

**BUDAPEST TECH  
HUNGARIAN FUZZY ASSOCIATION**

**PROCEEDINGS  
OF THE**

**9<sup>th</sup> INTERNATIONAL SYMPOSIUM OF  
HUNGARIAN RESEARCHERS**

**on**

**COMPUTATIONAL  
INTELLIGENCE  
and INFORMATICS**

**MAGYAR KUTATÓK 9. NEMZETKÖZI  
SZIMPÓZIUMA**

**2008  
NOVEMBER 6-8  
BUDAPEST**

**BUDAPESTI MŰSZAKI FŐISKOLA  
MAGYAR FUZZY TÁRSASÁG**



Budapest Tech  
Hungarian Fuzzy Association

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## Digital Course Supported Education In Life Long Learning Process

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*Abstract: E-learning which has been much talked-about in the past decade, seems to enter a new phase these days. It appears to be finding its own place within the wide spectrum of teaching aids. Most important is its role in distance and long life learning, and visualisation in the everyday education process. Among other possibilities we focused on the work of a multidisciplinary team which consisted of a programmer, a pedagogue, a psychologist, scientists and a professor, and took on an action which specifies using the technology of information and communication as an educative system. In order to do so a new software the Digital Map of Vojvodina is projected which implements the educative process.*

*Keywords: lifelong learning, e-learning, digital map*

### 1 Introduction

The high education system in central Europe is characterized today by the mass. The question arises, whether all young people stay at their original professions and at the achieved level of education throughout their working life? In today's fast-changing technological universe this is not possible. Learning one set of skills at school, technical college or university is no longer enough to carry people on the labour market. It is very important to being able to learn and adapt to the new skills and training that will be required [1], [2].

The European high school system is based on longlife learning policies regarded as the teaching market should be ready to give the solution for the people who need to be sure that they acquire new skills during their careers as efficiently as possible.

This is especially true in teacher training, training those who will be teaching the next generation in a completely hyperactive, informatics-based world. That is the reason why they need to study and use informatics in the form of e-learning materials, teach them their application, didactical background, and record our experiences. A great example for this is the map of Vojvodina (Vajdaság), which was created for school children, as it is suitable for future teachers and those involved in post-graduate studies to make them comprehend the importance of novel teaching methods.

Learning to learn is not enough. That means ensuring that qualifications systems give them credit for the experience and knowledge they have gained, whether in the classroom, in the workplace or elsewhere [1].

## **2 Digital Education Materials in the Longlife Learning Process**

One of the reasons why lifelong education has become so important is the acceleration of scientific and technological progress. Despite the increased duration of primary, secondary and university education, the knowledge and skills acquired there are usually not sufficient for a professional career spanning three or four decades [1].

With the new technical development of the Internet and information new opportunities are given to introduce lifelong and e-learning education models. All this leads us to the conclusion that the educational system should be more improved with technical developments, multimedia software using the computer and other methods which would motivate students and would make better results in learning.

Distance based learning supported by the interactive software teaching materials require lower fees than traditional university study, and as one of the components of lifelong learning process we achieve great prospects: the student choose when, how and where to learn [5].

In professional sence, with pedagogical and psychological methods it is tried to be proven that new e-learning developments improve learning. However it is necessary to make some empirical studies to show that the students were more motivated by the new type of teaching method, and about the standards needed to the introduction of them.



The most important standards and protocols are:

- usage and modality of tools;
- independence of application and platform;
- durability;
- easy localization and tool adjustment for the user.

The aim of education software is learning, organization and repetition. In order to achieve these goals and to make learning more interesting developed, educative and technological tools are used. Didactical games are interactive and are supported by computer's multimedial abilities (text, picture, sound and animation).

The functions of didactical games in the software are:

- detecting of knowledge;
- detecting of new references;
- verification of knowledge;
- repetition;
- development of logical abilities;
- development of mechanical abilities at the younger students classes.

