INTERNET BASED DISTANCE POST-SECONDARY EDUCATION IN SLOVENIA

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ABSTRACT

The presence and the expansion of Internet based distance education (online DE) are one of the characteristics of the information society by which we can estimate the level of its development. We have witnessed many changes in Slovenia in the last decade and therefore we were interested in acceptability (and readiness) of Slovene students for Internet based DE, especially because the Internet has so successfully penetrated into the Slovene society.

Keywords: Internet, online distance education, post-secondary education, Slovenia

INTRODUCTION

Lately, the importance of knowledge has been increased, yet more and more knowledge gained at schools quickly becomes out-of-date and must be updated. The act of "updating" the existing knowledge is mainly done by the active part of the population, which can hardly afford to leave their work and begin to study. Nevertheless, in the last decade, various forms of education have been developed, to help solving this problem. One of them is the Internet based distance education (online DE).

After the National Center for Education Statistics Report 2000-013 (4) technology-based DE is emerging in USA in post-secondary education. In the middle of the nineties the DE is emerging as a part of mainstream education (4). On the other hand the online DE belongs to the phenomena of the information society, which – with regard to its wide use – can indicate the development of a country (indicator of development by RIS (5)). Therefore we would like to research the situation of online DE at post-secondary level in a small country with no more than 2 million inhabitants, which is going through a period of tremendous changes in the last decade, not only in economy and politics, but also in the field of education. We believe that Slovenia will follow developed countries and that the introduction and usage of online DE is inevitable.

In the post-secondary education in Slovenia only the Faculty of Economics, University of Ljubljana (http://www.ef.uni-lj.si) and Doba Maribor (http://www.doba.si) has performed DE. DE at the Faculty of Economics is offered in traditional way (face-to-face meetings and paper based study materials) with one exception; the online materials for a course on European Economic Statistics. The second institution, Doba, offers online DE supported by WebCT educational environment. Online DE at Doba started in September 2000 with 35 enrolled students and in this academic year (2001/2002) they have additional 204 students(3),(6),(7).

In this paper the results from an experiment made with a non MIS students are presented. These students have enrolled an e-business course (http://www.uni-mb.si/~epfpodin) at Faculty of Economics and Business (FEB), University of Maribor. In addition there are also some results from a research made with online students at Doba Maribor.

Our research would like to confirm or reject the following hypothesis:

- face-to-face students prefer online materials to be introduced in their study process,
- introducing IT in education improves students' (and teachers') computer and Internet literacy and causes more positive relationship toward IT,
- online courses demand computer literate students.

READINESS FOR ONLINE DE (AN EXPERIMENT)

Participants of the Experiment

In spring 2001, an experiment that involved online materials instead of regular lectures for the e-business course was conducted in which two groups of 20 students participated (the experimental and the control group). The control group attended face-to-face lectures, the experimental one studied alone with online materials (http://epf-se.uni-mb.si/e-gradivo/eb-index.htm).

After the experiment students answered a questionnaire and their gained knowledge was tested.

Students characteristics and their IT attitude

In Table 1, statistically significant correlation, between students' characteristics and their IT attitude are shown.

	Characteristics and attitude of students	**2.**	**3.**	**4.**	**5.**
1.	Gender				
2.	Motivation for studies				
3.	Average grade				
4.	Attitude toward IT				
5.	PC usage estimation			0.47**	
6.	IT usage			0.52**	0.59**
7.	Attitude toward lectures supported by IT	0.36*	0.45**	0.44**	

**p < .01 (2-tailed), *p <.05 (2-tailed)

Table 1: Significant correlations of students' characteristics and their IT attitude

A positive correlation between the assessment of PC usage and their attitude towards IT (0.47) existed among the participants, which shows that students with more agreeable attitude towards IT also think highly about their ability regarding computer usage. Such users use IT actively (correlation with the variable attitude towards IT: 0.52 and correlation with the variable PC usage estimation: 0.59).

