

COMPUTER LITERACY OF STUDENTS IN SLOVENIA (IMPROVEMENTS AND COMPARISON)

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ABSTRACT

Computer literacy is considered to be one of the main driving forces in transition to the information society, for that reason it is in the focus of national education policies in all European countries. Recent research in Slovenia points two main issues influence computer literacy of Slovenian students – penetration of IT, i.e. personal computers and Internet on the one hand and secondary school informatics courses on the other hand. After mid nineties there were some positive changes in both areas, which was the reason for a survey in which we explored the computer literacy of students from two perspectives – as a comparison of the results obtained between 2001 and 1999 and as a comparison of the result, obtained from two Universities and a college from three different Slovenian regions.

Keywords: computer literacy, students, Slovenia

INTRODUCTION

Central and East European countries and Slovenia

For Central and East European - CEE countries (such as Hungary, Czech Republic, Poland, Slovakia, Baltic states, Slovenia, etc.), the success of their economies in the global (digital) economy is a matter of economic survival in the highly competitive EU and global environment. The political decision to join the EU implies that these countries believe that they will be competitive and successful on the European and worldwide market. One might ask if their assumptions and strategies are realistic and to what degree. Some indicators show that they are helplessly behind the developed part of Europe and others, surprisingly, that they are performing very well and even better than the EU average. Candidate countries have significantly lower levels of economic development than the EU member states. There are also significant differences among them. Slovenia is on the top with the GDP of 70% of the EU average, followed by the Czech Republic with 60%, and Hungary with 51%. Poland and Estonia are at 39% of the EU average (12).

Slovenia is economically the most developed European country in transition and it would like to be equally successful on their way to the information society. Some analysis show that use of the Internet or computer literacy is not always in correlation with GDP (2). The Scandinavian and some Baltic states prove that consistent national policy of education could significantly raise computer literacy with all its positive side effects. For that reason, understanding the driving forces behind computer literacy and its effects on society present an interesting research area and offers an important policy-making tool.

Penetration of Information Technology into the Slovenian Society

Being economically one of the most successful CEE countries, it is interesting to see if Slovenia is in the similar situation in the area of IT investments, penetration, usage and IT impacts. In 1999, Slovenia spent 1.8% of GDP on IT (EU average is 2.7%, other CEE countries spent more than Slovenia, except Poland with 1.7%). The situation is completely different if we look at IT spending per capita: Slovenia 200€ EU 600€, the Czech Republic 190€, Hungary 160€, Slovakia 100€, Baltic states 90€ and Poland 80€(2).

Another perspective from which it is possible to observe the IT penetration into the Slovenian society is by the help of basic information society indicators.

General indicator:	1995	1996	1997	1998	1999	2000	2001	2002*
# of PCs per 100 inhabitants				21.2	25.3	27.3		
# of Internet users/ 100 inhab.	3	6	9	11	14	19	23	30
# of Internet hosts/100,000 inhab.	168	506	877	1,114	1,159	1,089	1,500	1,800
Households (%) with:								
PCs		24	32	35	42	45		
Access to the Internet		3	8	9	15	21	32	
Elementary schools:								
# of PCs per 100 pupils			2.5	3.1	4.0	4.5		
% of schools with Internet access		26.0	54.0	86.0	93.0	98.9		
Secondary schools:								
# of PCs per 100 pupils			3.6		4.0	4.1		
% of schools with Internet access		90.0	91.0	92.0	96.0	100.0		

*March 2002

Table 1: Basic information society indicators for Slovenia (7), (9)

These indicators reveal that, in the late nineties, the trends regarding PCs and the Internet are increasing and are relatively good for a transition country such as Slovenia. Unfortunately, the situation in elementary and secondary schools where the PC availability is far below the needed level is far from satisfactory (In the majority of EU countries, the number of PCs per 100 pupils exceeds 7 PCs). But the latest research (March 2002) shows that 93% of students, 61% of secondary school pupils and 42% elementary schools pupils are Internet users (8).

If we compare the trends and the achievements from mid nineties with the achievements in Europe than we can become very unsatisfied, because we can observe a dramatic lag in the growth of Internet users, particularly with respect to the share of users, access from home and the density of hosts in Slovenia (1998-2001). The lagging behind the EU is particularly critical as Slovenia was above or around the EU average regarding all mentioned indicators in 1997.

The comparison *Slovenia: EU* for the percentage of Internet users in the total population as of February 2001 is 20: 31%. As for June 2001 this ratio is 25%: 46%. Again, this is a serious gap considering that it did not exist five years ago (7).

