The Dropout Rate from E-Learning Courses and the Satisfaction of Students with E-Learning

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This paper deals with the dropout rate for e-learning academic courses in correlation with student satisfaction with distance education. This study explores two main ideas: student satisfaction with e-learning and the locus of control. The results show that the main reason for persistence with e-learning academic courses is a significantly high level of satisfaction with e-learning and satisfaction with the students' own academic performance.

Key words: e-learning, dropout rate, success, satisfaction

Osip in uspešnost študentov pri e-študiju

Prispevek obravnava osip študentov e-študija in razloge, ki študente vodijo k opustitvi študija. Osredotoči se na povezavo med zadovoljstvom študentov z e-okoljem in uspešnostjo pri študiju, pri čemer upošteva tudi lokus kontrole. Rezultati kažejo, da so glavni razlogi, ki študente e-študija odvračajo od opustitve študija, zelo visok nivo zadovoljstva z e-študijem in z lastno uspešnostjo pri študiju.

Ključne besede: e-študij, stopnja osipa, uspešnost, zadovoljstvo

1 Introduction

A few decades ago, it would have been impossible to imagine that students would study at universities without any classrooms at all. Asynchronous Learning Networks (e-learning or e-study) is the main medium to study over the Internet (Thor, 2004). Distance education has existed for about 500 years, since the first book was printed, meaning that a reader could learn directly without a teacher being present to explain the topic. With e-study, we think of learning and teaching through the internet or in a virtual environment but then e-learning is just one way of studying and teaching in a distance learning courses.

There are a significant number of articles that offer definitions of e-study, e-education. Various authors state that e-education is education that involves electronic media in the process of education (Jereb and Šmitek, 2006).

On-line study basically differs from traditional forms that take place in traditional classrooms; e-students have their own pace of study and they can study whenever and wherever they want, providing Internet access is available.

A student can co-operate and work with a mentor, professor and peers on a daily basis in an asynchronous and synchronous way using different communication tools.

This is doubtless of the utmost importance in the society where continuous and life long education has become a necessity in order to maintain a work position or to acquire a better one. E-learning is also more interactive than traditional learning in traditional classrooms. (Jereb and Bernik, 2007)

There are several practical factors that speak in favour of e-learning: There is no need for commuting to and from lectures, which contributes to reducing costs and time that would be used for commuting can be better spent on study itself. There are no costs incurred from living away from home or renting a room or flat. Employed students don't have to ask for days off and there are no classes at the weekends. Beside the flexibility of time, e-studying also offers better learning management. Without e-study, many students would be unable to complete their studies because of family obligations or work time. Later, the concept of dropout and the satisfaction with e-study

will be presented, as well as the methodology and results of this research.

2   Defining the Terms Dropout and Satisfaction with E-Study

Levy (2004) offers an appropriate definition of the term dropout student: these are students who voluntarily withdraw from e-learning courses, acquiring financial penalties in the process.

There is no add/drop period in Slovenia and thus it is not possible to drop out without penalties even in the first two weeks after the beginning of the term. Existing Slovenian literature referring to dropout rates in e-learning does not abound because only a few first steps have been made into e-learning. Foreign literature states a distinctive quantity of drop outs in e-courses and distance courses before the introduction of the internet (Tinto, 1975). A number of authors agree that dropout is a complex phenomenon (Billings, 1988; Parker, 1999; Volkwein and Lorang, 1995; Williamson and Creamer, 1988). Xenos (2004) states that administrators and teachers must determine the causes of the dropout rate. Munro (1987) states that dropout is a symptom and its causes can be quite numerous and can differ substantially. Kember's model is based on Tinto's and involves demographic factors, student motivation, academic abilities and student social factors. Moreover, Kember reproaches Tinto for not taking into account the job motivation of adults. (Kember, 1989).

A number of authors believe that demographic factors do not influence the dropout rate.

