

## IMPLEMENTATION OF E-LEARNING METHOD OF TEACHING IN HIGH VOCATIONAL STUDIES

VITOMIR RADOSAVLJEVIĆ,  
High Vocational Studies in Belgrade, vitomir.radosavljevic@ict.edu.rs  
DANKA PEVAC,  
High Vocational Studies in Belgrade, danka.pevac@ict.edu.rs  
SLAVICA ŠTRBAC,  
High Vocational Studies in Belgrade, slavica.strbac@ict.edu.rs  
BILJANA GRGUROVIĆ,  
High Vocational Studies in Belgrade, biljana.grgurovic@ict.edu.rs

**Abstract** – The Paper presents achievements of e-learning method in ICT College of Vocational Studies. Pilot project “Implementing e-learning method in ICT College” was carried out by four teachers during period of time March-June 2011. Subjects affected by the project were from the field of expertise of multimedia applications, telecommunications and postal technologies. By analyzing both questionnaire results, conducted among students during the project and final exam results, we concluded that e-learning method increased student motivation and achievements. On the other hand, results presented in the paper raised numerous questions that will be answered in the following years with further usage and improvement of e-learning method.

**Keywords:** E-learning method, Distance learning

### 1. INTRODUCTION

Development of computers and Internet have influenced almost every aspect of human society. Education, being one of the milestones of the society, is not an exception. The potential offered by mutually connected computers and Internet give a solid base for rapid exchange of knowledge and development of new learning methods. Above given reasons together with more and more improved multimedia sources, which can be very well and effectively implemented into teaching materials, have caused fast expansion of electronic Distance learning method. [1]

Concept of this method embraces work and engagement of a student at home with a permanent overview of a subject teacher into student's improvement during the course. Each student follows teaching materials obtained on the on-line Internet portal within 3 months regularly. Student's engagement will be followed and evaluated, and through a number of extra resources such as forums, talkrooms and blogs each student can exchange his knowledge, experience and questions with other course participants as well as with the course teacher.

Following development trends of learning methods and teaching materials a group of teachers from High Vocational Studies has realized a pilot project Implementation of e-learning lessons and distance learning within the school teaching process. The whole project was realized in a few phases.

The first phase of the project represents detailed introduction of a teacher with the e-learning materials as well with principals and standards of composing e-learning lessons. In this phase teachers have finished an approved training of composing e-learning materials. The

training was done on Moodle [2] programme platform and during the training a SCORM (Shareable Content Object Reference) [3] standard of e-learning materials was introduced.

The second phase of the project represents production and preparation of e-learning materials which are afterwards set on the Internet portal [www.e-studije.com](http://www.e-studije.com).

The third phase represents the implementation of e-learning materials into a teaching process. During this phase a questionnaire was given with a goal to get a feedback information of how this method was accepted.

The last fourth phase represents the analysis of data and comparison of results obtained at the final exams with results obtained in the previous years.

The paper is organized as follows. In the second chapter the goals of the project are given. The third chapter shows the realisation of the project. The fourth chapter gives the results of the questionnaire and compares results obtained at the final exam. In the fifth chapter further directions for developing the method are given as well some questions that have arisen from the questionnaire.

### 2. Goals

The main goal of the project was modernization of the educational process. The idea to modernize the educational process came at the moment when all technical conditions were accomplished so that the idea of e-learning could be put into life. Since the school, where the process was realized, possesses good computers and a couple of computer classrooms for teaching, all technical condition have been fulfilled to introduce this method and use it for work with students. A group of teachers from this school has proposed the pilot project of introducing e-

learning into the teaching process with a goal to modernize teaching process expecting to increase students' productivity and to enhance success at exams.