Interestingly, highly motivated students showed a keen interest for the use of IT (0.36). The same holds true for students with higher average grades (0.45), as well as students who have a keener attitude towards IT (0.44).

In Table 2, regression analysis regarding the dependence of IT attraction to lectures on the independent variables from Table 1 is shown.

Included variable	B	t	Sig.
Average grade	0.162	2.463	0.020
IT attitude	0.119	2.420	0.022
F=7.415 Sig. 0.002; adj R^2=0.286			
Excluded variables: study motivation			

Table 2: Dependence of IT attraction to lectures on the independent variables

The analysis shows that IT mainly attracts students with higher average grades, as well as students who are in favor of IT, which is somehow understandable.

We were interested about computer and Internet literacy of online students compared to face-to face students. Additionally we tested our research's results with results obtained from another research done at Doba and with face-to-face students at FEB (281 full-time FEB students; research was done in September 2001). The results are presented in
Table 3.

Estimate of software usage (1=bad; 5=very good)	Online students		Face-to-face students	
	M	SD	M	SD
Word	4,3	0,7	3,6	0,8
Excel	3,2	1,2	2,3	0,9
E-mail program	4,2	0,7	2,9	1,3
Web browser	4,0	1,0	3,2	1,3
Average estimation	**3,9**		**3,0**	

Table 3: Estimation of computer and Internet knowledge/skills

As we can see in the
Table 3 online students are more computer and Internet literate that face-to-face students, which confirms our first hypothesis.

Online materials

All participants in the experimental group found their participation in the experiment highly interesting, they wished they could use online materials as a supplement for their lectures, and they expressed a belief that such materials should have been available for other subjects.

Opinion about usage of on-line materials	Control group	Experimental group
Attraction of online materials	81.2%	100%
Online materials can complement lectures	87.5%	100%
Online materials need to be used in other subjects	75.0%	100%

Table 4: Usage of online materials

As we can see in Table 4, students preferred the usage of online materials compared to traditional teaching.

The biggest obstacle for the use of online materials through Internet are the high costs of Internet usage. If the costs of online materials for Internet usage were lower, 46.7% of students in the control group and 58.8% of students of the experimental group would use them.

Quality of online materials

The quality of materials for DE is essential. Quality elements of software evaluated by ISO 9126 standard, which determines 6 characteristics of software, are: functionality, reliability, usability, efficiency, maintainability and portability (1).

The standard does not prescribe the meaning of individual characteristics or the metrics for their assessment, as the meaning and assessment are connected with the purpose of software (1). Therefore, the assessment of quality was left to software users, and was carried out by means of a two-level model. On the first level, students assessed individual components of the used online materials or activities, which were connected with the usage of online materials in the experiment. Because of an unequal importance all characteristics and because the importance of individual characteristics is by nature subjective, we - in order to assess the importance of the characteristics, typical for online materials in general - decided to include students, who sorted the ten characteristics from 1 to 10, placing on the first place what they considered the most important characteristics and on the tenth place what they believed to be of least importance. On the basis of this information we calculated relative weights (ponder) for each characteristic in the assessment model (Table 5).

Components of evaluation model	**M**	**Ponder**	**Evaluation** (M×Ponder)
Ease of use	7.67	0.15	1.15
Graphical design	8.24	0.11	0.91
Text understanding	8.21	0.15	1.23
Interactivity	8.16	0.09	0.73
Readability of texts	8.19	0.14	1.15
Links to similar areas	7.81	0.08	0.62
Links to web pages of the course	7.81	0.07	0.55
Entertaining content	7.28	0.06	0.44
Clear learning objectives	8.18	0.10	0.82
Cited literature	6.52	0.05	0.33
Total		**1.00**	**7.93**

Table 5: Evaluation model of quality of online materials

Online materials were assessed as very good (7.93 on the scale 1 to 10).

Evaluation of gained knowledge

Gained knowledge was assessed with a test consisting of 32 questions, which were used to check students' ability of recognition of the materials dealt with.