(Volkwein and Lorang, 1995; Williamson and Creamer, 1988). Dille and Mezack (1991) concluded that little research has been conducted on the personality traits that characterize a completer student in telelearning courses. They suggested that there exists an important correlation between the age and success of students in distance education courses. They claimed that older and employed students drop out more frequently (Levy, 2006) than younger students. Moreover, the results indicate that gender and family status do not have an important role as in predicting dropout from distance education courses.

Cheyung, Winiecki and Fenner (1998) pointed out that the main cause of dropout from distance courses is (dis)satisfaction with the study itself. The study then defines Slovene students' satisfaction with e-study.

Parker (1999) conducted a study of numerous variables as predictors of students' dropout from distance education courses. The focus of her study was in locus of control and some demographic characteristics such as gender, age and employment status. She concluded that locus of control was the main variable in predicting dropout rates with an overall accuracy of 80%. Locus of control also plays an important role in understanding the nature of the learning process in different kinds of learning situations.

Rotter (1966) proposes locus of control as a measure of individual perceptions on outcomes of their own behaviour relative to their perceptions on outcomes resulted

from actions of someone else. An internal locus of control is developed by those students who believe that their academic success is attributed to internal factors (their own academic abilities). Therefore they are firmly convinced that they have control and this motivates them. An external locus of control is significant for those students who develop a learned incompetence because of fear of failure. They attribute their successes to external, »outer« factors such as chance, luck, fate or the actions of others.

A key factor that the literature states referring to dropouts is the satisfaction of the student with e-study. Several researches report that the satisfaction of the student is the most important factor in making the decision whether to drop out or not. Cheyung (1998) reported that 42 percent of the students who dropped out gave dissatisfaction with the learning environment as the reason. Fredericksen et al. (2000), also noted that students who are very happy with the learning environment and e-learning in general, get higher grades, strive for better results and do better in exams taken for the first time. Fredericksen et al. (2000) also state that older students have developed a higher degree of dissatisfaction with e-learning than younger students. Levy (2000) carried out a survey of 200 students and found that satisfaction with e-learning is one of the key points for successful study. Sachs and Hale (2003) noted that universities and educational institutions should put a major emphasis on student satisfaction with the study because this is the key predictor in dropout rate. The factors that cause (dis)satisfaction with e-study are pedagogic, the forms of work and the development of study programmes (Shea, Pickett, Peltz, 2003). Their research shows that student satisfaction has a strong correlation with the clarity and precision of the instructions, the organization of e-subjects, communication with mentors and professors and interaction with mentors who give instructions online. Richardson and Swan (2003) examined social role in e-learning courses as one of the key factors for successful e-study as well as co-operation with mentors, which is strongly connected with mastery of study topics. The sensation that a student can master academic topics fills a student with enthusiasm for further study and such a student will never drop out.

3   Methodology

Hypotheses

From the relevant literature above, it is evident that satisfaction with e-study is a potential factor related to student dropout rates from academic e-courses. Reasons for dropout and satisfaction with e-study was researched through a survey distributed among e-students of the second and third grade of a three and four year business school. We defined several layers of questions, which were then categorized and supported with a programme for statistical analysis, SPSS.

The answers to our questions in the survey will help us understand which factors are related to dropout rates in e-courses and which factors encourage e-students to

continue and complete them. 152 students answered the questionnaire. We inquired about satisfaction with e-study and the success of the students, satisfaction with their own academic performance, reasons for not taking up traditional forms of academic course and also the age and gender of the students for correlation with successfulness.

The study proposes the following hypotheses:

1. The causes that affect the dropout rate and success of students are: a profile of an e-student, reasons for taking up e-study and satisfaction with e-study.
2. The dropout rate is lower for e-students than for traditional ones.
3. If students are satisfied with the e-study itself, then they tend to be more successful than those who are less skilled in e-technology and thus dissatisfied.
4. Considering gender, more women decide to take up e-study than men mainly because women are generally more persistent than men and this could be an additional reason for the lower dropout rate of women in e-study.
5. E-study is taken up by younger people because they are better acquainted with information technology and they seem to be closer to the virtual classroom.
6. E-study offers time flexibility for accomplishing tasks, which is an additional reason why the dropout rate is lower than in traditional study.
7. Distance from academic centres makes a significant difference when deciding to take up e-courses.

