

E-learning at the University of Zagreb

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SUMMARY

As a response to new demands and challenges which the universities are facing at the beginning of 21st century and recognizing the opportunities introduced by e-learning and modern technologies, the University of Zagreb has started a wide and systematic implementation of e-learning and usage of information and communication technology (ICT) in university education. In June 2007, the Senate of the University of Zagreb approved the *E-learning Strategy for the Period 2007-2010* which is presented here. The central *University Office for E-learning* was established at the same time. The *E-learning Support Centre* within the University Computing Centre (SRCE) was entrusted with the duties of the Office. One of the main goals of the Office is to promote and monitor the implementation of the *E-learning Strategy*. The *Office for E-learning*, specifically the *E-learning Support Centre*, conducted a survey in June 2007 at the beginning of the implementation of the *E-learning Strategy* at the University of Zagreb. Only the most important results of the survey are presented here. In September 2006, the *E-education system* (Sustav E-obrazovanje) based on the LMS Moodle platform was initiated on the server of the Faculty of Geodesy. According to the *E-learning Strategy* of the University in Zagreb, at the end of 2007 the Faculty of Geodesy adopted plan for implementation of e-learning for the year 2008.

SAŽETAK

Odgovarajući na nove izazove i zahtjeve s kojima se susreće na početku 21. stoljeća i prepoznajući mogućnosti koje e-učenje i moderne tehnologije donose, Sveučilište u Zagrebu krenulo je u sustavnu i široku implementaciju e-učenja i primjenu informacijske i komunikacijske tehnologije (ICT) u sveučilišnom obrazovanju. U lipnju 2007. Senat Sveučilišta prihvatio je *Strategiju e-učenja* za razdoblje 2007-2010. koja je ovdje predstavljena. Istodobno je osnovan središnji sveučilišni *Ured za e-učenje*. Poslovi Ureda povjereni su *Centru za e-učenje* u Sveučilišnom računskom centru (Srce). Jedan od temeljnih ciljeva rada Ureda je poticanje i praćenje provedbe sveučilišne strategije e-učenja. Uz početak primjene *Strategije e-učenja* na Sveučilištu u Zagrebu u lipnju 2007. je *Ured za e-učenje*, odnosno *Centar za e-učenje*, proveo anketu. Navedeni su najvažniji rezultati ankete. Još u rujnu 2006. na poslužitelju Geodetskog fakulteta pokrenut je *Sustav E-obrazovanje* na platformi LMS Moodle. Sukladno *Strategiji e-učenja* Sveučilišta u Zagrebu Geodetski fakultet je krajem 2007. donio svoj plan provedbe *Strategije e-učenja* za 2008. godinu.

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1. E-LEARNING STRATEGY AT THE UNIVERSITY OF ZAGREB

The University of Zagreb, the oldest and largest Croatian university, as a research-oriented university with century-old tradition in higher education, considers quality one of its greatest virtues. Triggered by new challenges and demands of the society at the beginning of the 21st century, e-learning, as well as other forms of learning supported by information and communication technologies, is the synonym of new, modern and high-quality education. Aiming to create a positive and stimulating environment for development and systematic implementation of e-learning, the Senate of the University of Zagreb accepted the *E-learning Strategy 2007-2010* (URL1) at the session held on June 12, 2007. The strategic plan supports autonomy of faculties, art academies and university professors to decide about the optimal form of teaching and does not enforce any specific model of teaching.

A specially appointed commission made the university development strategy titled *Iskorak 2001* (Breakthrough 2001) a starting point for the development of this strategic plan within broader Croatian national strategy of educational development. The Plan for the development of education in the period 2005-2010 in the Republic of Croatia (URL2) also specifies "development of lifelong learning habits, application of information-communication technologies, and innovative approaches in the process of education and their harmonization with EU programs at all levels". The development of the strategic plan was based to great extent on the results and discussions which were organized as a part of the Tempus project UM_JEP-19105-2004 Education Quality Improvement by E-learning Technology (EQIBELT) which is coordinated by the University Computing Centre (SRCE) on behalf of the University of Zagreb (URL3).

In this strategy, e-learning is defined as a process of education (learning and teaching process) conducted by means of information and communication technology which improves the quality of the process itself and the quality of its results.

