Electronic education in the Czech Republic in 2003-10: development and students´attitudes

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***Abstract*—**The paper deals with the situation at Czech universities within the last decade when electronic way of learning started to be implemented in the process of instruction. In the first part, the situation is described from the general point of view, and the chronological development is presented. In the second part, a survey monitoring changes in students´attitudes towards this way of education are presented. The results are critically evaluated, and several improvements are recommended.

***Keywords*—**Development, distance education, e-learning, feedback, university education.

I. Introduction

INFORMATION society was introduced at the end of last century, and consequently modern information and communication technologies were implemented in various fields of human life. Last decade brought a distinctive diversification in perceiving and accepting modern technologies and especially e-learning in educational institutions. [1] A wide scale of levels showing various attitudes towards latest educational approaches runs not only through educational institutions as a whole but also within particular institutions themselves. In spite of a large number of problems electronic learning (e-learning) has been spreading.

E-learning and the distance education have become standard in the current educational system in the Czech Republic. A decade-taking process of information and communication (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. Some of currently solved substantial problems 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?

Receiving feedback and collecting various types of data must be an unseparable part of the process of instruction. 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 the survey analyzed below arose ten years ago.

The explicit strategy of EU countries in the field of education since the end of the 20th century has been among others characterized by names of documents produced by European Commission, e.g. Growth, competitiveness, and employment. The challenges and ways forward into the 21st century [2]; White Paper on Education and Training - Teaching and Learning - Towards the Learning Society [3]; etc.

It is obvious that increasing the quality of education belongs to priorities of every developed country. Although this fact is reflected in all levels of educational systems, the tertiary education should be the most important field. The Czech educational system underwent substantial changes in last decades but there still exist numerous problems to be solved. Open access to universities, i.e. to tertiary education in general, wider offer of study programmes to higher number of applicants, development of the system of lifelong education etc. belong to the topical ones. [4]

Currently the number of university applicants is not decreasing, and at the same time the interest in lifelong education is increasing. Limited financial sources and related space and personnel restrictions having been taken into account, universities now are not, and will not be able to satisfy all applicants in the near future. Data from the Faculty of Informatics and Management, University of Hradec Králové, can illustrate the situation in 2008/09 and 2009/10 academic years. Amounts of applicants were four times higher than number of those who could enroll. The situation is similar at most non-technical faculties. [5]

One of a few ways how to satisfy the demand for university and further education in this situation is the distance education. In university environment the educational process usually runs in the form of interaction between teachers and students in classrooms, laboratories etc. according to the

schedule. Instead of this traditional, present form of study, Act N. 111/1998 Coll., on universities, deals with the distance and combined form of study. [6]

The electronically supported distance education does not exist long in the Czech educational system; it appeared after 1990 and replaced evening schools. According to Průcha the distance education is understood as a multimedia form of managed study where teachers and tutors are totally or partially separated from students during the process of instruction. The multimediality covers the use of all distance communication means which can support the explanation and mastering of the learning content, i.e. printed materials, sound and video recordings, computer programmes on floppy discs or CD-ROMs, telephones, faxes, e-mail messages, radio and TV programmes, computer networks. [7]

The distance and combined forms of education are often the only way for busy people how to reach the necessary qualification and meet increasing demands of the labour market. High motivation and personal maturity of university applicants enable to use higher share of self-study supported by ICT. These approaches quickly penetrated the lifelong education but can be easily applied in the present form of study at educational institutions of all levels. [4] [8]

The distance education is often connected with the use of computers. Computer support in education was considered just several years ago. But only when personal computers had been launched, electronic instruction became available for wide public. Mass development of the Internet contributed substantially to the process. This medium enabled to integrate elements of management into the self-study activities, and thus increase the efficiency of the process of learning. [9]

II. Ten years of e-learning at universities

A. Starting situation

At the beginning of 2009 a research on e-learning implementation started within the Czech Science Foundation Project N. 406/09/0669 "Evaluation of the modern technologies contributing towards forming and development university students´ competences". [10] Annual reports of Czech public universities from 1999 to 2008, which are available at their websites, were the main source of information. Twenty-five universities were included in the research:

-Academy of Art, Architecture and Design, Prague,
-Academy of Performing Arts, Prague,
-Academy of Fine Arts, Prague,
-Charles University, Prague,
-College of Polytechnics, Jihlava,
-Czech Technical University, Prague,
-Czech University of Life Sciences, Prague,
-Institute of Chemical Technology, Pardubice,
-Jan Evangelista Purkyně University, Ústí nad Labem,
-Janáček Academy of Performing Arts, Brno,
-Masaryk University, Brno,
-Mendel University of Agriculture and Forestry, Brno,
-Palacký University, Olomouc,
-Silesian University, Opava,
-Technical University, Brno,
-Technical University of Liberec,
-Tomas Bata University, Zlín,
-University of Economics, Prague,
-University of Hradec Králové,
-University of Ostrava,
-University of Pardubice,
-University of South Bohemia, České Budějovice,
-University of Veterinary and Pharmaceutical Sciences, Brno,
-University of West Bohemia, Plzeň,
-VŠB - Technical University of Ostrava.

College of Technology and Economics, České Budějovice, was established in 2006, which is why it was not included in the research. The research sample contained annual reports of 1999 - 2008 academic years. If universities published annual reports of single faculties or colleges, these were not included in the research.

Totally more that 180 annual reports were included in the research. In some cases there were not all annual reports available, several years were missing, e.g. University of Pardubice, University of West Bohemia, etc. Information on e-learning was searched, both in the form of single chapters and data mentioned in the text. Most frequently, the topic of e-learning was included in the chapter on Information and communication technologies, which is an obligatory part of annual report structure given by the Czech Ministry of Education. The collected data underwent the process of critical examination and evaluation.

B. Chronological development

From the chronological point of view the electronic support of instruction was first mentioned in 1999 in the University of Ostrava annual report. There existed a database of approximately 60 CD-ROMs there which were available from university network, and the LMS LearningSpace containing interactive educational courses available on the Internet.

In 2000 the annual report of University of Hradec Králové presented the use of distance courses in the virtual learning environment, University of Economics, Prague, described their e-learning project, they planned to design a course for academic staff on LMS WebCT and LearningSpace, University of Ostrava mentioned the LMS LearningSpace where interactive courses were placed and used to support the management of instruction.

One year later, in 2001, e-learning was mentioned in ten annual reports.

-Czech Technical University, Prague, started the ICT integration into their long-term plan, mainly in the form of piloting e-learning projects, and support to designing five e-learning courses was provided.

-University of Ostrava established the e-learning department and the IT Centre, organized training in distance education methodology, made decision about which LMS would be used at the university.

-Silesian University, Opava, Faculty of Business and Management, started activities towards building virtual university and work in LMS Tutor 2000.

-University of Hradec Králové started the process of designing e-subjects for students, and organized e-learning courses for public, ran training for academic staff to prepare them for online instruction, solved several projects on e-learning.

-Jan Evangelista Purkyně University, Ustí nad Labem built the infrastructure and bought a video-server.

-University of Veterinary and Pharmaceutical Sciences, Brno started activities of the audiovisual centre, made several educational films on operations, laboratory experiments, lectures and seminars on e-learning.

-VŠB-Technical University of Ostrava prepared study materials for combined (part-time) and present (full-time) form of study on university website.

- University of Economics, Prague, prepared the distance form of master study programme in e-learning form for accreditation, organized training for academic staff, put a video-server into operation.

-Institute of Chemical Technology, Prague, gradually built a virtual library of electronic study materials on university websites.

The Mendel University of Agriculture and Forestry, Brno, does not state any e-learning activities within the institution. Other universities do not mention e-learning at all.