Unfortunately, rather big difference among Slovenian regions according to the personal access and usage of the Internet exists. In the “central” region (capital Ljubljana and its surrounding), where Faculty of Social Sciences is situated, 40% of the adult population is using Internet, in “western” region (Coastal region next to Italy where College of Management is situated) 37% and in “eastern” region (where Faculty of Economics and Business is situated) 32% (10). These differences could be explained by the differences in economic development, good jobs and income, as well as education, especially in central and partially western region.

RESEARCH AND RESULTS

Purpose of the research

MIS departments are having the major responsibility for educating business students in the field, and they should improve the marketability of the graduates (3), (4), (5), (6),(11),(13). In other words, general computer-related courses designed for business students should be geared toward increasing their ability to use the computer as a tool to enrich their professional and personal lives (1).

Taking into account the factors, which influence computer literacy of students before entering MIS course on one hand and the role of the MIS departments at business schools on the other, the goals of the research were:

- To understand computer literacy that students obtained in secondary school, at home or elsewhere (before entering a basic MIS course). (In secondary schools basic computer knowledge is obtained through a course entitled Informatics).
- To find out if there are any differences in computer literacy of students at two universities and a college in three different Slovenian regions.

Methodology

Data were gathered from a survey administered in October 2001 (from students at the Faculty of Economics and Business - FEB, the University of Maribor and the Faculty of Social Sciences- FSS, the University of Ljubljana) and in March 2002 from students at the College of Management in Koper – CM students.

With the help of the Internet-designed questionnaire, we gathered data from almost all current FEB juniors (281 out of 302 students, 93% of the enrolled students in 1999 and 217 out of 254, 85% of the enrolled students in 2001) and approximately 70% of FSS and CM students.

Student Profiles, Computer Resources and Attitudes

Students’ Characteristics	Mean			St. dev.		
	FEB 01/99	FSS	CM	FEB 01/99	FSS	CM
Final exam in secondary school*	3.50/3.48	4.04	3.63	0.69/0.73	0.70	0.64
Average grade at university**	6.88/6.97	7.14	6.98	0.67/0.67	0.76	0.71

* Choices: 2-5 (A), ** Choices: 6-10 (A)

Table 2: Student’s Characteristics of the sample

FSS has the best students among the three schools, which is clearly seen from the average secondary school final exam and the average grade at university.

PC Usage characteristics	Choices	Frequency			Percentage		
		FEB	FSS	CM	FEB	FSS	CM
Years of PC usage	-6	143	56	20	66	50	40
	7-	74	55	30	34	50	60
Frequency of PC usage	Up to once a week	66	19	5	31	16	10
	More times a week	85	45	22	39	38	44
	Every day	66	54	23	30	46	46
Number of used programs	-3	128	58	23	59	56	47
	4-	89	46	26	41	44	53
Informatics as well as an additional course	Yes	53	35	19	24	30	39
	No	164	82	30	76	70	61
Access to computer	home	66	109	38	85	92	76
	school	185	45	31	30	38	62
	elsewhere	17	7	3	8	6	6
Usage of computers prior to entering the university		202	115	50	93	97	100
Access to the Internet		156	100	44	72	85	88
Using GSM for WAP		26	16	9	12	14	18
Personal home page		5	15	6	2	13	12
		Mean			St. dev.		
		FEB 01/99	FSS	CM	FEB 01/99	FSS	CM
Years of PC usage		5.72/4.33	6.84	7.26	2.84/2.57	2.94	2.35
# of used programs		4.15/3.70	4.66	4.51	5.33/2.85	5.45	3.17
Students' opinion about their computer literacy		2.83/2.63	3.07	3.14	1.1/1.2	1.1	0.9

Table 3: PC usage characteristics

Some of the interesting findings were:

- Almost all FSS students (92%) are using computer from home, which is not the case for CM students who, on the other hand, have the highest percentage of personal home pages and access to the Internet, mainly because their school provides access to PCs and the Internet.
- Regarding the average number of years of PC usage and frequency of PC usage CM students are the best again what probably reflect in their the highest opinion about their computer literacy.
- We can see noticeable improvements among FEB students regarding years of PC usage (index 99/01 128.6).
- On the average all students started to use PC in the secondary school through an informatics course.
- Differences in PC usage characteristics among students from various schools are logically reflected in their opinion about their computer literacy where again CM students have the highest average.

EUC and Internet knowledge/skills

Subsequently, students were asked a number of questions in order to access the perception of their knowledge of the EUC and the Internet before entering the MIS course.