From the new method is expected to motivate students to take an active part in the learning process. Besides that the goal is to present them the way of learning which they will be meeting very often in their future practice and which is expected to become the base of lifelong learning. [4]

It is planned that students attend the lectures regularly and to follow their teachers' lectures whereas e-learning materials will be used as an addition to a conventional way of teaching. On the base of teachers' experience a great number of students do not have their personal hand notes from exercises/lectures. Nevertheless, some students who have written personal notes often make mistakes in writing down some expressions being temporarily not concentrated or due to noise in the classroom ,or if those expressions have been pronounced not understandably by the lecturer. It is expected that e-lessons could completely replace any hand written notes, which a student had to write down by himself, and in any moment each student can from any location approach the web portal and open teaching materials and study them or refresh teaching materials that have been lectured. Extra advantage that e-learning materials offer compared with old fashioned course books is the possibility to use a big number of multimedia contents. Since those e-learning lessons give the opportunity to add video and audio materials, as well as different flash animations, it was expected that students would have positive attitude towards the new learning approach and that the motivation level to follow the teaching material would be higher than when an old fashioned approach was used, and thus would result in better marks at the final exam.

Besides the above mentioned we have expected positive results of the method being encouraged by additional facts. First of all, each student can individually choose the time when to approach e-materials as well as the pace he/she will be following the teaching materials. Usually the home atmosphere gives a student more comfort and better concentration to follow e-lessons compared with a school surrounding, where a big number of students in the same classroom within limited time intervals of a school class has to fulfill their tasks connected with e-lesson. Of course we have had in mind a discomfoting fact that the majority of students are confronted with this way of learning for the first time. Due to that reason it was necessary to take more time at the beginning of the course to present the new way of learning to the students and to define their tasks and obligations which should be fulfilled within those e-lessons. It was planned to present students the method of distance learning during introductory lectures and to explain them how to use those e-learning materials. It was also planned during the course lectures to motivate students to use more flash animations offered by e-lessons. They should use workshops, talk rooms, forums and blogs besides following lessons and composing tests.

During those e-courses it was planned to make a questionnaire while implementing e-courses. The goal of the questionnaire was to get a feed back about how users had accepted the idea of e-learning and distance learning. It was also necessary to study positive and negative aspects of using e-learning materials as well as some difficulties that an individual might have confronting for the first time the new way of learning. After three months it was expected that students should have better results at their final exams compared with results from previous years when the e-learning method was not in use.

### 3. Project realisation

The first phase of the project included the training process of teachers engaged on the project on composing e-learning materials and their introduction with the Moodle platform.

The training consisted of two courses: one for learning how to use tools for making e-lessons compatible with SCORM standards ( programme eXe[5] for making e-lessons was used) and the other for setting e-learning materials and holding e-courses on the Moodle platform. On the base of the obtained knowledge during the courses teachers involved in the project started the second phase of the project, which consisted of composing e-learning materials. The description of e-lessons was given on the example of lessons within the „ FLASH CS5“ course.



Picture 1: Organisation of a lesson

E-learning materials were organized as separate e-lessons. Each lesson started with the title and name of the autor of the lesson (picture 1). After that goals to be achieved within the lesson were defined. Goals also represented a sort of synopsis of the lesson. The next step in the lesson was to provide materials for a successful following of a lesson. Those materials included photographs, presentations, flash animations, audio files through which a student was able simultaneously to read e-lessons and to apply on his/her computer described actions and knowledge from the lesson. The following step within the lesson was the e-lesson itself.



Picture 2: View of one page of an e-lesson

E-lessons begin with a short introduction where already obtained knowledge is necessary in order to follow the current lesson successfully. In the introduction are given expressions which will be described in the lesson as well as flash animations which will be made. Further development of the e-lesson contains explanations concerning the topic that is studied in the lesson. Each e-lesson ends with the conclusion that summarizes the teaching material and tells the student what the following lesson is about.

An e-lesson was the key part of the whole lesson. After an e-lesson within the lesson students have on their disposal lesson's forum, lesson's glossary, lesson's test and talk room. Forums are meant for the students' questions concerning the discussed topic from the lesson and there students can mutually exchange their opinions and experiences. A glossary within the lesson contains new expressions from the current lesson.



Picture 3: Types of questions used in tests

A test that follows an e-lesson represents a key part of a lesson. Through different forms of questions (matching answers, multiple choice, filling answer gaps) a student can in a limited interval of 10 minutes check his/her acquired knowledge from the lesson.

In the third phase of the project an e-learning method is incorporated into the teaching process of four subjects during the term of three months in the period from March till June 2011.

