

Changes in Students' Attitudes towards Electronic Education in 2003 - 2010

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Abstract: - The paper deals with monitoring the development of students' attitudes in the field of e-learning. Since 2003/4 academic year data have been collected from part-time students of Applied Informatics and Information Management, Faculty of Informatics and Management, University of Hradec Kralove, evaluating their opinion and experience in on-line distance courses in LMS WebCT which are used to support the process of instruction. The paper provides data on students' satisfaction or dissatisfaction with single tools of the LMS and financial demands on this way of study.

Key-Words: - Distance education, e-learning, electronic education, university education, on-line course, feedback

1 Introduction

E-learning and the distance education have become standard in the current educational system in the Czech Republic. A decade-taking process of ICT implementation into the process of instruction at Czech universities ran in three steps, and both learners and educators were concerned. Receiving general computer literacy followed after providing hardware and software equipment; the process was completed by developing didactic competences so that a great deal of ICT potential could be exploited in the process of instruction. Substantial problems being currently solved are as follows:

Are teachers able to apply suitable methods and forms of instruction, create and use appropriate didactic means which are offered by new technologies?

Do students have higher level of knowledge if they attend lessons managed by ICT or run traditionally by teachers?

Are the new didactic means (methods and forms supported by digital technologies) able to optimize the cognitive process of creating knowledge?

What are students' opinions, experience, attitudes towards this way of teaching and learning? [1]

Receiving feedback and collecting various types of data must be an unseparable part of the process. Students' satisfaction, adjustability of the LMS, and necessity or even requirement to tailoring the process of instruction to students' needs lead us to monitoring the process. It was the initial reason why this survey arose ten years ago.

2 Problem Formulation

The LMS WebCT has been used since 2001 at the Faculty of Informatics and Management, University of Hradec Kralove. Having had 80 e-courses in 2004/5 academic year, more than 170 ones supporting a complete range of subjects have been created up to 2009/10 [2]. Feedback is received by a questionnaire filled by both students and teachers regularly every year and from interviews running continuously during the years. Any participant of any e-course is expected to express their opinion and experience. This paper deals with comparison of results in three-year periods in 2003/4, 2006/7 and 2009/10 academic years.

2.1 Questionnaire description

The questionnaire consists of 45 items structured in three fields. Part One provides information on the sample group. Questions monitor students' previous study experience, availability of ICT equipment, accessibility of the educational institution etc. Part Two deals with the quality and students' satisfaction with single tools provided by LMS. In Part Three students' opinion on financial requirements are collected. Thirty-one questions of multiple-choice type are included in the questionnaire, fourteen questions require open answers. The questionnaire was used in an electronic form in courses in LMS WebCT, where the results were finally displayed.

Table 1 Basic information on the sample group (%)

	Responses (in %)	2003	2006	2009
		/4	/7	/10
1	Male-students	84	86	74
2	Female-students	16	14	26
3	School-leaving exam before 2000	7	36	55
4	School-leaving exam in 1999-6	46	28	11
5	School-leaving exam in 1995-before	47	36	34
6	School-leaving exam at grammar school	51	33	18
7	School-leaving exam at secondary professional school *	37	64	67
8	School-leaving exam at secondary vocational school	10	3	4
9	School-leaving exam at another type of school (of art, abroad etc.)	2	0	11
10	Before starting study at FIM I studied at another university, and graduated successfully	7	2	8
11	I did not study at another university before starting study at FIM	93	98	92
12	<i>Before starting study at FIM I studied at another university, but did not graduate successfully:</i>	51	50	60
13	Before starting study at FIM I studied at a technical university/college**, but did not graduate successfully	96	80	45
14	Before starting study at FIM I studied at a Faculty of Law, but did not graduate successfully	0	0	0
15	Before starting study at FIM I studied at a Faculty of Education of Arts, but did not graduate successfully	0	6	0
16	Before starting study at FIM I studied at a Faculty of Economics or Management, but did not graduate successfully	0	3	15
17	Before starting study at FIM I studied at a Faculty of Medicine of Pharmacy, but did not graduate successfully	0	3	0
18	Before starting study at FIM I studied at another type of faculty, or abroad, but	4	8	0