After stating these hypotheses, research was carried out on students of the Business High vocational school in Maribor.

Instrument

There are two instruments employed in the research. The first is a survey that follows Likert's five level scales. Students were asked to rate each item on a five-score Likert-type scale ranging from 1 »Strongly disagree« to 5 »Strongly agree«. By means of the survey we have determined demographic factors, the time of the day when the students fulfil their study obligations, the reasons for taking up e-study, satisfaction with the co-operation with mentors, professors and organizers of the e-study, satisfaction with their own performance and academic achievements, satisfaction with the work in the programme environment and their opinion on team work.

The second instrument was a Bures seven item survey (2000), which is used in order to measure the students' satisfaction with e-learning. This survey is also based on Likart's five level scales where 1 means »Strongly disagree« and 5 »Strongly agree«. The statements are:

1. Using the WebCT (Web Course Tools) was frustrating.
2. Learning to use the WebCT was easy.
3. WebCT was an effective way to learn the course content.
4. I learnt a lot through using of WebCT.
5. WebCT facilitates my work with other students in the course.

6. Group on-line activities did not improve the quality of my education.
7. I will not voluntarily take another course using WebCT.

4   The Results of the Research

We ascertain that the **dropout rate for e-students is not larger in number than for traditional students.** The reverse is true. The data from the Statistic annual of Republic of Slovenia (2005) shows that the dropout rate of students who are partly or fully employed reaches almost 50 percent - out of 2438 students enrolled in the 1st grade of high school courses in the year 2001/2003, 1074 students graduated, making 44.05 percent. In on-line study, the dropout is lower than expected as, 14.9 percent of students dropped out in 2003/2004, meaning that a little over than 85% of students successfully completed the course (for a business secretary). The percentage of dropout was a bit higher in the on-line commercialist course, where 15.8 percent dropped out. A year later (2004/2005) the dropout from the business secretary course reached 16.9% and 16.8 percent for the commercialist course. In 2005/2006, the figures were 16.6% of students on the business secretary course and 15.2% on the commercialist course, as shown in Fig 1.
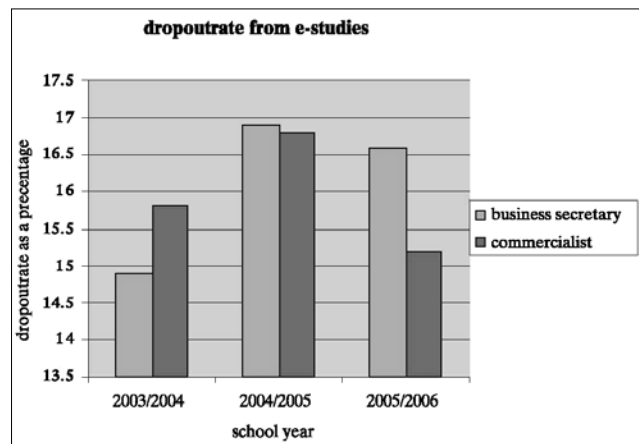

Fig 1:   *Dropout from e-studies in the school years of 2003/4, 2004/5 and 2005/6*

Such a low percentage of dropouts is due to various factors: e-study is taken up by people who are already employed and need further education and knowledge to get promotion at work or to get a job. This is why these students do not procrastinate. They want to complete their studies as soon as possible because they have a number of obligations – besides work, they usually have a family to look after and obligations connected with their study. Besides, for most students in Slovenia, e-study is quite a handful financially so they really do their best to complete it. Students have strong support from their mentors, who are constantly within reach and the course is designed in such a way that it demands serious, devoted and hard work. If a student deviates from their personal week-

ly plan, the organizers and councillors will get in touch with them and kindly invite them to continue with the work.

If students are satisfied with e-study, they are successful. This statement matches Levy's findings (Levy, 2006). Table 1 shows that students are generally happy with the course (the average in the last year is 5.3 on the scale from 1 to 7). It is clear that most students are satisfied and even very happy with their own performance and success (in over 87 percent of valid answers from the students questioned).

