Rationalisation of Educational process by e-learning

Roman Horváth, Martin Mišút

Pedagogická fakulta, Trnavská Univerzita, Priemyselná 4, P.O.BOX 9, 918 43 Trnava
rhorvath@truni.sk, mmisut@truni.sk

Abstract

Paper discuss about education by e-learning at the Faculty of Education of Trnava's University in Trnava. We describe the new situation in view of students and teachers. Paper briefly characterizes the centre dealing with e-learning and its parts, experience and production of courses at the university.

1. Introduction

E-learning can increase the effectivity of teaching especially in organisations that don't have enough resources like learning space. In line with the strategic decision of management, a complete system of e-learning, which will create the base for the academic system of e-learning, has started to be built. The realization of this learning system have been supported by several grants (e.g. development grant of Ministry of Education, IDEP program of NOS-OSF, VEGA, KEGA, State research programme etc.)

Management of the Faculty of Education, responsible for preparation of next teacher generation, accepted the strategic program of adopting the e-learning services at the Faculty of Education of Trnava's University in 2001 year. Afterwards university management accepted this program as pilot program for the whole university.

Responsibility of the teacher training faculties is higher than other faculties. Without modification of the education system beginning with preschool education, we will not be able to prepare next generation for life in knowledge-based society. Basic assumption for being successful in this is to have appropriate prepared teachers. Building of the system is to be found in more details in [1] and [2].

2. E-learning system at Faculty of Education of Trnava's University

In the program of e-learning services at the Faculty of Education of Trnava's University, main accent is put on the valuation of own expert knowledge, transformed into valuable content and interesting and suitable form of courses. Considering knowledge as one of the most important valuables the faculty possesses, it has to be preserved carefully.

The program includes all necessary items that can help to cope with problems related to faculty operation. Program covers following areas:

- Educational content;
- Technical infrastructure;
- Institutional structures;
- Management policy.

E-learning is the goal, as well as instrument of the faculty transformation.

Educational content is seen from two perspectives:

- As a curriculum, appropriate to training of next generation teachers for knowledge-based society;
- As a preparation of on-line or blended courses.

The complex system for e-learning support, which includes whole e-learning cycle from educational content preparation and courses development to evaluation of education, was built at Faculty of Education of Trnava's University in Trnava.

Authors taking care of educational content preparation cooperate with technical realisation team during course development. Authors must pass through the course about development of e-learning courses, where they can take more information about e-learning possibilities. So they can improve educational content preparation. The course will be made to order by technical realisation team that proceeds on the base of materials prepared by authors. The technical team actively consults the details with authors during the course development. Complete courses together with some bought courses are published in LMS EKP.

These activities are administratively covered by Continuing Education Centre (CEC).

2.1. Continuing Education Centre (CEC)

The proposal for change of faculty organizational structure is an important part of the e-learning program at the faculty. Three-year experience have showed us that new methods of learning and teaching need also appropriate organizational structures. E-learning has increased demands on preparatory work for educational process. To assure new form of educational process preparation and organization, new organizational units are needed:

- Educational materials development centre – technical support for authors of courses;
- Training centre – organisation of various courses for authors of courses and LMS users;
- Administration and support office – organisation and administration of e-learning at Faculty of Education of Trnava's University in Trnava;
- Administration of educational resources – LMS system management and enrolment of courses, courses archive, implementation into LMS;
- E-learning support and operation office – technical administration of e-learning.

All these units are grouped into e-learning centre organizational unit. This unit gives support to on-line courses authors, tutors, and all other faculty staff participating in e-learning or life long learning activities.

CEC covers these activities: organisation of courses for authors and users, course development support, e-learning administration, technical systems (e.g. LMS EKP) administration.

2.2. System Architecture

LMS system EKP that follows the latest standards (AICC, SCORM) used in e-learning has been bought by University of Trnava in Trnava. This feature enables publishing of the courses following the same standards. We had an opportunity in real operation to find out what LMS should contain and consequently to come closer to conception of LMS system, which we will need. EKP is fully localised into Slovak language. The system was installed on DELL server, placed at the head office of Trnava University. EKP installation used server with installed Oracle 8i as database server.

System administrator takes care of whole system management. It is allowed to create assistance administrators who could take care of study management. However one employer is sufficient to cover these activities in present. There are more default user roles defined in system, the most used are: "learner" (teacher) and "student". The role "learner" enables teachers to gain miscellaneous data related to students and their study (the time spent studying certain course chapters, test results etc.), to assign various tasks and so on. This user role includes all privileges that the user role "student" contains. The user role "student" allow students to access to enrolled courses and tests, check their own study progress and results, communicate with other students and teachers, and enrol to certain courses and so on.