	did not graduate successfully			
19	While studying at FIM, I do not study at any other university	96	94	96
20	<i>While studying at FIM, I study at another university:</i>	4	6	4
21	While studying at FIM, I study at another university**	50	33	0
22	While studying at FIM, I study at a Faculty of Law	0	0	0
23	While studying at FIM, I study at a Faculty of Education of Arts	50	33	0
24	While studying at FIM, I study at a Faculty of Economics and Management	0	0	4
25	While studying at FIM, I study at Faculty of Medicine or Pharmacy	0	33	0
26	While studying at FIM, I study at another type of university, or abroad	0	0	0
27	I do not commute to the FIM, or I commute from max. 59 km	26	46	55
28	I commute at the FIM from 60-109 km	32	30	26
29	I commute at the FIM from 110-199 km	39	23	19
30	I commute at the FIM from 200 and more km	3	1	0
31	<i>I have got a computer at home:</i>	93	98	100
32	I have got a computer with the Internet access at home	70	97	100
33	I have got a computer with the high-speed Internet access at home	37	71	92
34	I have got a computer with the Internet access at work which I share with colleagues	21	6	8
35	I have got a computer with the Internet access at work which I do not share with anyone	76	88	81
36	I do not have any computer at work	3	6	11

* secondary school of engineering, machinery engineering, IT, for nurses, business academy etc.

**college of engineering, machinery engineering, electrotechnics, mathematics-physics etc.

2.2 Sample group description

Totally 280 respondents were included in the survey studying Applied Informatics or Information Management part-time study programmes. Their minimum experience in e-learning was completing 10 e-courses in LMS WebCT during their first year of study (in Management, IT English, Database Systems, Mathematics, Applied Information Technologies, i. e. two e-courses in each subject, which either supported the process of instruction, or ran in the distance way). While in 2004 only those e-course participants who considered it necessary and were willing to provide their opinion participated in the survey (i.e. 57 students, which is 85 % of all students enrolled in the e-course), in 2007 a 2010 the participation was obligatory (i.e. 100 % of students filled in the questionnaire, which is 140 students in 2007 and 83 students in 2010. The return rate is considered satisfactory.

3 Problem Solution

The collected data were processed and summarized in tables below. Results cover three academic years (2003/4, 2006/7, 2009/10), and are provided in per cent (%).

3.1 Survey results

In table 1 basic information on respondents is presented which includes number of participants (male, female), year and type of secondary school they graduated from, personal experience in previous university study, if there was any, accessibility to the educational institution and availability of hardware and software equipment.

Table 1 description

As it can be seen in table 1 the number of male students is substantially higher in all three academic years, but currently the difference is lower and the number of female-students is slightly moving up (items 1, 2).

Number of “younger“ students (i.e. those who graduated in recent years) is increasing. While in 2003/4 nearly half of the students graduated 5-more and 10-more years before they started studying again (46 % and 47 %), in 2009/10 it was only 7 % of this age-group, and more than half of students (55 %) graduated fewer than 5 years before they started studying again (items 3 – 5).

In 2003/4 half of students (51 %) graduated from grammar schools, followed by 37 % from secondary professional schools (i.e. schools of engineering, machinery engineering, information technology, business academy, etc.). Three years later the trend changed, and in 2006/7 there were 64 % and in 2009/10

even 67 % of enrolled students who graduated from secondary professional schools (items 6 – 9).

Following items dealt with respondent’s previous university study. Fewer than 10 % of students (2 – 8 %) had graduated from another university (item 10). The same number started university study but they did not graduate successfully. They studied at technical faculties, faculty of medicine, education or economics (items 11 – 18). There also appeared few students (4 – 6 %) being simultaneously enrolled at another faculty (of education, medicine or technical ones; items 19 - 26).

The accessibility to the educational institution changed. Number of students who live in the same location where the institution is situated or commute max 59 km is increasing. From 26 % in 2003/4 the number reached 55 % in 2009/10, while the number of long-distance commuters (i.e. commuting 110 – 199 km) was decreasing gradually from 39 to 19 (items 27 – 30).