The main components of the plan are: research of environment, vision, mission, fundamental guidelines, strategic objectives, planned activities inside the areas of strategic operations and monitoring of strategy implementation.

1.1 Main setting for the implementation of e-learning

The University of Zagreb supports and actively encourages e-learning, i.e. application of information and communication technology in learning and teaching processes at all levels of higher education. E-learning is a legal and desirable way of learning and teaching at the University of Zagreb (URL1).

E-learning is a synonym for new, modern and quality education. E-learning technologies and information technologies in general can and should act as a catalyst of integration processes within the University and be an efficient tool in the realization of quality changes at the University of Zagreb, as well as in the implementation of the Bologna Declaration principles.

E-learning is an integral part of the higher education process.

As a rule, the mixed (blended, hybrid) form of e-learning is applied at the University of Zagreb. Such an approach is based on a combination of classical teaching methods and those employed in virtual learning and teaching environments. The choice of the form and intensity of e-learning is left to the faculties and academies of the University. They should recognize and apply the forms of e-learning appropriate for particular education areas, i.e. particular studies and/or courses.

The University of Zagreb encourages harmonization of various approaches and ways of applying e-learning at the University, supports adoption of common standards and recommendations for the development and use of e-learning teaching materials, as well as for the establishment of common, university repositories of e-learning teaching materials.

The University of Zagreb and its faculties and academies take good care of the sustainability of e-learning by creating necessary preconditions through systematic planning of activities and ensuring financial resources for the application of e-learning, through continuous support and evaluation of teachers' work, through provision and maintenance of the infrastructure, and through enhancing and co-funding the development of high-quality e-learning teaching materials and promotion thereof.

1.2 Vision, mission, strategic objectives of e-learning

The vision describes desirable situation at the University at the end of the period:

The educational process at the University of Zagreb is an active partners' relationship between teachers and students, adjusted to individual characteristics and needs of each student. Its learning objectives are clearly defined, as well as the responsibilities assigned for achieving them.

Information and communication technology is applied in the teaching process harmoniously, allowing both students and teachers to communicate and efficiently cooperate within the integral virtual environment in which learning and teaching are conducted. The process itself is a combination of classical classroom teaching model and the one in which information and communication technologies are used.

The results of university education comply with advanced requirements of both knowledge-based society and knowledge-based economy. Skills obtained during the studies are the basis for lifelong education and further independent learning, as well as for scientifically founded collection and interpretation of various data and information.

The vision defined in such a way implies the mission (role of e-learning):

Systematic introduction of e-learning contributes to the quality of higher education by creating an environment in which active cooperation between students and their teachers is enabled and encouraged. Introduction of e-learning leads to improvement of research work, opens space for lifelong learning programs, increases importance of the social role of the University and betters its competitiveness in both national and international environments.

The University of Zagreb aims to accomplish the following strategic objectives by introducing and actively implementing e-learning:

- 1 Enhance the quality of university education
- 2 Enable teachers and students to achieve new roles in the process of education
- 3 Increase the competitiveness of the University and its study programs
- 4 Enable students to use lifelong learning technologies.

1.3 Areas of strategic operations and planned activities

In relation to the implementation of the *E-learning Strategy*, the University of Zagreb and its faculties will carry out forty six different activities within the following areas of strategic operations:

- A Improvement of formal/legal and organizational environment, assurance of sustainability
- B Development of human resources
- C Support to teachers
- D Support to students
- E Development of educational contents
- F Development of basic and specific infrastructure.

Competent/responsible bodies and deadlines for realization/duration are precisely defined for each activity.

1.4 Monitoring of strategy implementation

Monitoring and analysis of thirteen quantitative parameters is scheduled during the period 2007-2010 for the purpose of monitoring the implementation of this strategy and for the purpose of monitoring the conditions for the application of e-learning at the University of Zagreb and the levels thereof.

The main *E-learning Support Centre* (CEU) was established for continuous qualitative and quantitative monitoring of the e-learning development, its support and monitoring of the implementation of the e-learning strategy at the University of Zagreb.

The strategy document can be found on the website of the University of Zagreb (URL1).