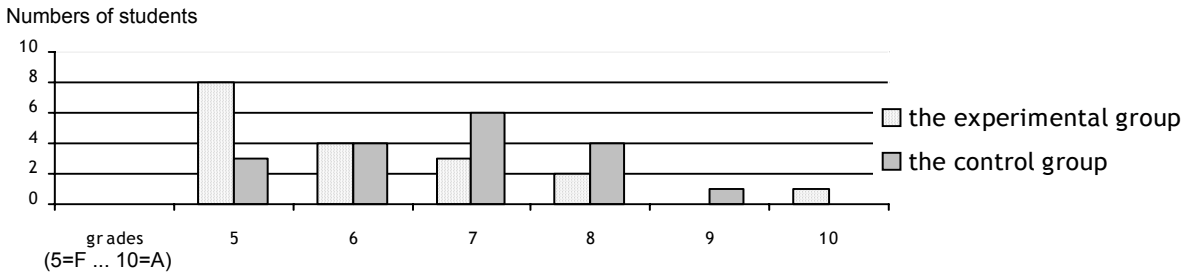


Figure 1: Comparison of results of tests

It can be seen that the members of the control group proved to be much more successful than the members of the experimental group. More than one third of the students of the later group did not manage to remember enough to gain a positive mark. Taking into account the fact that the content of lectures was the same in online materials and in face-to-face lectures, poor results can be explained only by believing that the students of the experimental group did not pay enough attention to learning objectives set at the beginning of the materials. Quite obviously, an ordinary lecture, assessed pretty highly by the participants (M=8.7; on a scale 1=poor to 10=excellent), is still very important for students. The classical lecture was supplemented by practical cases and learning objectives were explicitly given, which probably contributed towards a better recall of basic terms.

When we merged the questionnaire of the selected group with the tests, which assessed knowledge we wanted to find out if the result of the test is statistically correlated with any other variable. The results of regression analysis are shown in Table 5.

Included variables	B	t	Sig.
Usage of Internet	6.982	2.614	0.014
Gender	-3.092	-2.424	0.022
F=6.404 Sig. 0.005; adj R^2=0.252			
Excluded variables: motivation, attitude toward IT			

Table 6: Dependence of the students' success in tests

The regression analysis shows that better results were reached by male students and students who used Internet and e-mail. This at the same time proves the hypothesis that computer literate students are likely to be more successful in online distance education.

We have also proved the hypothesis that the experiment will be interesting for the chosen group, as all members of the experimental group expressed keen interest for the experiment, as well as 81.2% of student in the control group.

Readiness for DE

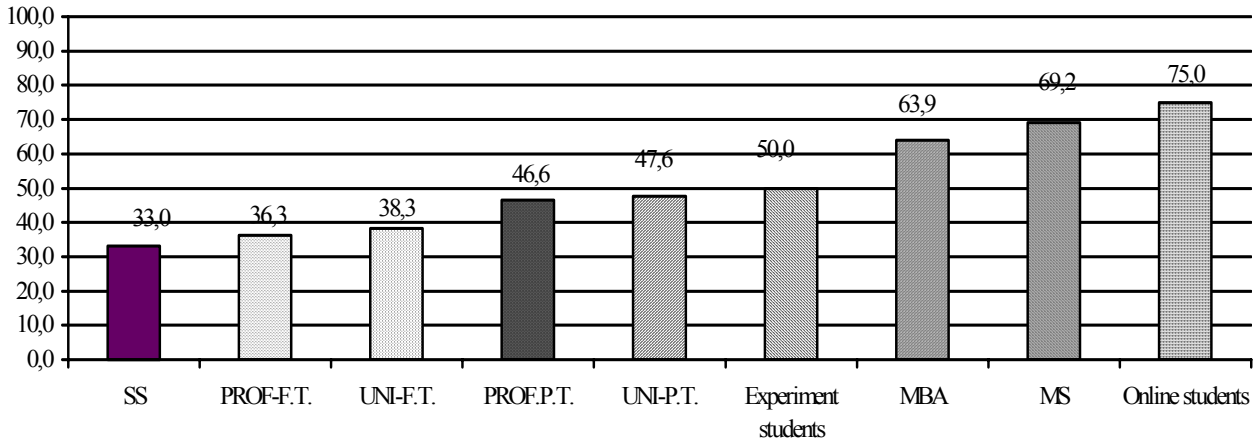
The readiness for DE was evaluated on the basis of the model of acceptability of online DE, which includes the following items – participants' characteristics (and their relative weights):