EUC and Internet knowledge/skills	FEB			FSS			CM		
	%	M	s.d.	%	M	s.d.	%	M	s. d.
Word-processing (Word)	99	3.6	0.8	99	4.1	0.8	100	4.1	0.6
Spreadsheets (Excel)	78	2.3	0.9	95	2.9	1.0	100	3.2	0.9
Databases (Access)	28	1.4	0.7	30	1.5	0.9	56	1.7	0.9
Windows	99	3.5	0.9	100	3.8	0.8	100	3.8	0.9
Browser (Explorer)	95	3.2	1.3	100	4.0	0.9	100	3.7	0.9
Browser (Netscape)	71	2.5	1.3	79	3.0	1.4	66	2.5	1.3
WWW	92	3.0	1.1	97	3.7	1.0	100	3.8	1.0
e-mail	82	2.9	1.3	97	3.9	1.1	100	3.8	1.1
Yahoo	87	3.1	1.2	94	3.6	1.2	98	3.7	1.0
Mat'kurja	81	3.0	1.3	94	3.9	1.1	96	4.0	1.1
average	81	2.8	1.1	88.5	3.5	1.0	92	3.4	1.8

1=don't know... 5=I use it perfectly

Table 4: EUC and the Internet literacy

In terms of students' familiarity with EUC/Internet results are more or less expected:

- Again CM opinion about their EUC/Internet literacy is the highest among the students from three different schools. On the other hand, FEB students have a rather low opinion about their spreadsheet, WWW and email knowledge/experience.
- Compared to FEB 1999 results the most positive improvement is in the WWW area – index of the % of users is 112.
- “Mat'kurja” (a Guide to Virtual Slovenia: <http://www.matkurja.com>) is getting more and more popular in Slovenia, but obviously not as much as Yahoo (Alta Vista is in the 3rd place with a mean of 2.7).

Student opinion about their EUC and Internet skills (Table 5) were later checked with a list of activities of a particular EUC tool those students are able to perform (control questions).

Rather high positive correlations between students' perception of EUC and the Internet and their actual skills to perform were found. This means that student opinion on one hand, and their actual ability to use a particular EUC tool, on the other hand, could be trusted.

The differences in correlation especially between CM students on one side and FEB and FSS on the other side are rather interesting. Relatively low correlations tell us that CM students overestimate their EUC and Internet knowledge/skills compared to the students from the other two school, which explains their highest computer and Internet knowledge/skills.

EUC and Internet knowledge/skills		WP	ES	DB	WIN	WWW	EM	CL
Word processor (WP)	FEB	0.49**						
	FSS	0.59**						
	CM	0.30**						
Electronic spread. (ES)	FEB		0.50**					
	FSS		0.54**					
	CM		0.43**					
Data Base (DB)	FEB			0.39**				
	FSS			0.34**				
	CM							
Windows (Win)	FEB				0.57**			
	FSS				0.62**			
	CM				0.38**			
WWW	FEB					0.67**		
	FSS					0.44**		
	CM							
e-mail (EM)	FEB						0.79**	
	FSS						0.63**	
	CM						0.34**	
Computer Literacy (WP+ES...)	FEB							0.62**
	FSS							0.54**
	CM							0.50**

** $p \geq .01$ (2-tailed), * $p \geq .05$ (2-tailed)

Table 5: Correlations between student opinion about their EUC and Internet knowledge/skills and their abilities to perform EUC and Internet activities/functions.

SUMMARY AND CONCLUSIONS

The main purpose of this investigation is to assess the computer literacy of students who were not majoring in information systems before enrolling in a basic MIS course at three schools from three different Slovenian regions.

The major findings reveal the following:

- not only a significant degree of computer literacy in the perceived computing skills of students, particularly in the areas of word-processing, spreadsheets, and Internet features, but also a positive impact of information technology penetration into then Slovenian society regarding computer and especially the Internet literacy.
- substantial differences among students coming from various schools/regions, which is probably caused by the “digital divide” in regions, selection process, parent’s wealth (to afford PC and Internet at home) and finally students’ attitude toward computers and the Internet.

This kind of research is necessary in order to improve the MIS course, i.e. to adjust the content/methodology of the MIS course on the basis of the knowledge/skills students already

have, i.e. to realize what to offer within a basic MIS course and how to provide better educational opportunities for the communities in which the programs are based.

On the other hand, the definition of computer literacy is constantly changing together with the change of technology and also IT based services. Scholars have often a problem to provide state of the art knowledge on IT that is relevant for business world and could be considered as an essential part of computer literacy. For that reason, a constant dialog between business and academia is very important.

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