The access to computers and the Internet improved. In 2003/4 93 % of students had their own computer at home, 70% of them with the Internet access, in 2009/10 all respondents state they have a computer with the Internet access at home. These results seem positive but it must be taken into account that respondents were part-time students of Informatics working in this field (items 31 – 36).

Table 2a Evaluation of students’ satisfaction with LMS tools (%)

	Y+++ 2003/06/09			Y++ 2003/06/09			Y+ 2003/06/09		
	Study Materials	35	14	26	32	49	37	32	26
Dictionary	24	11	15	18	22	15	23	20	15
Search	3	11	11	6	11	11	3	13	0
Tests	21	33	40	42	39	44	16	23	4
Sample Credit Test	56	59	74	14	27	11	4	6	11
Syllabus	45	54	20	30	29	4	16	9	11
Calendar	47	47	50	32	29	29	11	13	4
E-mail	49	49	52	23	24	29	10	6	8
Discussion	49	61	63	18	21	29	12	12	0
Chat	3	6	18	7	3	11	5	5	8
Setting Assignments	54	39	59	28	39	37	13	13	24
Submitting assignments	68	59	33	19	34	52	11	6	3

Table 2b Evaluation of students' dissatisfaction with LMS tools (%)

	N- 2003/06/09			N-- 2003/06/09			N--- 2003/06/09		
	Study Materials	1	1	1	0	0	0	0	0
Dictionary	3	16	1	1	9	0	0	9	0
Search	2	5	0	0	3	0	0	0	0
Tests	5	0	4	0	1	0	0	0	0
Sample Credit Test	0	0	0	0	0	0	0	1	0
Syllabus	0	1	0	0	0	0	0	0	0
Calendar	5	4	0	0	0	0	0	1	0
E-mail	0	7	0	0	0	0	0	0	0
Discussion	0	0	0	2	0	0	0	0	0
Chat	3	6	0	2	0	0	0	3	0
Setting Assignments	5	7	0	0	1	0	1	1	4
Submitting assignments	0	1	0	2	0	4	0	0	0

Table 2c Data on *Not Used* tools (%)

	Not Used 2003/06/09		
Study Materials	0	10	3
Dictionary	31	13	44
Search	86	57	78
Tests	16	4	4
Sample Credit Test	26	7	4
Syllabus	9	7	11
Calendar	5	6	8
E-mail	18	14	11
Discussion	19	6	8
Chat	80	77	63
Setting Assignments	-	-	-
Submitting assignments	-	-	-

Table 2 provides figures evaluating students' satisfaction with single tools displayed in the left column. The evaluation scale is structured into seven levels as follows:

Yes +++ (Y+++) expresses complete, full satisfaction with the tool,

Yes ++ (Y++) describes a large degree of satisfaction,

Yes + (Y+) presents a slight degree of satisfaction,

No - (N-) means a slight degree of dissatisfaction,

No -- (N--) shows a large degree of dissatisfaction,

No --- (N---) indicates complete dissatisfaction.

The *Not Used* column situated in the centre of the scale displays numbers of those who did not use the tool. The table is divided into three parts (2a, 2b, 2c) because of required file formatting. Table 2a presents

positive values (*Y+++ - Y+*), table 2b displays negative data (*N- - N---*) and in table 2c *Not Used* tools are shown.

Tables 2 a-c description

Figures in tables 2a - c clearly show students' satisfaction with most tools. Columns *N---*, *N--*, *N-* seldom provide other figures than zero per cent. The only situation is *N-* in Dictionary where 3 - 16 % were slightly dissatisfied with this tool. On the other hand most students highly appreciated study materials, sample credit test, syllabus, calendar, e-mail and discussions. Although offered, students hardly use the search tool and chat. No data are provided in Setting assignments and Submitting assignment because all students used them for the described activities.

Table 3 deals with necessary financial requirements when studying in distance on-line courses. The table provides data of two types. First, in the upper part the total sum of money is presented Second, individual student's evaluation of the necessary amount is provided in the lower part of the table.