In 2002 the number of educational institutions using e-learning increased. Czech University of Life Sciences, Prague, University of South Bohemia, České Budějovice, Technical University of Liberec, Tomas Bata University, Zlín, Mendel University of Agriculture and Forestry, Brno, joined the e-learning community and made several references to e-learning in their annual reports.

Since 2003 e-learning has been mentioned in annual reports of most universities instead of those of art - Academy of Performing Arts, Prague, Janáček Academy of Performing Arts, Brno, and Academy of Art, Architecture and Design, Prague. University of Pardubice and University of West Bohemia did not have their 2003 annual report available on their public websites.

Academy of Performing Arts, Prague, first mentioned e-learning in 2005. Janáček Academy of Performing Arts, Brno, and Academy of Art, Architecture and Design, Prague, have not mentioned any e-learning activities. University of Pardubice and University of West Bohemia provided 2007 annual reports only; e-learning was mentioned in both of them. College of Polytechnics, Jihlava, was established in 2004 as a non-university public institution, and it mentioned e-learning just in that year.

C. Academic staff education

In the process of e-learning implementation it is crucial to pay attention to academic staff education in the field of new methods, both from the technical point of view, and educational science and didactics. That is why universities often presented ways and results of this process in their annual reports.

The first mentioned training of academic staff in methodology of the distance education was found in 2000 annual report of University of Economics, Prague.

In 2001 the same information appeared in reports of University of Hradec Králové and University of Ostrava.

One year later, in 2002, other five universities joined this forward-looking group - Czech Technical University, Prague, Czech University of Life Sciences, Prague, Silesian University, Opava, Tomas Bata University, Zlín, and VŠB-Technical University of Ostrava.

D. E-learning centres and project activities

Several universities established special e-learning centres or departments, either as parts of IT centres, or working independently. Their names may differ, e.g. Virtual Education Laboratory, Centre for Electronic (or technological) Support of Instruction, e-learning Department, etc. In the course of ten years the centres were established in ten institutions.

Financial funding and support of e-learning is another important field. Seventeen of twenty-five monitored institutions (68 %) mentioned national or international e-learning projects which were a source of financial backing.

E. Learning management system

The way how e-learning is mostly applied in the instruction and what the efficiency of the process is substantially depends on the type of LMS which is used at the university. Twenty of twenty-five institutions (80 %) mentioned the used type of LMS in the annual report.

At the very beginning of the process sixteen institutions decided for a certain type, or started with two different types and later preferred the better one.

Four of 25 institutions changed the type of LMS for three or more times (University of Ostrava, Jan Evangelista Purkyně University, Ústí nad Labem, VŠB-Technical University of Ostrava, University of Economics, Prague).

Six universities decided to design their own LMS (Czech University of Life Sciences, Prague, University of South Bohemia, České Budějovice, Masaryk University, Brno, Mendel University of Agriculture and Forestry, Brno, Technical University of Liberec, VŠB-Technical University of Ostrava).

LMS Moodle is the most frequently used system in the Czech universities. It is used by six universities. Other

frequently used systems were Tutor 2000 or iTutor (3 universities), LearningSpace (3 universities), EDEN (2 universities), WebCT (2 universities), eDoceo (2 universities), MS Class Server (2 universities), Unifor (1 university), IBM Workplace Collaborative Learning (1 university) and Oracle e-learning (1 university).

III. E-LEARNING EVALUATION

In the last decade several competitions were run every year dealing with quality of e-learning courses and products. Most universities apply their own system of quality assessment but the approaches differ substantially. [10] In a few cases the assessment is done on university level (Technical University of Liberec) but usually it is organized by faculties or departments (Faculty of Informatics and Management, Faculty of Education, University of Hradec Králové; Faculty of Management and Economics, Tomas Bata University, Zlín, etc.). The aim of the process is to support designer´s motivation in further e-learning activities, e.g. competitions are organized and the best products are awarded, and all participants may gain more experience (Faculty of Education, University of Hradec Králové, Technical University of Liberec). Another approach applies evaluation according to given requirements and criteria. If they are met, the author receives a financial bonus (Faculty of Informatics and Management, University of Hradec Králové).

