

E-LEARNING INNOVATION: CASES IN RIGA TECHNICAL UNIVERSITY

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ABSTRACT

The article presents the stories of the eLearning development projects initiated by Riga Technical University Distance Education Study Centre. All the projects were carried out by early innovators at universities and city and town councils. Our plan intends to promote the acceptance of eLearning in the regions. To achieve this goal, we intend to employ the skills from diverse activity sectors (TV, Mobile phone), which will include eLearning, tLearning, mLearning and ePortfolio skills. We feel that this multi-informational approach better meets the skills, needs and expectations of the target group. The plan has the potential to become a platform for further innovation and large scale deployment.

E-LEARNING - OPEN COURSEWARE

The three ECDL-Riga Course modules were published on the Riga City Council main portal www.riga.lv on 20 May 2005. Headed by a long streamer massive advertising the courseware was run in three highly popular Latvian Web Portals www.tvnet.lv, www.delfi.lv, and www.apollo.lv from 1 June until 30 June.

To study the learning process of available free courseware, the log files of all visits were recorded and analysed. Figure 1 presents the number of Mouse Clicks (requests) per month for ECDL-Riga Courseware from June 2005 until December 2005. It demonstrates a rapid increase in response to the advertising, but it decreased during summer holiday months of July and August. Starting in September, we observed an increase of requests which steadily intensified reaching 300 000 requests per month.

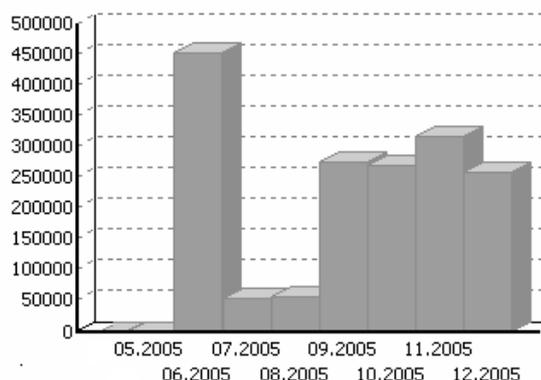


Figure 1. Requests per month for ECDL-Riga Courseware.

The 300 000 mouse clicks are a high number compared proportionally to the 2 000 000 Latvian speaking population. The story demonstrates that well organised



Figure 2. E-courses in the Riga City Public Portal.

eCourses in popular public portals can contribute significantly to eLearning development. Now we have published additionally two new course modules – Computer for the beginners and Web page design (see Figure 2).

E-COURSES IN REGIONAL DEVELOPMENT PROJECTS

The second story is about six regional development projects with a strong human resource development component in the Livani region, Latvia. The Livani region was among the most economically developed regions in Latvia from 1980 to 1990 but during the period of transition to a free market economy and a knowledge society, 90% of the old industry collapsed, causing unemployment to rise up to 25%.

The Livani leadership drew upon the new e-learning solutions that had emerged at the time and that had been captured and designed at the Riga Technical University as an effective human resources development approach.

The Distance Education Study Centre at the Riga Technical University (RTU) had a team that had participated in many international e-learning development projects and had the expertise to meet the development needs of the Livani community.

Modern e-learning solutions developed at the RTU differed visibly from traditional training. They stimulate motivation by making learning activities more entertaining.

To achieve faster and more effective learning results, RTU learning solutions were more user friendly, easier to understand, and more socially inclusive.

Six Livani development, social cohesion, and sustainable growth projects were implemented from 1999 to 2007.

Our most visible success was the following, which also drew the greatest number of participants:

- E-courses with interactive multimedia CD-ROMs
- The Innovation Management e-course game

The first visible results were screened after implementing the first small-scale project. Fifteen participants enrolled in the course “Business Planning for Open Markets”. Twelve participants completed the course and produced a self-designed business plan. Four of the business plans were actually implemented and made the small businesses where they were put into effect stronger and more competitive. The participants of the course were also viewed as better credit risks by financial institutions.

The participants informed us that they had to visit a bank only three times as compared to the eight times that was necessary for non-participants. Moreover, the non-participants often ended up paying a consultancy fee to design a business plan and their projects were viewed as higher credit risks.

Recently we compared the GDP in the Livani region to the neighbouring regions. The data from the Latvian Central Statistical Bureau www.csb.gov.lv (see Figure 3) clearly demonstrate the difference in GDP growth in Preiļu District (the Livani District is half of Preiļu District) and the neighbouring Ludzas, Kraslavas, and Rezeknes Districts (regions).

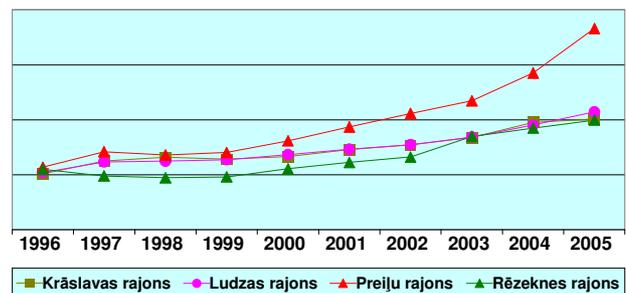


Figure 3. GDP in districts with e-Projects (Preiļu rajons) and the neighbouring districts after 6 years of implementing e-Learning projects.