Suitable educational software lacks a certain tradition in teachings. Using the software the student perfects his knowledge on the computer. Also the educative software serves as a global and interesting resource of knowledge. This kind of information seems to affect more senses and secures interactivity. The advantage is that the software with its results affects the attention of the students in addition to now days mostly used method which is the chalk-blackboard-word method. Appropriate educative software has a module test of knowledge which can show the user how much knowledge has he acquired from different subjects. In the software should be integrated not only the test module but also the questionnaire. With the help of the test the users of the software can check their knowledge.

## **2.1 An Example: Digital Map of Vojvodina**

The idea of the Digital Map of Vojvodina project ensued from the educative system of the developed countries where the digitalized maps are already used at all levels of education from the elementary schools. Through the students are getting used to relying on technology. Scientific researches improve that by using such methods in education motivates students to gain knowledge and to do a more effective work. Because of this the new Digital Map of Vojvodina software is contrived which results are measured in the educative system, especially in the first classes of the elementary schools. The software is built in a way that teachers, children and parents can use it too, which amounts, that the software is suitable to learn how to build in such type of the digital education material in the whole education process.

The educative software enlarges the equipment which can be used on the classes in the teachings about the country. The map can be modified in order to make it easier to learn the geographical terms (the color of the map, water surface, inhabited places, population of different nationalities, width and the length of territories). The structure and use of the CD is easy and it is suitable for younger and inexperienced users. It is enough to know how to use the mouse.

The teacher or user is expected to actualize an equipment, which has a coherent and compatible content of the foregoing topics, and has the opportunity to combine the inner contents of subjects and also the levels of the students. Basing on this a multidisciplinary access in constructing of terms can be working out.

### 2.1.1 General Information

The Digital Map of Vojvodina is a vector graphical map [4]. The software is projected on a CD with all the necessary applications, and it is done through different software and hardware equipment. Every panel in the software is a separate SWF file. When the interface and the panel changes (e.g. changing the language) new files are opened and the unwanted are closed, like by Internet sites. These advantages secure a faster start and the work of the software. The Digital Map of Vojvodina is built by a software Macromedia Flash MX 8.0 and it is recorded in the file "mapa.swf". File "start.exe" contains the right player for the "swf" files.

The software was made according to the curriculum of the Republic of Serbia [3], textbooks, workbooks, and the methodical guidebooks.

### 2.2.2 The Software's Didactical Characteristics

The software contains material module, module for didactical games, and test module, represented in Table 1, 2, and 3.

Table 1  
Material type of a software




	Material: Information, Multimedia: text, picture, sound, animation, control: mouse
	Material: Animation, Multimedia: text, picture, sound, animation, control: mouse
	Material: Map, Multimedia: text, picture, control: mouse

Table 2  
Types of didactical games in the software






	Material: Puzzle Game: to find the suitable place for the object according to the principals of the game (the adjunction must be right) Control: mouse
	Material: Pairs Game: to find and to set up the pair to the right place and to make logical connection (picture-picture, text- picture) Control: mouse
	Material: Puzzle Game: with removing the pictures the big picture is made Control: mouse

Table 3  
Types of tests in the software

	Material: Tests Game: to find and mark the right answer on the basis of former learning Control: mouse
	Material: Questionnaire Game: to write in the right answer on the basis of former learning Control: mouse and keyboard

During the adaptation of the Digital Map of Vojvodina a higher correlation can be reached on every level (on the level of classes and subjects), making the education even more important.

The software can be used in the following subjects:

- The world around us (first and second grade), Nature and society (third grade), Nature (fourth grade), Society (fourth grade): in this curriculum the software helps in learning geographical terms starting with the map, the colors and all the structures and orientations of the map. Moreover the program contains the history, geography and political organization of Vojvodina (these terms also belong to this subject). The orientation on the map can be easily determined by the appearance and help of the compass.
- Mother tongue: the software contains the exact names of towns, provinces, regions, rivers, roads and borders.



Foreign language: the user interface of the program is added on three languages so it can help in some cases.

- From toys to the computers. The software can be used in acquiring some terms of informatics (CD-ROM, software, mouse, printing, etc.) and in improving mechanical abilities which are needed for the work on the computer. The Digital map of Vojvodina is accommodated to the knowledge of an eighth grader.
- The software can be used in the acquiring of interdisciplinary projects.