- Motivation (20%),
- Students' connection necessity (8%),
- Possibilities for IT using and relationship to IT (32%),
- Abilities for IT using (30%),
- Usage of e-services (10%).

The students estimated their study motivation and some other characteristics on a five-degree scale. The average value, corrected with standard deviation, was included in the model. The same method was used for assessing their relationship and experience with IT. The estimations of DE readiness, shown in Figure 2, was calculated through corrected average values for some variables and percents of variables and their relative weights for other variables.

We also tried to assess FEB students' readiness for DE in general. Thus 652 students from various FEB programs (different undergraduate and postgraduate, full time and part time programs) were inquired and gathered data was analyzed with the model of Internet based DE acceptability. The 109 part-time students at secondary education level and 50 online students at Doba were included in research, as well. The results shown in Figure 2 show that students included in the experiment and online students are more ready for online study than peer in face-to-face study. Higher acceptability of DE can be explained with their higher computer literacy and with better IT experience in education process obtained by using various online materials.

Face-to-face students in both postgraduate programs point at a higher DE readiness, which is a consequence of a higher motivation, longer learning experience and higher computer literacy.



Legend: MS – postgraduate master of science study; MBA – postgraduate MBA study; UNI – university (4 year) program; PROF – professional (3 year) program, P.T. – part-time study, F.T. – full-time study; SS – secondary school

Figure 2: Student's readiness for DE (6)

The estimation of readiness proves that higher computer literacy improves the readiness for DE, supported by IT. Improved computer literacy leads to better chances for the introduction of IT, be it for business purposes or the advancement of e-services.

CONCLUSION

The presented research results are one of the first made with online students, as online distance education has not yet been researched much as it is a novelty in Slovenia. Some researches are still unfinished.

Major findings of the presented researches are:

- the students prefer online materials therefor online materials should be introduced in education more frequently,
- computer literate students are likely to be more successful in on-line distance education,
- introducing IT in education improves students' (and teachers') computer and Internet literacy and influences positively the relationship toward IT,
- therefore the usage of IT in education reinforces the students' willingness for participation in e-business.

REFERENCES

1. ESSI-SCOPE. (2001). Available: http://www.cse.dcu.ie/essiscope/sm2/9126ref.html [03.12.2001].
2. Distance-Educator.com. Distance education: An Introduction. Available: http://www.distance-educator.com/portals/research_deintro.html [05.10.00].
3. Lesjak, D. and V. Sulčič. (2001). Beginning and Development Of Distance Education in Slovenia. Issues in Information Systems Vol. 2: 241-247.
4. National Center for Education Statistics. (1999). Distance education at post-secondary Education Institutions: 1997-98. Statistical Analysis Report. Available: http://nces.ed.gov/pubsearch/pubsinfo.asp?pubid=2000013 [01.03.02]
5. Ris – Raba Interneta S Sloveniji (1999). Available: http://www.ris.org/si/ris99/news/n20000211.html [18.07.2000].
6. Sulčič, V. (2001). Vpliv informacijske tehnologije na študij na daljavo v Sloveniji. Magistrsko delo. Ekonomsko-poslovna fakulteta, Maribor.
7. Sulčič. V. and D. Lesjak. (2001). DE in Slovenia : where are we? In: Global co-operation in the new millennium / The 9th European Conference on Information Systems, ECIS 2001, June 27-29, 2001, Bled, Slovenia. Vol. 1-2. - Kranj : Moderna organizacija (2001). - Vol. 2, str. 1087-1097.