Table 1: Students satisfaction with the course, professor, mentor and materials

	Programme	Professor	Mentor	Materials
2003/2004	5,3	6,1	6,0	5,2
2004/2005	5,2	6,0	6,1	5,0
2005/2006	5,3	6,0	6,0	5,3

Table 2: Estimation of the students' own academic performance

Grade	1	2	3	4	5
Number of students	0	0	18	47	78

Students who labelled themselves as successful were also more satisfied with the course, professors, mentor and materials (Table 2). Students who have difficulties with information technology are more dissatisfied and also less successful. The question is though, whether they are less successful because they are dissatisfied or they are dissatisfied because they are less successful.

We later interviewed a further 49 students and asked them about the final grade they got in the exam (from 1 to 10, 6 meaning pass and 10 meaning excellent). We also asked them about their satisfaction with the course (on the scale from 1 to 5). We found that if the final grade improves, their satisfaction with the course will also rise and vice versa. Our hypothesis is confirmed, though rather weakly: students who are satisfied with the course are more successful in the examinations (r=0,328, α=0,05, p_α=0,035).

We present the contingent table below, which shows the two observed variables where the distribution by individual values of both variables is presented.

Table 3: Correlation between the final grade obtained at the exam and satisfaction with e-study

		satisfaction			
		2	3	4	Total
grade	6	3	4	5	12
	7	0	2	5	7
	8	0	5	11	16
	9	0	3	8	11
	10	0	1	2	3
Total		3	15	31	49

It can be seen (Table 3) that there are only students with the lowest grades (6) among those who are less satisfied (2) and nobody got a better grade in this group. The students with higher grades have higher level of satisfaction (3, 4). This fits our hypothesis, although the value of the chi square test on such categorial data is 10.5 which, at 8 degrees of freedom, is not statistically significant. To get a stronger confirmation, more units of observation would be needed because in our case there are too many empty cells.

More women than men get education through e-learning. This statement was confirmed in the present research. As mentioned in the introduction, 36 females and 13 males responded to the question on gender, which means that three times as many woman than men took up e-courses (over 70 percent). According to the data in the table below (the Guide for e-study 2006/7), the result is to be expected.

We can confirm the statement that the rate of women who take up e-learning courses is higher than men (Table 4). It can be seen that women prevail among the enrolled students in all years. The representation of women is growing over the years (t=7,398, α=0, 05, p_α=0,000). With a negligible level of significance, we deny the hypothesis and accept the alternative that more women than men take up e-learning courses. In all the given years (from 2007 to 2007), more women enrolled in e-learning courses than men (Fig. 2). Women are generally more diligent. They have to try harder than men to achieve a certain status, they have become more ambitious and they crave better jobs. A number of women were forced to give up traditional forms of study for family reasons or work but nowadays study, education and graduation are available and possible even if they have family and job obligations.

Table 4: *Representation of the sexes as a percentage in three and four-year high school for the years 2002 to 2007.*
(Guide for long distance study, 2006/2007)

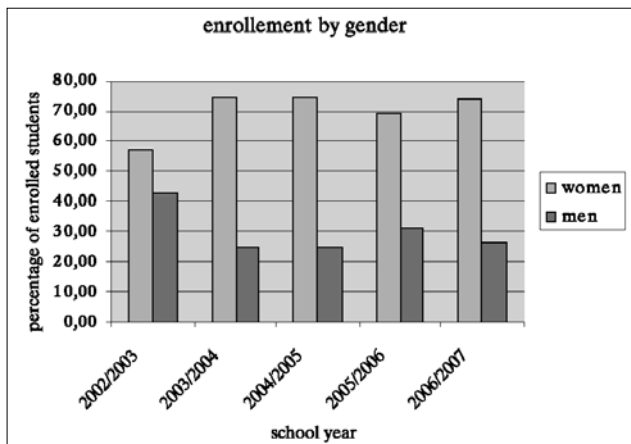|	Three year course		Four year course	
	women	men	women	men
2002/2003	57,00	43,00		
2003/2004	75,00	25,00		
2004/2005	75,00	25,00		
2005/2006	69,00	31,00	81,6	18,4
2006/2007	73,80	26,20	68,9	31,10

Fig 2: *Enrolment in e-learning courses by gender*

The statement that it is mostly young people who take up e-study because they are more acquainted with information technology is inconsistent with the facts.

