University Network – Efficiency of Virtual Mobility

PETRA POULOVÁ, MILOSLAVA ČERNÁ, LIBUŠE SVOBODOVÁ
Faculty of Informatics and Management
University of Hradec Králové
Rokitanského 62, Hradec Králové, 500 03
CZECH REPUBLIC

Petra.Poulova@uhk.cz Miloslava.Cerna@uhk.cz Libuse.Svobodova@uhk.cz

Abstract: - The article summarizes four-year experience in the area of virtual mobility in the Czech Republic. Virtual mobility represents utilization of information and communication technologies to obtain the same benefits as one would have with physical mobility but without the need to travel. The contribution describes two projects based on the issue of virtual mobility. Special attention is devoted to the efficiency of virtual mobility. The efficiency is in this paper understood as a difference in numbers of students who got enrolled in courses at the beginning of the academic year and those who completed courses successfully at the end of the year. The reasons of the unsuccessful study are explored in detail.

Key-Words: case study, education, eLearning, interuniversity study, study failure, study efficiency, virtual mobility.

1 Introduction

Technologies, especially information and communication technologies (ICT), play a significant role in today’s knowledge society. These technologies enable removing geographical obstacles, speed up communication and make some processes more effective.

ICT affect not only an industrial sector, but also plenty of other sectors and act as integrating device or a kind of mediator. ICT change society, all that has a considerable impact on development in economic, social and environmental areas. [3] On the other hand, ICT influence is not only positive one, it may build new, still unknown barriers. A new expression “digital gap” is closely connected with the use of ICT. Similarly it is not true that speeding the communication guarantees higher effectiveness of the communication.

The changes afflict a lot of human businesses as well as education. Remarkable progress can be observed during last fifteen years. Technology allows students to be more flexible as to the time and place of learning in ways that were unimaginable then fifteen year ago.

2 Mobility and Higher Education

Importance of internationalization and mobility is growing at present and the same trend is experienced in the university education.

In 1998 the ministers of education of several European countries (Germany, France, United Kingdom and Italy) discussed a call for a European Area of Higher Education. They signed the Sorbonne declaration, in which the European higher educational systems would be harmonized following a bachelor-master model. Another document of key importance was signed one year later by all ministers of the European Union and the associated countries. This document called Bologna declaration defines clear goals to be reached in 2010:

- enhancing the comparability of Europe’s higher education systems on the basis of a two-cycle system, supported by the ECTS-compatible credit system;
- enhancing the employability and mobility of European’s citizens;
- improving the competitiveness of Europe’s higher education as a whole. [13]

The idea of mobility at the university environment has been connected and supported by the program of European Union ERASMUS for more than fifteen years.

2.1 Virtual Mobility

An innovative idea in the field of university mobility is utilization of ICT potential. Staying at home students and teachers can get international experience via the use of ICT.

Virtual mobility means the use of information and communication technologies to obtain the same benefits as one would have with physical mobility but without the need to travel. [5]

In the frame of the Being Mobile project the expert team defined virtual mobility in higher education institution as a form of learning which consists of virtual components; this kind of learning is run through information and communication technologies supported by learning environment. Virtual mobility includes cross-border collaboration with people from different
backgrounds and cultures working and studying together, having the enhancement of intercultural understanding and exchanging knowledge as its main purpose. [2]

Virtual mobility may be defined from another point of view – it is the way of collaboration of people from different backgrounds and cultures, working and studying together where crossing borders in not a necessity any more. This approach has special name in the Czech educational environment, it is called interuniversity study.

Virtual mobility and interuniversity study fit well in the context of the Bologna process and e-learning Action Plan. The aim of the Bologna process is to create a European Higher Education Area. And one of its objectives is to facilitate interuniversity mobility and cooperation among universities.

According to the type of virtual mobility student is free to choose his professor regardless of the geographic distance that might exist between them. Studying at the virtual university enables the student to get familiarized with different educational and learning systems. He/she can improve their adjustability to different levels of culture and philosophy in the area of the university. [1]

2.2 Types of Virtual Mobility

Due to the fact that the given definition of virtual mobility is rather wide covering a wide range of various activities it is advisable to divide virtual mobility into several categories.

This categorization can be done in different ways, using different views and there is no generally accepted set of categories.

