and psychological principles is used. Classrooms are without a computer, and instead of them printed material and classical models of display are used. Location of the teaching is classical classroom. The main disadvantage of this model is absence of the modern teaching tools. The advantages of this model are simplicity of applied educational materials and absence of technical problems.
- Combined model: applies only one computer and projector to show presentation that contains text and images. Frontal form of work dominates. Teaching happens in classic classroom, equipped with computer and projector. For combined model computer is a teaching tool. The main disadvantage of this model is lack of multimedia and individual work (on a

computer). Advantage of the model is computer application with moderate intensity.

- Multimedia and interactive model: multiple computers are applied (if possible, each students uses an individual computer), as well as projector and interactive whiteboard. The emphasis is on the presentation of multimedia, individual work and interactive methods (for electronic board and for computer). Active learning and individual learning are dominant, all under the coordination to teachers. Frontal part of the class is motivation and task presentation. Class is held in computer room or in media room. For multimedia and interactive model computer is a teaching environment. The disadvantages of the model are the possibility of technical problems and long preparation for class. The advantages of the model are individual work, possibility of applying multimedia and interactive methods.

The degree and the level of computers implementation in teaching activities, in addition to the structure and objectives of the education system mostly depends on teachers, who often resist changing.

The reasons for the resistance to the changes are divided as:

External barriers, which include the lack of:

- Hardware access
- Software access
- Time to plan a new form of teaching
- Technical support
- Support of the management of educational institutions

Internal barriers, which include the lack of:

- Beliefs about the quality of teaching
- Beliefs about the advantages of technology
- Educational models
- Unwillingness to change

The elimination of external barriers is possible with investing in the educational system, by equipping schools with modern computer tools.

Elimination of the internal barriers is process that is more complex. The key to success is in the minds of the teachers. Possible solutions to this problem are organizing of professional seminars, training courses, motivating teachers, detail investigation of the issues, and presenting the obtained results.

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