The data obtained by the survey show a student age structure as can be seen in Table 5.

It can be seen that more than half the students who answered the question belong to the third age group, which means quite a large number of students in this age group. 70 percent of all the students in e-courses are over 35 years old. In this case, the statement that it is the younger students who take up e-study is inconsistent with the present situation.

The distribution of students into a particular group can be calculated using the chi square test. The observed (factual) frequencies and the expected (theoretical) frequencies are presented in Table 6.

Table 5: *The age structure of e-students*

	Up to 24 years	25-34 years	35-44 years	above 44 years
Percentage	2	29	56	13
Number of students	1	14	27	6

Table 6: *The distribution of students according to age*

	Up to 24 years	25-34	35 - 44	From 45 years on	total
O	1	14	27	6	48
E	12	12	12	12	48

O - observed (factual) frequency in the cell of i column and J row of the contingence table
E - expected (theoretical) frequency in a particular cell

Table 7: *The age and gender of e-students*

	Up to 24 years	25 - 34	35 - 44	From 45 on	TOGETHER
Women	1	10	20	4	35
Men	0	4	7	2	13
TOGETHER	1	14	27	6	48

Table 8: The age and gender of e-students in percentage

	Up to 24 years	25-34	35-44	From 45 on
Women	3	29	57	11
Men	0	31	54	15

Table 9: The age and gender of e-students, a table of observed (factual) frequencies

	Up to 24 years	25 - 34	35 - 44	From 45 on	TOGETHER
Women	1	10	20	4	35
Men	0	4	7	2	13
TOGHETHER	1	14	27	6	48

Table 10: The expected frequencies

EXPECTED	Up to 24 years	25 - 34	35 - 44	from 45 on	TOGETHER
Women	0.729	10,208	19,688	4,375	35
Men	0.271	3,792	7,312	1,625	13
TOGETHER	1	14	27	6	48

Categorization of the enrolled students by their age reveals that there are different percentages of students in the different age groups and we cannot claim that age has no influence on enrolment. This can be confirmed by a statistical test using Pearson's chi square test

(χ^2=8,042, α=0,05, p_α=0,045). We deny the hypothesis and confirm the statement that age structure is not even and constant among e-students. The majority of students are in the 35 to 44 age group .

Next (Table 7, Table 8), we will calculate if gender and age are correlated.

It is evident that the percentage by age groups among the sexes are similar and we cannot define the difference between gender and age as significant. The hypothesis is verified by the chi square test (Table 9, Table 10).

Even at a hasty glance it is evident that the frequencies are closely connected and correlated. The value of the chi square test will be quite low. Comparison of the e-students by gender and age shows that the number of women prevails in every age group. The comparison also shows that the share of students in the individual age groups is the same for both sexes. It means that we can not conclude that there is difference between males and females in the age structures in e-study. Pearson's chi square test confirms our findings. (χ^2=0,015, α=0,05, p_α=0,998).

Young people up to 24 years old prefer to take up traditional forms of study because of social and companionable specifics. It is also quite possible that the fee for e-study is too high.

The fact that students over 45 are in a minority (3 percent), as is shown in fig. 3 below, is not connected to knowledge and skills in computing but is because people over 45 have already established their position in society and are not prepared to change it any more. They are not willing to go back to studying even online. (Fig.3).
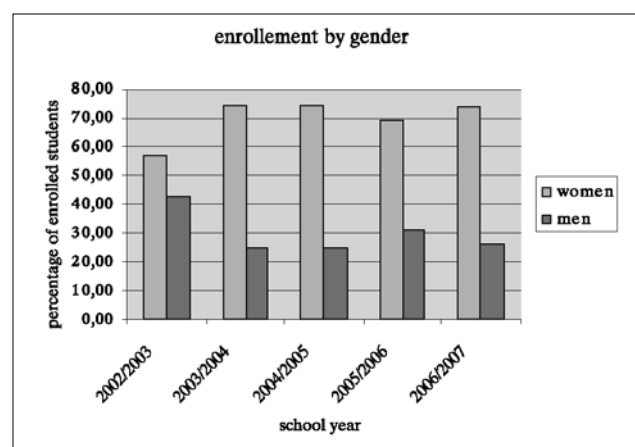