Table 3 Financial requirements for studying in distance on-line courses (%)

Amount (CZK)	2003/4	2006/7	2009/10
0	33	41	22
200-300	38	26	41
400-500	14	14	29
600-800	5	7	0
900-1,400	10	12	4
More than 1,400	0	0	4
Total sum is high for me	2003/4	2006/7	2009/10
Strongly agree	2	7	4
Agree	5	10	11
Disagree	25	29	26
Strongly disagree	68	54	59

Table 3 description

In spite of the fact the total amount of money required for studying in the distance on-line course is not low, the data in table 3 prove most students do not consider it high. From 81 to 92 % of students spend max 500 CZK per month on expenses relating to on-line distance study which 7 - 17 % of them consider high. These figures changed slightly during the monitored period.

4 Results interpretation and discussions

Although calculating the significant differences was not done (as it was not required), the descriptive statistic shows the three groups are similar in male/female members and possessing the computer at home. Most of them have their own notebook [3]. They slightly differ in following criteria:

- the distance students commute to the educational institution: currently there are more “local“ students,
- the year they graduated from the secondary school: current students are “younger“, i.e. they graduated five and fewer years ago,
- the type of secondary school: currently more students from secondary technical schools enrol to the faculty,
- access to the Internet: these days all students have access to the Internet from home, which is one third-increase in comparison to 2003/4 academic year.

In the field of tool evaluation it is highly positive that most tools are appreciated (A+++ - A+). The slightly negative opinions (N-) relate to the dictionary. There might have been two reasons why students were not satisfied with this tool. First, it was originally designed as glossary, i.e. the application was structured into two columns in one file. The traditional dictionary format would appreciate two files at least, one for each language (foreign language – mother tongue, and vice versa). In 2006 the LMS provider cancelled the original alphabet structuring which suited much more to the purpose of dictionary. The required format can be set but consequently it takes more time for data loading and students may consider it not user-friendly. Second, the survey ran within the IT English course, which may have reminded respondents their slightly negative experience just in this course and tool.

Tests of ten types were also invited. Students considered them contributive, sometimes in lower degree. At the beginning of their work in LMS they had problems with being accurate enough when writing open-answer questions, which may discourage them a little, but it improved during a short-time period.

Communication tools were widely used because they belong to essential ones which enable to carry out the distance instruction. On one hand, e-mail and discussions were highly appreciated and hardly any student did not consider them contributive. On the other hand, chat was seldom used. The reason could be students found it redundant, they did not need any other way of communication, or they could use other tools out of LMS, e.g. ICQ. Syllabus and calendar were understood helpful as they support time management and thus help students meet all the requirements.

A large number of on-line distance courses which students had participated in before the survey started provided them with large experience in several subjects. Single courses were designed by different teams and

run by tutors of different teaching styles. It is generally acknowledged that the instructor’s (tutor’s) teaching style should match the student’s learning style. Felder says that mismatching can have consequences and cause a wide range of further educational problems. It favours certain students and discriminates others, especially if the mismatches are extreme [4]. On the other hand, if the same teaching style is used repeatedly, students become bored. Gregorc claims that only individuals with very strong preferences for one learning style do not study effectively, the others may be encouraged to develop new learning strategies [5]. Only limited number of studies have demonstrated that students learn more effectively if their learning style is accommodated [6]. Smith et al. found the same number (nine) of studies which showed that learning is more effective if there is a match, and the same number where there is a mismatch [in 6]. Mitchell et al. concludes that making the educational process too specific to a user may restrict the others [7].

Information and communication technology supported instruction is considered suitable and beneficial for learners of all styles. The reason is it offers a wide range of activities which can be aimed at any learning style and used by any teaching style instructor. The possibility of individualization of the educational process from the both student’s and teacher’s point of view is its greatest advantage. Computer literacy is being understood to be essential by all students and most teachers [8]. Didactics accepting the ICT implementation in the field is being developed.

5 Conclusion

It is obvious that results were influenced by the fact that respondents were related to the field of Information and communication technologies to some extent, both by interest and profession. The distance education is steadily spreading as it enables to accommodate requirements for study and work at the same time period. The current life style and social-economic demand for further education will support this way of education so it is highly desired teachers (tutors) had adequate competences and were able to design and run on-line distance courses in the efficient way [9].

Acknowledgements

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