2. UNIVERSITY E-LEARNING SUPPORT CENTRE

Because of its proportions and diversification the University of Zagreb is developing a hybrid organization model, the so-called coordinated decentralized e-learning support. The newly established *E-learning Support Centre* is the central unit at the university level that provides support to teachers and students in the usage of ICT and e-learning tools.

Besides, the *E-learning Support Centre* also acts as the central university *Office for E-learning* and coordinates support groups at faculties for promoting and supporting the e-learning with the goal of efficient conducting of common activities associated with the implementation and use of e-learning at the University of Zagreb (URL4).

2.1 Entry survey about the state of e-learning at the University

At the beginning of the implementation of the *E-learning Strategy* at the University of Zagreb, the *E-learning Support Centre* conducted a survey in June 2007 with the goal to identify the current status and the status of the faculties' and art academies' plans related to the usage of e-learning, or more precise, the usage of information and communication technologies (ICT) in university education. The goal was also to go through long-term visions and expectations of the faculties and art academies within the University of Zagreb about the usage of ICT in the learning process. The answers to the survey questionnaire with 74 questions were provided by all 33 university departments of the University of Zagreb (URL5).

The survey shows that most faculties (79%) recognise that the role of e-learning and ICT is important for improving the quality of the educational process and recognise the positive attitude of students towards e-learning and implementation of ICT in the educational process.

It shows that the greatest expectations from the implementation of e-learning are in the following order:

- greater availability of on-line teaching materials
- greater accessibility to resources of digital libraries
- greater of the quality of education
- better access to additional educational materials on the web
- modernisation of university education
- adjustment to European and worldwide experiences and trends
- recognizing of e-learning as a tool for lifelong learning
- transparency of the educational process
- better communication between students and teachers
- enhancing possibilities of communication between students and teachers
- flexible learning independent of time and place
- better accessibility of teachers to students
- more time for quality communication between teachers and students
- adjusting to individual learning styles
- better access for Croatian students to international educational resources during their studies in Croatia

- better access for Croatian students to international educational studies and programmes
- continuous self-examination of the students' knowledge
- choice of education modules according to personal needs
- availability of multimedia teaching materials
- learning through collaboration
- better access to studies in Croatia for foreign students
- better communication between students in the learning process
- virtual contacts between students in learning process
- evaluation and examination in virtual environment.

Geodetski fakultet Sveučilišta u Zagrebu
Studij geodezije i geoinformatike - preddiplomski

1. semestar	6
Izborni predmeti:	3
2. semestar	6
Izborni predmeti:	4
3. semestar	6
Izborni predmeti:	3
4. semestar	8
5. semestar	5
Izborni predmeti:	3
6. semestar	4
Izborni predmeti:	5
Poslijediplomski doktorski studij	
1. semestar	2
2. semestar	2
3. semestar	
4. semestar	
5. semestar	
6. semestar	
Izborni projekti:	
Akademska godina: 2006./2007.	9
Akademska godina: 2007./2008.	10

Pretraži kolegije:

Fig. 1. The number of courses that are available on the E-learning System at the Faculty of Geodesy, University of Zagreb

3. E-LEARNING AT THE FACULTY OF GEODESY

E-learning as "electronically supported learning" has been an inherent part in teaching at the Faculty of Geodesy for years, as well as in professional and scientific work of geodetic experts. Basic information about faculty courses could be found on the website of the faculty, lectures were usually held by using of presentation tools, and computers exercises have been organised by using different applications for solving problems with the aim of achieving learning objectives. But, the development of the necessary infrastructure (quick internet access), efficient systems for managing online learning and technical equipment of students

(greater number of computers with internet access) have made the creation of a unique virtual space for learning and teaching possible just a few years ago.

In September 2006, the *E-education System* (Sustav E-obrazovanje) was initiated on the server of the Faculty of Geodesy on the LMS Moodle platform. At that time, there were only around 20 Moodle sites in Croatia! In the academic year 2006/07, online activities were included by 40% of the 1st and 2nd year undergraduate courses which were conducted by the new program according to the Bologna process (Fig. 1).