Fig 3:   The age of e-students as a percentage for each school year

Students take up e-learning courses because of their time flexibility. This is the reason why almost half of the e-students decided to take up e-learning courses, as can be seen in the table below (Table 11):

From Table 11, it is evident that almost half of the students named time flexibility as a specific reason for taking up an e-learning course. In all the given years, the values for this reason exceeded 40 percent and are far above all the other reasons. Calculation of a statistical t-test for the year 2006/07 (42 percent) counting the average numbers for all the reasons shows that this value is statistically different from others and so our hypothesis can not be confirmed. (t=-4,508, α=0,05, p_α=0,006).

Table 11: Reasons for taking up e-study in percentages

	02/03	03/04	04/05	05/06 three year course	06/07 four year course
Time flexibility	**41**	**44,0**	**40,0**	**43,0**	**42**
Independence	15	10,0	19,0	18,0	18,0
Family	18,0	21,0	17,0	19,0	18,0
Distance from the study centre	7,0	7,0	5,0	5,0	7,0
Job	11,0	15,0	15,0	7,0	12,0
Novelty	6,0	3,0	4,0	4,0	3,0

Table 12: The reasons for joining e-courses in percentages

	02/03	03/04	04/05	05/06 three year course	06/07 four year course
Time flexibility	41	44,0	40,0	43,0	42
Independence	15	10,0	19,0	18,0	18,0
Family	18,0	21,0	17,0	19,0	18,0
Distance from the study centre	**7,0**	**7,0**	**5,0**	**5,0**	**7,0**
Job	11,0	15,0	15,0	7,0	12,0
Novelty	6,0	3,0	4,0	4,0	3,0

Students do not decide to take up e-learning courses because of their distance from study centres. The distance from study centres in Slovenia is of minor importance because Slovenia is not a vast country where distances would make a serious difference. Study centres are not really out of reach. In spite of or maybe just because of that, we are not used to commuting and we do not want to travel for an hour or more to a study centre. The table below shows that geographical distance does not present an obstacle for taking up an academic course and we will deny the sixth hypothesis as only 7 percent of students stated that the main reason for taking an e-learning cour-

se was distance from the study centres. It is shown in Table 12.

It is evident from Table 12 that only 7 percent of students named distance as the main reason for taking an e-learning course in the last year. In comparison with the other reasons, this is a rather low value and our expectations in this study that distance could be a reason for taking up e-learning course turns out to be inconsistent with the present situation. This can be confirmed by a statistical t-test (t=1,723,α=0, 05, p_α=0,146). Fig. 4 shows the reasons for taking up e-study.

Students accomplish their academic obligations in the evening and not during the day. Almost half of the stu-
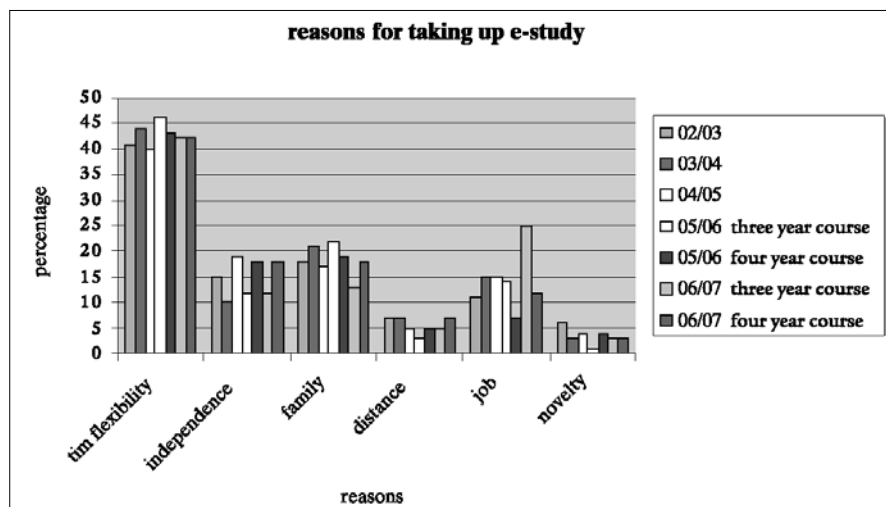