### 2.2.3 Study of the Effectiveness

The basic aim of the Digital Map of Vojvodina project is to make the education in the elementary school more effective. Studying the effectiveness the general hypotheses were:

- adjustments of new devices also improve the level of cognitive learning in elementary school;  
 adjustments also have positive effects in motivating students in learning activities in the elementary schools.

The study of initial knowledge is made in the experimental and control group in order to equalize the equivalence. The material was taken from the curriculum of Nature and society (third grade): Orientation on the geographical map of The Republic of Serbia (the charge density image, water, places, borders, traffic). The interviews were made in the control group with 170 students and in the experimental group, applying education software, with 180 students. The classes were chosen so that the level of knowledge would be similar (Figure 1).

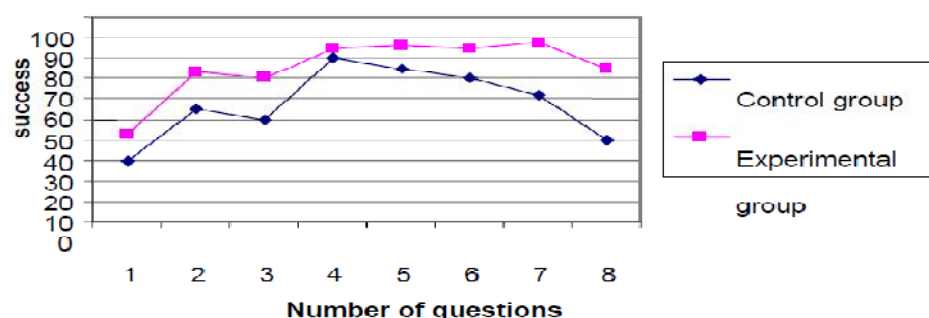


Figure 1  
 Results- comparing the results of the experimental group and the control group

In order to see how many students used the software for their work the students questionnaires is given. It is also wanted to see if they are more motivated on the classes where the educative software is used or on regular classes.

The questionnaire contains questions where we wanted to find out whether they are more motivated.

1. question: What do I think about the geographical map of the Republic of Serbia (the charge density image, water, places, borders, traffic)?

The distribution of the answers is represented in the Table 4.

Table 4  
Answers on question 1

GIVEN ANSWERS	STUDENTS NUMBER	%
didn't like it at all	0	0
liked it	63	35
liked it very much	117	65

2. question: Is learning with the help of the new software more interesting than the regular class work?

The distribution of the answers is represented in the Table 5.

Table 5  
Answers on question 2

GIVEN ANSWERS	STUDENT NUMBER	%
It isn't interesting	0	0
It's the same	5	2,77
It is more interesting	43	23,88
It is a lot more interesting	132	73,33

### Conclusions

With the new technical development of our hyperactive, informatics-based world new opportunities are given to use these in education. The high school system should be ready to organize education for the people who need to be sure that they acquire new skills during their careers as efficiently as possible, i.e. to be a part of lifelong learning process.

This is especially true in teacher training. That is the reason why they need to study and use informatics in the form of e-learning materials, teach them their application, didactical background, and record our experiences. An example for this is the map of Vojvodina (Vajdaság), which was created for school children, as it is suitable for future teachers and those involved in post-graduate studies to make them comprehend the importance of novel teaching methods.



In this work the education software is only dealt with in the broadest outlines, but based on methodology, pedagogy, psychology and fundamental education principles, an empirical study was made and concluded that the motivation of the students was higher and the learning was more effective when new adjustments are added as tools for education.

All this leads us to the conclusion that the educational system should be more improved with technical developments, multimedia software using the computer and other methods which would motivate students and would make better results in learning. Bringing e-learning closer to lifelong learning is very relevant today. Education systems are seriously facing the modernization challenge. The importance of flexible delivery modes and institutions is increasing. Lifelong learning obviously implies intensive interaction between the world of work and the different educational sectors and represent a more and more essential part of the portfolio of traditional educational institutions, in this case of teacher training institutions [2].

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