Students have had an obligation to follow e-learning materials together with the conventional way of learning. Teachers have been monitoring continually the students' work and they have followed students' activities within e-learning courses. Two months after the beginning of the implementation of e-learning a questionnaire was given to students and on its base it could be concluded whether students were satisfied with a new way of learning and it gave us first students' impressions about e-learning method.

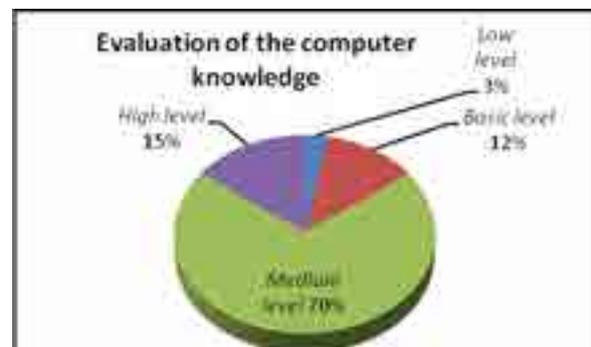
The fourth phase of the project includes the analysis of the results obtained by the questionnaire and the comparison of this year's results of final exams with the results achieved by students at the last year's final exams, when e-learning method was not implemented in the teaching process.

The most important results are given in the following chapter.

#### 4. Results of questionnaire and comparison of results of final exams

Students using e-learning materials were questioned at the end of May 2011, two months after the beginning of the implementation of e-learning method. Those were students of the third year at High Vocational Studies School, attending the Division for Telecommunications or Internet Technologies. The questionnaire was done by 59 students aged 21-25.

At the beginning of the questionnaire students gave the evaluation of their level of computer knowledge and explained for what purposes they use the computer mostly (picture 4). 70% of students described their level of computer knowledge as middle, which means that a student can use a great number of applications and programs on the computer, whereas 15% of students evaluated their computer knowledge as high, which means that he/she uses a greater number of applications and programs where some of them are on the professional or half professional level. 12% of questioned students evaluated their level of computer knowledge as basic and 3% of questioned students as low.



Picture 4: Evaluation of the computer knowledge of students who filled the questionnaire

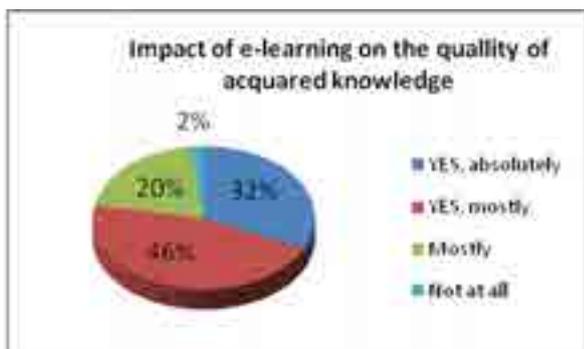
Being asked for what purposes they use computers they answered that they: use it for searching Internet (90%), e-

mails (76%), chat/social nets (62%). Among offered answers was also the option: using internet for studying and finding learning materials. This option was circled by 69% of questioned students. High percentage of students who circled this option showed us that they were using Internet not only for entertaining purposes and getting information but they have discovered educational potential offered by Internet as well.

More than half of the students (51%) use a computer 3-6 hours a day, and 37% use it 1-3 hours a day. Above given results have shown us a good base for introducing e-learning. A great number of students use computer regularly and the level of their computer knowledge is good.

The questionnaire results point out that students have accepted a new way of learning easily. With this conclusion agree 85% of students who took part in the questionnaire. They find the new way of learning interesting. Already 93% of questioned students agree with this statement, so the goal to improve motivation among students has been achieved.

Quality improvement which this method has brought could be seen in the fact that students had better und more fundamentally understood teaching materials (picture 5.). With this statement agree completely or in a great percentage 78% of all questioned students.