Fig. 4: Reasons for taking up e-study

Table 13: The time of day when students perform their academic obligations

Time of day for academic obligations	1	2	3	4	5
Morning	81	3	28	16	42
Afternoon	4	12	32	28	76
Evening	**4**	**0**	**24**	**28**	**96**
During work	100	8	28	8	0

dents who were asked only study in the evening – and only about one tenth of the students perform their academic duties in the morning before going to work, as can be seen from the table below:

Table 13 shows that the students questioned do not support the notion that they perform their academic duties in the morning or during work. Conversely, they study in the afternoon and especially in the evening. This hypothesis is strongly supported by out study: students mainly accomplish their academic duties in the evening.

The highest average points to the evening (4. 4 out of 5), as can be seen in Fig. 5. We take each part of the day and we get an average, as seen in Fig. 5.
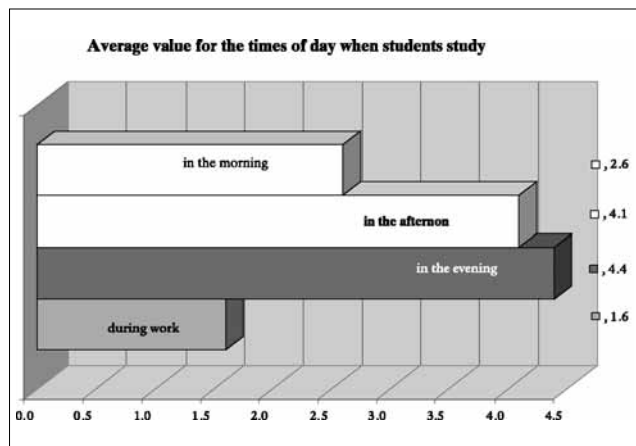

Fig 5: The average value for the times of day when students fulfil their academic obligations

It is evident that the evening value is significantly different from the values for morning and work time (with values of 2.6 and 1.6) as opposed to the afternoon (with a high average of -4.1), which means that students mainly do their academic study assignments in the evening, only partly in the afternoon and almost never in the morning or during work.

In Table 13 we can see that students study and perform their academic tasks mainly in the afternoon and evening. The validity of this statement can be checked with a statistical chi square test. (χ^2=21,377, α=0,05, p_α=0,045). Students mainly perform their academic tasks in the evening and in the afternoon (Table 14).

5   Conclusion

The results received show that persistence in e-learning courses is higher if students are satisfied with the e-study and if they are happy with their academic achievements. It is evident that the dropout rate in e-learning courses is lower than the in traditional studies. Considering gender, women prevail over men. The majority of the students belong to the age group between 35 and 44. E-learning courses are mainly taken up because of the flexibility of study. The students themselves manage their own time and decide on the part of the day when they want to perform their academic tasks. Geographical distance from study centres is irrelevant when deciding to take up e-learning course.

The contribution of this paper is twofold: firstly, it attempts to stimulate research into dropout and the reasons why students do not complete the on-line academic courses. It is intended to invoke new researches that would help concentrate on the factors behind the dropout rate in e-learning courses.

The other contribution is the findings concerning e-learning courses related to student satisfaction with e-study, which is a very important predictor of success or failure in academic courses. The results of the study are greatly consistent with the existing literature, though there is a discrepancy in the percentage of dropouts. The paper offers an insight into some key factors that influence the success of e-study.