Literary sources base categorization in accordance with various aspects:

- according to the use of virtualization: totally virtual, partially virtual, dual or mixed;
- based on the used technology;
- based on the educational aspects - the teaching and/or learning scenario that has been used.

The expert team of the Being Mobile project based their typology of virtual mobility activities mainly on the terms in which the virtual mobility activity takes place. They identified four main types:

- a virtual course (as part of a programme) or seminar (series) at a Higher Education Institution;
- the whole programme at a Higher Education Institution;
- virtual student placements;
- virtual support activities to physical exchange. [2]

2.3 Virtual Mobility Projects

The European Commission and some national agencies actively promote virtual mobility by providing financial support to educational projects in this field. There are several examples of virtual mobility projects in the European area:

- **EVENE - Erasmus Virtual Economics & Management Studies Exchange**
  The core aim of this project was creation of a network of traditional European higher education institutions for the purpose of mutual exchange and sharing of courses and pedagogues and a possibility of providing these to students in a distance form of education supported by the eLearning format. The EVENE project creates a core network of universities operating in the field of Economics and Management study. [14]

- **EVICAB – European Virtual Campus for Biomedical Engineering**
  This project sets up an online platform on which various partner universities and universities outside the consortium can offer their courses. The responsibility for each course, its maintenance and its delivery remains within the universities. Each university offers its courses to the online programme, it can also take out courses from the online programme into its own study programme. [6]

- **REVE – Real Virtual Erasmus**
  The REVE project aims to enhance the impact and efficiency of traditional Erasmus programmes through the development and support of Virtual Erasmus actions. [7]

- **VENUS – Virtual and E-mobility for Networking Universities in Society**
  This project implements two different models of virtual seminars: a virtual seminar series of monthly seminars during the academic year and a one-week virtual summer school. The seminars consist of three main parts: interactive preparatory activities, seminar delivery (presentation, localization and discussions) and interactive follow-up activity. Seminars aim at promoting European citizenship, collaboration and personal development. [8]

3 Virtual Mobility in the Czech Republic

Faculty of Informatics and Management, University of Hradec Králové (FIM UHK) has devoted its attention to the problems and issues associated with eLearning since the beginning of 1997. FIM UHK belongs to pioneers in utilization of ICT in the process of education in the Czech Republic.

Quite soon voices calling for cooperative and collaborative ventures among universities in the area of creation of distance eLearning courses could be heard. Challenging option for collaboration was identified at the eLearning in Higher Education 2003 Conference
organized by Tomas Bata University in Zlín, which involved sharing of courses - including the relevant teaching staff and providing these courses to students of partner institutions, leading to the exchange of students through the intermediary of eLearning-supported distance courses. [15]

This idea was worked out and brought to existene in two projects which are described below.

### 3.1 RIUS project
Since 2005 the first Czech virtual mobility has been run in the form of RIUS project - Initiation of the Inter-University Study in a Network of Selected Universities in the Czech Republic. The University of West Bohemia in Plzen, University of Hradec Králové and Tomas Bata University in Zlín took part in this project. The project RIUS involved sharing of both the courses and teaching staff of the universities participating in this project. Student of these universities could pass part of their study programme at universities other than their alma mater university. The project belonged to those which are supported from European social funds.

The main objective of the RIUS project was to build a substructure of the network of selected universities in the Czech Republic and thus enable forming the working virtual interuniversity space where blended and distance form of study could be run via eLearning.

The aims of the project could be expressed in the following way:

- to build strong fundamentals of the network of universities and colleges and launch interuniversity study in the Czech Republic;
- to enable start of interuniversity study in the network of selected universities;
- to improve quality and attractiveness of study programmes and subjects offered by single universities and colleges;
- to increase effectiveness of financial means invested into blended and distance forms of study benefiting from eLearning;
- to prepare universities and colleges in the Czech Republic for more intensive and closer cooperation with counterpart institutions abroad. [11]

The whole project had a positive and beneficial impact on students from participating universities in the following areas:

- the offered subjects are supposed to be of high quality and backed by notable experts;
- students have opportunity to create individual study plans based on a wide offer of educational subjects of participating universities;
- time and place flexibility of study. [11]

The courses are provided in a distance form of education with eLearning support. This eLearning course is organized in the form of an introductory meeting in the presence of both teachers and students at the students’ alma mater university, directed self-studies supported by a virtual educational environment and, as may be required, by further interim face-to-face meetings, combined with live examinations. The live face-to-face meeting may be replaced by real-time video-conferencing via the Internet.