2.3. Courses

Our philosophy is to check availability of the courses with chosen theme taking all requirements on the market and only then to create the course with

technical team support. Nowadays three courses are complete and other ones are in preparation. Complete courses relate to security and hygiene at work and environmental education: "Security and hygiene at work", "Toxicology and security at work in Chemistry", and "Environmental education". These courses are designated to bachelor course "Master of vocational training". Courses follow standard AICC so they are portable.

Recently these courses are prepared: "Terminology of inorganic stuff and computations in inorganic chemistry" (first degree, full-time study), "Selected problems from graph theory" (Teacher training for the first degree in the specialisation will provide higher standard as schoolbook [3]), "Linear algebra". These courses will also follow standards and they should follow latest standard SCORM.

System contains integrated test manager that serves as test editor and publisher. This module was used to check knowledge from course ICTE 1. Very good connection with other LMS features is an advantage. Students can see their results immediately and detail information about individual questions (correct or incorrect answers, score e.g.). Teachers have the same results at their disposal. There is possibility to create reports providing various statistical data.

Since the Faculty of Education does not possess special technical experts, which have been able to assure production of on-line courses at high technical level, it was necessary to find a software and multimedia producing company. Because of e-learning program at faculty, also good relations were established with a company that assured technical production of on-line courses. Courses are described in more detail in the paper of Gazdíková [4].

2.4. Educational Process

The education using e-learning is running for the third term. Trial run was realised at bachelor external study. Students' reactions to new form of education were positive. Global teaching of course ICTE 1 came to pass in previous term and next term the education is going to continue with course ICTE 2. Continuing education courses are provided by CEC. Course for increase the computer literacy came to pass in summer 2004. Every employer of Trnava's University was allowed to enrol to the course. The registration was possible on-line at web pages of CEC. Login and password were attached to registered participants. At the end of study they were examined properly and successful ones obtained certificate of computer literacy containing information about achieved computer literacy level. The certificate is valid within Trnava's University.

3. Experience

Not only rationalisation of educational process is important for us, but also to find out students' attitudes

to e-learning and possibly affect them. They are future teachers and their attitudes will affect progression of next generations. Therefore each educational activity performed by using e-learning is controlled by survey that is realised by questionnaire mapping students' and teachers' attitudes, opinions and experience with e-learning.

The last research was performed with students of ICTE 1 taught in summer term of academic year 2003/2004. Study was realised by electronic study materials designated to prepare for ECDL certificate. Within framework of course ICTE 1 four courses were the subject of study. Checking of obtained knowledge was realised on-line by tests implemented inside of EES. 150 students was total number of students studying full-time this academic year. All these students were enrolled into the course ECDL containing auto-tests. Forasmuch as 13 students of total count finished or interrupted their study during the term final number of students studying in EKP was reduced to 137. 103 of them (19 men, 84 women) passed the sectional test. Successful test completion was conditioned by achieving at least 8 points from total number 15.

Research group consisted of 137 students studying for the first year at the faculty. 103 students were assessed. They were students of following academic disciplines: "English-Chemistry", "English-Maths", "English-Slovak Language", "Math-Ethics", "Math-Physics", "Math-Religious Studies", "Math-Biology", "Biology-Chemistry", "Biology-Art", "Slovak Language-Ethics", "Slovak Language-Religious Studies", and "Slovak Language-Art".

Results of students studying by e-learning were not statistically different in compare to results of students studying by traditional study form. Actually the requirements to teachers and learning space were reduced what leaded to rationalisation of educational process. According to our research students have realised the importance of e-learning and they are disposed to gain knowledge through this form of education. About 50% of students filled out the questionnaire because the completion was voluntary and was not supervised. In spite of this it is relatively good successfulness because the questionnaire is usually filled out by 30% of respondents. 57% of respondents agreed that active teaching methods (like e-learning) are useful and 44% of them would use it by their study. 37% consider the active teaching methods for popular. For more details see [5].

4. Conclusions

Four-year experience with e-learning at Faculty of Education of Trnava's University in Trnava showed us that this form of education is comparable with traditional forms of education. From the point of view of educational quality there were not noticed high statistical divergences, but it was found out that external students would accept it rather than traditional education. Rationalisation of education was made, the number of contact lessons decreased, requirements for learning space and number of teachers teaching certain courses were reduced.

5. References

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