All students were granted a simple and flexible (time and place independent) access to materials for studies and easier communication and cooperation with teachers and other students. The youth is far more skilled these days in accepting new technologies, but more than ever they seek authority of teachers who will skilfully guide them to study independently, who will always be available to them and who will share their life motivation and optimism with them. To the teachers, the system offers easier and more efficient means of communication with the students, but also cooperation on the development of interactive multimedia educational materials. It is a big challenge to find the optimal way of using the technology adjusted to the needs of a specific subject and the real possibilities and needs of students and teachers in the mixed (blended, hybrid) form of e-learning.

3.1 The implementation plan at the Faculty of Geodesy for year 2008

According to the *E-learning Strategy* of the University of Zagreb, faculties and art academies within the University produce their plans. Therefore, at the end of 2007, the Faculty of Geodesy also adopted its plan for the implementation of the E-learning Strategy of the University of Zagreb for the year 2008. The following activities were pointed out in that plan:

- To create a new and unique portal on a separate server, which will technically be based on the newest version of LMS Moodle, different types of social software, such as forums, chat, wiki, blogs, etc., the administrative information system ISVU and other resources. A unique visual identity will also be created in that way. Access to the e-learning system is based on AAI@EduHr.
- To create virtual access for all courses of the summer semester of the academic year 2007/08.
- To conduct continuous evaluation through regular monthly analysis of system access statistics and online surveys of students and teachers. Open access to the results will be available.
- Maintenance and development of the system according to the needs of students and teachers.
- Organizing lectures, workshops and courses with themes related to e-learning and additional education for teachers in collaboration with the *E-learning Centre* in SRCE.
- All teachers will be able to share their experiences through the *E-learning for Teachers* course. Through that course, teachers will be guided and encouraged to actively track modern methods of teaching, new communication skills, trends in the development of technologies, find necessary sources on the web on their own and mutually cooperate.

- To encourage teachers and staff to involve in the informatics education via the Croatian Academic Research Network (CARNet) portal for remote learning and the distance learning system at SRCE.
- To enable education for teachers and their co-workers on the CARNet E-learning academy.
- To prepare instructions for the use of LMS Moodle in Croatian, materials and guides for course design and teaching materials.
- Through the course *The Basics of Informatics*, students will gain basic competences (knowledge, skills, behaviour) of using of information and communication technologies. Through different projects/themes, students will make materials that will be available to everyone through LMS Moodle.
- Support from students to students will include: support for new users in the form of courses (basic system elements, etc.), user courses (not just related to LMS) and forums/chats for current questions and problems, etc.

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BIOGRAPHICAL NOTES

Miljenko Lapaine studied mathematics and graduated from the Faculty of Science, University of Zagreb, in the field of theoretical mathematics in 1976. He finished the postgraduate studies of geodesy, the field of cartography in 1991 at the Faculty of Geodesy in Zagreb by defending his Master thesis *A Modern Approach to Map Projections*. He obtained his PhD at the same Faculty in 1996 with a dissertation *Mapping in the Theory of Map Projections*. He has been a full professor since 2003. He published more than 600 papers, several textbooks and monographs. He is a full member of the Croatian Academy of Engineering, the vice-dean for education and students at the Faculty of Geodesy, University of Zagreb, a founder and a vice-president of the Croatian Cartographic Society and the chief editor of the *Cartography and Geoinformation* journal.

Stanislav Frangeš graduated from the Faculty of Geodesy, University of Zagreb in 1984, obtained his Master's degree in 1993 by defending his Master's thesis *Differentiation of Objects on Maps with Area Symbols*, and his PhD by defending his doctoral thesis *Map Graphics in Digital Cartography*. His subjects are Geodetic Drawing, General Cartography, Topographic Mapping, Thematic Mapping, Map Reproduction and Map Visualisation. He published several course materials and about 20 cartographic representations. He was awarded for excellence in cartography at the International Cartographic Exhibition in Ottawa in 1999. He is the president of the Croatian Cartographic Society and the dean of the Faculty of Geodesy, University of Zagreb.

Željka Tutek currently works as a teaching assistant at the Faculty of Geodesy, University of Zagreb. In 2003 she obtained her Master's degree in mathematics at the Faculty of Science, University of Zagreb. Her research work is focusing on numerical methods and software for solving partial differential equations. As an e-learning coordinator she is involved in faculty's implementation of e-learning technologies since 2006.

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