Depending upon prior agreement with a partner university, students can choose these courses within the context of their compulsory elective subjects. Information on subjects offered within interuniversity study is placed in catalogues of subjects and in the information system of study agenda of student’s alma mater university. If a student is interested in some of the "outside“ subject he/she will get registered it into their study plan, so the subject will be recorded in a student’s study register. At the end of the semester when the subject is finished, the tutor informs the study department of students’ alma mater universities on their results. The study department is responsible for writing these results into study records of participating students who successfully completed the subject. The students are granted the reached credits (ECTS). The credits acquired by the student are added as a part of the fulfillment of their standard study duties. Through making the best use of the range of interuniversity studies on offer to them, students can not only enrich their own study plans with topics attractive to them, but also get to know new educational methods and instruments, and have a share in the genesis of an expanded system of interuniversity studies in the Czech Republic, enabling mutual sharing of study subjects and experts across this university network. [4]

### 3.2 EVENE project
The other project - EVENE project (Erasmus Virtual Economics & Management Studies Exchange) supported by the European Union’s eLearning programme was inaugurated in 2006.

The project’s consortium was composed of three Czech universities - the same ones as in the RIUS project and five European partners (the Galway-Mayo Institute of Technology in Ireland, Huddersfield University Business School in Great Britain, the Savonia University of Applied Sciences in Varkaus in Finland, the Riga International School of Economics and Business Administration in Latvia, and the University of Genoa in Italy).

The core aim of this project was foundation of the international network of traditional higher education institutions. The purpose of the project was a mutual exchange and sharing of courses and pedagogues and the
3.3 Process Model of the Interuniversity Study

The interuniversity study organization is managed by the developed process model. Due to increasing number of operations and participating people necessity of creation of working management system had arisen. At the beginning of the project the analysis of particular processes, their management and monitoring was made so as the project could work as a whole.

Fig. 1 Model of the preparation phase of the interuniversity study

The model describes particular processes in a hierarchical way up to the level of elementary activities, responsibilities, terms and recommended tools.

When the model was created, all activities were analyzed in detail so that particular processes could be defined. In the following phase the processes were incorporated into the appropriate hierarchy and each was given its owner. [9]

Fig. 2 Model of adjustment of provided e-subjects

3.4 Evaluation of the Interuniversity Study

The strong evaluation system was set up in the frame of these projects. The evaluation system monitors the level of educational services and the interuniversity organization’s quality. The system is based on:

1. Synchronizing questionnaires for tutors,
2. Final evaluation questionnaires for tutors,
3. Final evaluation questionnaires for successful students,
4. Final evaluation questionnaires for unsuccessful students,

Each partner creates the evaluation statistics for his university at the end of each academic year.

4 Students’ Study Success in the Frame of Virtual Mobility

Due to these two projects over 2 194 students were given chance to study at least one out of 164 subjects in last three academic years (Fig. 3).

Fig. 3 Number of subjects from 2005/06 until 2007/08

4.1 Efficiency of Virtual Mobility

The efficiency is within the project understood as a difference in numbers of students who got enrolled in courses at the beginning of the academic year and those who successfully completed courses at the end of the year. [12]

2 194 students got interested in studies within the interuniversity studies during the traced period, 1 055 students passed their subject and gained the credit and exam. So the average efficiency reaches 48%.

Followed values vary in individual subjects in a wide span from 0% to 100% (Fig. 4).
Some differences in study efficiency of subjects provided by individual universities might be seen. For example, subjects offered by University of Hradec Králové reached up to 80% of study efficiency, subjects offered by Tomas Bata University in Zlín got to 27% and subjects prepared and run by University of West Bohemia in Plzen reached 47% of study.

When we look at the study efficiency from the point of view of alma mater universities of enrolled students the situation is quite different. Only 18% of students from Savonia University of Applied Sciences in Varkaus and 32% of students from University of Hradec Králové successfully finished their study, on the other hand students from Tomas Bata University in Zlín were successful in 87%, as for students from University of West Bohemia in Plzen there were 66% of them who successfully finished their subject.

4.2 Reasons of Drop-Out rate

It is possible to say that students from Savonia University of Applied Sciences have very poor study habits and because of that they leave the subject during the semester? Or is it more accurate to say that tutors from University of Hradec Králové are the best in methodology of education in distance and eLearning subjects and that is why they reach the best results?