Picture 5. Impact of e-learning on the quality of acquired knowledge

It has already been mentioned that e-learning materials and e-learning were implemented into the teaching process as an additional method to the conventional way of learning. One of the questions in the questionnaire was concerned with the role of a teacher and the conventional way of approach to lectures compared with the electrical approach in learning teaching materials (picture 6.). Asked to give an evaluation of teachers and teachers' lectures compared with e-lessons 86% of students said that „impact of teachers and of their oral lectures is valuable for quality learning and understanding teaching materials within the e-learning materials. This result points out an important impact of teachers/lecturers in the learning process and that teacher should not be excluded from the educational process.



Picture 6. Teacher's impact compared with e-lessons

Greatest advantages of e-learning mentioned by students in the questionnaire were: the possibility to approach lessons at any time (86%), comfort of learning at home (54%) possibility to use forums for questions (39%).

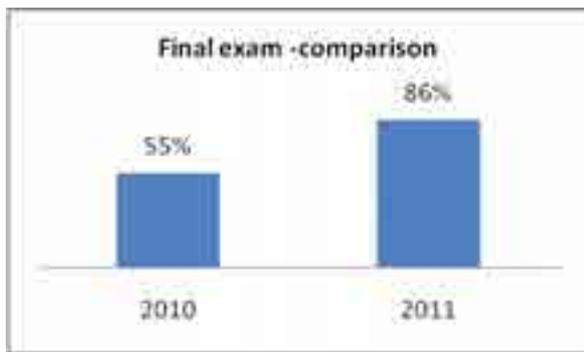
As disadvantages of the method most often were mentioned technical problems such as necessity for a quick Internet (12%) and inconvenience of long reading of materials on the computer monitor. Certain number of questioned students (5%) pointed out as a disadvantage of the e-method lack of direct communication with a professor.

The last question in the questionnaire for students was to give an overall impression about e-learning (picture 7.). E-learning was evaluated with an „excellent“ mark by 68% of questioned students, whose opinion was that it should be also applied to other subjects. A „good“ mark was given by 32% of questioned students. None of the students gave a „bad“ mark.



Picture 7. Overall impression about e-learning on the base of students' questionnaire

Compared results at the final exam are as followed: The percentage of students who had more than 80 points at the final exam (from a maximum score 100) in 2010 was 55% of those who had past the exam, whereas in 2011, when the e-learning method was applied, the percentage of students with more than 80 points at the final exam - from a maximum 100 points - was 86% (picture8.)



Picture 8. Percentage of students who had more than 80 points (from maximum 100) at the final exam

## 5. Conclusion

The first results of the pilot project Implementation of e-learning method in High Vocational Studies School have been encouraging. The questionnaire conducted among students gave us some pieces of information on which base the expected positive result of implementation of e-learning had been achieved. Compared results at the final exam in 2010. and 2011. showed improved and better results achieved by students.

In the future we have to work on broadening of e-learning method on other subjects in High Vocational Studies School. One of the necessary conditions for that is that teachers should show an interest for it and they should be trained to compose quality e-learning materials and how to apply the method.

Although the questionnaire has offered a big number of answers there are still many opened questions that should be answered in the following period. Above all we should check an impact that teachers have on the e-learning method. Is it possible and if possible how to compensate the existence of teachers and their oral lectures in order to get full effect of e-learning ? Further questions may rise on the path of improving the method itself. Is there a connection between time intervals, when lessons are presented, and successfulness of learning? What effect would written materials have upon e-learning?

Since this method has given positive results and it can immensely improve the quality and effectiveness of educational process it is necessary to put extra efforts and to establish some more research work.

## 6. Literature

- [1] Wikipedia, Distance learning, distance education Available: [http://en.wikipedia.org/wiki/Distance\\_education](http://en.wikipedia.org/wiki/Distance_education)
- [2] Moodle Available: <http://moodle.org/>
- [3] Wikipedia, SCORM Available: [http://en.wikipedia.org/wiki/Sharable\\_Content\\_Object\\_Reference\\_Model](http://en.wikipedia.org/wiki/Sharable_Content_Object_Reference_Model)
- [4] [www.elearningeuropa.info](http://www.elearningeuropa.info) Available: <http://www.elearningeuropa.info/en/category/freetags/lifelong-learning>
- [5] <http://exelearning.org/wiki>