EVALUATION OF THE REGIONAL DEVELOPMENT PROGRAMME

The key success factors of the programme were:

- a small scale start-up project with tangible and visible results,
- use of advanced multimedia learning materials and internet study support technologies which were not available 10 to 20 years ago in traditional classes,
- availability of courses for the development of basic computer skills for the participants who needed it (IT for the beginners),
- an appropriate share of face-to-face seminars (6 to 8 hours in a 25 to 40 hours course),
- ongoing availability of tutors by telephone and e-mail,
- ongoing availability of computers with internet access at a local “e-study centre,” when needed,
- the opportunity to move to a more advanced level, when required,
- rich, well designed, user friendly interactive multimedia CD-ROM study materials which the participants may retain after the course,
- final assessment assignments with real applicability in the business world or the job-related activities of the participants,

- the large scale funding project had a synergetic effect; it increased the number of participants by more than 15% of the economically active people in the region.

The package of six projects presented here gives important examples of a long-term approach to rapid development and successful transfer to knowledge society.

These “just-in-time” knowledge-training courses present an opportunity to transfer to knowledge society without damaging the regional infrastructure and the traditional values. This is possible because of a number of similarities between pre-industrial and post-industrial ways of working.

The presented experience demonstrates the potential of technology enhanced learning, but there is also the need for more ambient study support – the most efficient approaches are still in development.

E-LEARNING INNOVATION IN UNIVERSITY EDUCATION

Most Latvian universities have modern e-learning environments. Many of them have moved to Moodle in recent years. In Riga Technical University after connecting the student database with the virtual learning environment the usage of e-learning increased rapidly.

Often the eLearning course delivery is very time consuming for teachers - it is also hard to motivate students to avoid the copy-paste approach in their essays. After 3 years of traditional blended e-learning with face-to-face seminars we decided to apply teamwork in the virtual learning environment.

After uploading their essays, the students were organized in teams - 5 students in each team. Every student working in the virtual learning environment received four essays for evaluation from his team mates. The evaluation criteria were the same as the framework for essay writing. The students used the evaluation results for further update of their essays. All the assessment process was supervised by teachers/researchers. The more detailed research report will be published by Dzintars Tomsons and Janis Kapenieks.

The preliminary evaluation of the new approach was the following.

- students had better knowledge after having passed the course,
- students had a higher study load during the course,
- teachers had more time for specific study support,

- it was easier for the teachers to identify the knowledge gaps, and respond,
- students were more motivated and more satisfied with the course.

Table 1: Evaluation of student satisfaction

Survey statement	2008	2009	Difference	Comments
Starting the course, the teacher presented the course programme and informed the students about the assessment principles	4,33	4,36	0,04	The introductions to the course in 2008 and 2009 were very similar
The course covered all the material of the curriculum, and the time spent in classes was used in an effective way.	3,84	4,09	0,25	Teamwork was evaluated as effective use of time. In 2009 the students spent more time on the course than in 2008.
The themes of the study course were well-structured and explained in a comprehensible way	3,88	3,97	0,10	
The teachers were well-prepared for the classes	4,01	4,16	0,15	
The teacher effectively used the audio-visual aids	4,34	4,53	0,19	
The teacher's explanations were clear and comprehensible	4,19	4,38	0,19	
The text-books were available, and helped to acquire the study subjects.	4,13	4,41	0,29	The text-books were the same in both years
The teachers gave regular tutorials	4,11	4,22	0,11	In both years the tutorials were conducted in the same way
Courseware was available in the e-learning environment	4,59	4,71	0,12	Courseware was available in 2008 and 2009
The study content did not overlap with that of other courses	4,45	4,69	0,24	

Student satisfaction for 178 students in the year 2008 and 220 students in the year 2009 was surveyed before the final exam in the scale from 1 (completely disagree) to 5 (completely agree). The results are presented in the Table 1.

The new approach requires more efforts on the part of the students, and their knowledge was much better. The student satisfaction had clearly increased. The teacher's time was spent more efficiently.

LATVIAN E-LEARNING IN THE TRADITIONAL EDUCATIONAL LANDSCAPE

The number of successful e-learning projects which achieved demonstrable effects encouraged group e-learning innovators at six Latvian universities to design about 30 new project proposals in 2005.

The funded projects (see Figure 4) covered all the application areas of e-learning:

- eLearning research projects,
- PhD programme development project,
- master, BSC program development projects,
- course development projects,
- innovative technologies development projects,
- course delivery projects.