Similar statements are rather misleading and simplifying. To avoid this situation the members of the project team developed a questionnaire and distributed it to those students who did not finish the chosen subject. This questionnaire accompanied in a suitable way another questionnaire which was filled in by tutors and students after the exam.

The questionnaire consisted of twelve questions divided into three logical sections. The first section dealt with reasons of drop-out of the chosen subject due to technical and administrative reasons, the second one reflected the reasons of drop-out associated with the content and way of learning/teaching the subject and the third section followed the drop-out reasons associated with poor quality of tutor’s work. The questions were formed in the way of statements; a student was to express agreement or disagreement with these statements, for example: “The tutor was not able to motivate us enough to study the subject.”

If a student agreed with the statement, he/she marked out the level of significance of an appropriate factor in his/her decision making (crucial, substantial, of little importance). In each sections there were chosen three areas of possible biggest problems where students could state also other reasons of their study drop-out beside offered three options mentioned above. [12]

<table>
<thead>
<tr>
<th>I stopped studying the subject because of technical difficulties (long waiting time to a system response, unreliability, etc)</th>
<th>crucial</th>
<th>substantial</th>
<th>of little importance</th>
<th>no</th>
<th>without answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>8</td>
<td>6</td>
<td>6</td>
<td>45</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>I stopped studying the subject because of complicated communication in the learning/teaching space.</td>
<td>7</td>
<td>9</td>
<td>5</td>
<td>44</td>
<td>0</td>
</tr>
<tr>
<td>I stopped studying the subject because of a bad organization and mistakes in an administration section.</td>
<td>6</td>
<td>4</td>
<td>5</td>
<td>49</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 1 Drop-out due to technical and administrative reasons

As illustrated in the Table 1 more than 70% of students wrote that their failure was not connected with technical or administrative reasons. Some students could see the main reason of their drop-out in themselves (“After all I did not have any time to do it because I took too many subjects.”, „I just enrolled too many subjects generally so I had to drop of some of ‘less important’”, „I have made mistake in my time-management, so I had not enough time to complete this course.”). A few of them saw the reason of their drop-out in technical problems („Different and unclear e-learning system.”, „The faculty anti-spam filter marked tutor’s e-mail as spam and deleted them.“). Some students justified their drop-out in administrative problems.

<table>
<thead>
<tr>
<th>The content of the subject was actually different from the content I had expected.</th>
<th>crucial</th>
<th>substantial</th>
<th>of little importance</th>
<th>no</th>
<th>without answer</th>
</tr>
</thead>
<tbody>
<tr>
<td>2</td>
<td>6</td>
<td>6</td>
<td>47</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>The subject turned out to be too demanding.</td>
<td>3</td>
<td>14</td>
<td>6</td>
<td>36</td>
<td>6</td>
</tr>
<tr>
<td>The elaboration of the subject content did not suit me.</td>
<td>3</td>
<td>7</td>
<td>9</td>
<td>41</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 2 Drop-out associated with the content and way of learning/teaching the subject
Problems connected with content and teaching/learning of a particular subject make another critical factor. A chosen subject proved to be too demanding for 27% of students and 15% of students were not satisfied with the elaboration of the subject.

Students made comments on subject content and technical support but surprisingly over 15% did not evaluate tutor’s work at all. Quite alarming is that 12% of students stated that their tutor had not established any contact with them (“I saw my tutor only at the kick off tutorial and I did not try to communicate with him via EDEN”). According to 12% of students the tutor organized his/her classes in a bad way (“I was happy that systematic work was not required from us. On the other hand it did not pay to leave everything to the last moment”).

Fig. 5 Reasons of drop-out associated with a poor quality of a tutor’s work

4 Conclusion
Virtual mobility represents for students trendy option to reach knowledge which they cannot get at their alma mater. Beside gained knowledge they enrich their students’ lives with worthy experience collected by their study in different cultural environment.

Although subjects offered within the interuniversity study belong to facultative subjects in students’ study plans, the rate of success in passing them is quite high.

Nevertheless it is necessary to pay great attention to reasons leading to drop-out in particular subjects. First and foremost it is essential to provide students with comprehensive and accurate information on content, demands, prerequisites and a form of study of particular offered subjects. Persistent attention to tutors training is of vital importance so as they would be able to manage and run the distance classes in an appropriate way.

References:

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