The main limitation of the research is the lack of data on e-students from different institutions. The survey was carried out in only one institution, which deals with e-learning academic courses, thus the situation in other institutions must be considered and studied.

Additional research is needed into the field of motivation and the locus of control, which lead either to dropout or a successfully completed course. Such research should focus on students who complete the study successfully as well as those who drop out. Thus we will be able to understand the reasons and mechanisms that lead to dropout.

It would be of utmost interest to make a comparison between the academic success of on-line and traditional students.

Literature

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Table 14: The time of day for performing academic tasks:

FACTUAL						
O	1	2	3	4	5	TOGETHER
In the morning	81	3	28	16	42	170
In the afternoon	4	12	32	28	76	152
In the evening	4	0	24	28	96	152
During work	100	8	28	8	0	144
TOGETHER	189	23	112	80	214	618
EXPECTED						
E	1	2	3	4	5	TOGETHER
In the morning	52,0	6,3	30,8	22,0	58,9	170
in the afternoon	46,5	5,7	27,5	19,7	52,6	152
In the evening	46,5	5,7	27,5	19,7	52,6	152
During work	44,0	5,4	26,1	18,6	49,9	144
TOGEHTER	189	23	112	80	214	618
O- E	29,0	-3,3	-2,8	-6,0	-16,9	0,0
	-42,5	6,3	4,5	8,3	23,4	0,0
	-42,5	-5,7	-3,5	8,3	43,4	0,0
	56,0	2,6	1,9	-10,6	-49,9	0,0
	0,0	0,0	0,0	0,0	0,0	0,0
O-E^2	841,6	11,1	7,9	36,1	284,5	0,0
	1805,0	40,2	19,8	69,3	546,0	0,0
	1805,0	32,0	12,6	69,3	1880,6	0,0
	3131,7	7,0	3,6	113,2	2486,4	0,0
	0,0	0,0	0,0	0,0	0,0	0,0
SUM(O-E)^2		13202,8				
SUM E		618,0				
CHI-SQUARE		21,36372				
DF		12				

1 strongly disagree, 5 strongly agree

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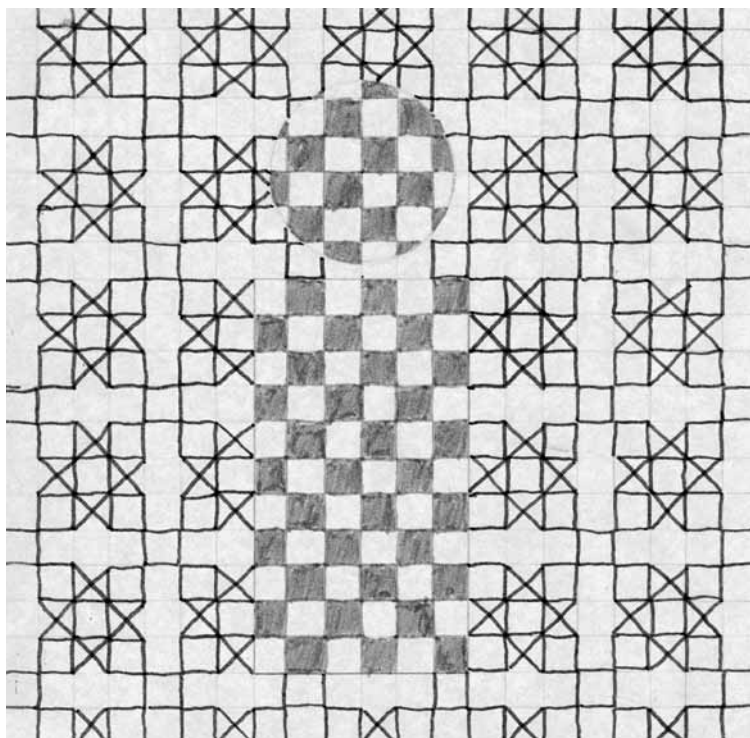
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David Mihevc

Nika Poderšan

Samo Pahor