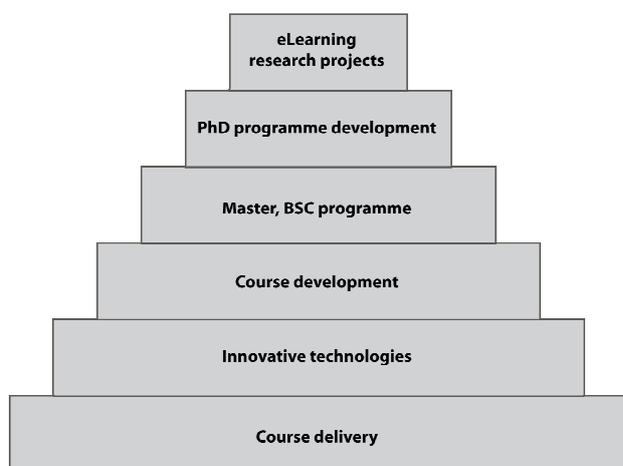


Figure 4. The Scheme of eLearning development projects funded in Latvia in 2005-2008.

Currently all the projects have been completed and we are discussing the course sustainability, impact, lessons learned and a continuing implementation strategy.

Recent data in Europe's Digital Competitiveness report; Main achievements of the i2010 strategy 2005-2009 had good news for the Latvian eLearning community. Latvia

held the second place in Europe in two Internet usage indicators: doing an online course, and uploading self created content.

We are currently looking for new challenges and solutions.

The successful project development and implementation were carried out by early innovators at universities and city/town councils.

Projects were implemented because a number of early innovators were in key positions in the Riga City and Līvāni Town councils.

Most town/city leadership is interested in supporting regional development, but they are not accustomed to take the risks of early innovation.

Smart organizational and/or technological solutions could support regional development organizations in this situation:

- Hire early innovators type staff in HRD development projects;
- Implement new technologies to encourage gradual acceptance of eLearning (t-learning or TV-Learning);
- Implement new technologies to strongly increase course availability - any time, any place (m-learning);
- Implement new technologies supporting the reaching of HRD goals, demonstrate and register results, and promote and encourage the participation in learning support. (e-Portfolio).

CONCLUSIONS

The present state of eLearning ensures wide-scale availability, but large scale acceptance has not been observed yet.

The skills from other activity sectors (TV, Mobile phone) could be employed to raise the acceptance level of eLearning.

The set of eLearning, tLearning, mLearning and ePortfolio instead of the traditional eLearning better meets the skills, needs and expectations of target groups.

These could provide the platform for further innovation and large scale deployment.

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BIOGRAPHY

Atis Kapenieks. Education in Physics and PhD from University of Latvia. Director of Riga Technical University Distance Education Study Centre. Head of Latvian Delegation in EU FP7 ICT Programme Committee.

Experience in IT, Research, e-learning and administration: Director of Department of Higher Education and Research, Latvian Ministry of Education and Science 1991-1997.

Dr. Atis Kapenieks has participated in more than 20 international e-learning development projects in Europe. Over 60 publications on experimental solid state physics, 7 publications on higher education and research policy, 40 on Internet and Multimedia applications in e-learning. Current scientific interest: virtual learning environments, multimedia applications e-learning and regional development, t-learning, m-learning.

Rūdolfs Gulbis has a MS in physics. For many years he served on the administrative staff of EuroFaculty as an expert on network and distance learning project development and design. He was a specialist in Internet services applications at Latvia Mobile Telephone, designing user activities models. Currently, he is a PhD candidate at Riga Technical University.

He has managed several EU 5/6th Framework projects. Most recently, he is part of the management staff of the EU project MyElvin, specializing in the design of language tools to update Latvian language compatibility to ICT technology and advising on terminology development. He has designed and edited many distance learning courses, notably http://www.riga.lv/LV/Channels/About_Riga/Kaleidoscope/talmaciba.htm, a public access learning portal to which he continues to contribute.

Bruno Zuga has MSc degree in Electronics and Telecommunications engineering from Riga Technical University (RTU). Bruno Zuga is author or co-author of more than twenty international publications in e-learning and multimedia. At present he is a PhD student at RTU.

Research topic deals with question “How exactly technology supports learning?”. He is working at RTU Distance Education Study Centre. He has participated in about thirty national/international e-learning and knowledge management projects.

Janis Kapenieks. Background education in Physics and master degree in social sciences. Currently researcher in Riga Technical University Distance Education Centre and PhD student in the E-learning technology and management program. Experience in pedagogy and e-learning, information support for the Parliament.

Janis Kapenieks has participated in more than 10 international e-learning development projects. 11 publications on multimedia applications and e-learning pedagogy. Scientific interest in e-learning pedagogy, multimedia applications in e-learning and mobile learning.

Dzintars Tomsons has MSc degree in Computer Science. He is lecturer at Faculty of Natural and Social Sciences, Liepāja University, and PhD student at Liepāja University.

Current research interests: e-learning, computer supported collaborative learning, computer-based educational games and simulation. Author of more than ten international publications on simulation and computer-based learning. He has participated in more than ten national and international projects on multimedia, e-learning, and human resource development.