The way of presenting courses also differs. Either courses are introduced to the commission and the public (Faculty of Management and Economics, Tomas Bata University, Zlín, Faculty of Informatics and Management, University of Hradec Králové), or they are evaluated by single members independently (Technical University of Liberec, Faculty of Education, University of Hradec Králové).

Some institutions use internal evaluation (Faculty of Informatics and Management, University of Hradec Králové), others prefer opinions of external evaluators (Technical University of Liberec); or they combine both approaches (Faculty of Management and Economics, Tomas Bata University, Zlín, Faculty of Education, University of Hradec Králové).

IV. DEFINING THE RESEARCH PROBLEM

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. [11] Feedback is received by a questionnaire filled by both students and teachers regularly every year and from interviews running continuously during the years. Any e-course participant is expected to express their opinion and experience. This paper deals with comparison of data collected in three-year periods in 2003/4, 2006/7 and 2009/10 academic years.

A. Questionnaire description

The questionnaire consists of 45 items structured in three fields. Part One provides information on the sample group, 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 the LMS. In Part Three data on 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 e-courses in the LMS WebCT, where the results were finally displayed.

B. 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 partipipants 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.

C. Problem solution

First, the collected data were processed and presented in tables and graphs below (figures 1 to 10). Results cover three academic years (2003/4, 2006/7, 2009/10), and are provided in per cent (%). Then, results were summarized, generalized, and several recommendations provided.

V. SURVEY RESULTS

In figures 1, 2 and 3 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.

Tab. 1 basic information on the sample group (%)

	Responses (in %)	**2003 /4**	**2006 /7**	**2009 /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 universty, and graduated successfully	7	2	8
11	I did not study at another university before starting study at FIM	93	98	92
12	*Before starting study at FIM I studied at another universty, but did not graduate successfully:*	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 a another type of faculty, or abroad, but did not graduate successfully	4	8	0
19	While studying at FIM, I do not study at any other university	96	94	96
20	*While studying at FIM, I study at another university:*	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 have got a computer at home:*	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.

A. Table 1, figures 2 and 3: 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 to 5).

In 2003/4 half of students (51 %) graduated from gramar 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 form secondary professional schools (items 6 to 9).

Following items dealt with respondent´s previous university study. Fewer than 10 % of students (2 to 8 %) had graduated from another university (item 10). The same number started university study but they did not graduate succesfully. They studied at technical faculties, faculty of medicine, education or economics (items 11 to 18). There also appeared few students (4 to 6 %) being simultaneously enrolled at another faculty (of education, medicine or technical ones; items 19 to 26, figure 1).

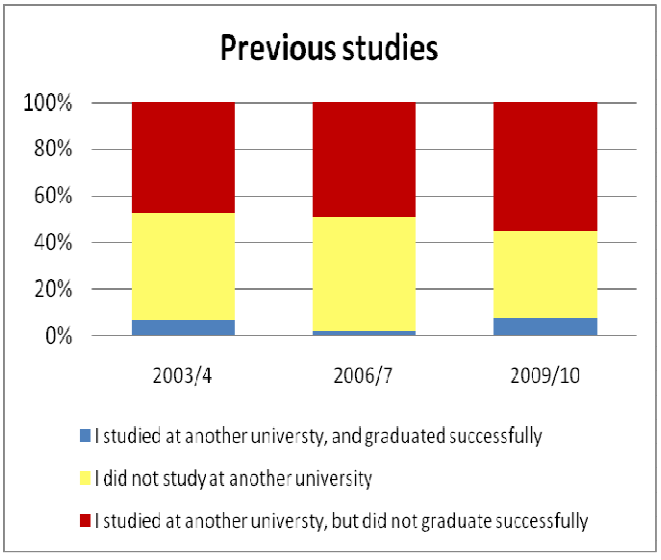

Fig. 1 previous university studies

The accesibility 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 to 199 km) was decreasing gradually from 39 to 19 (items 27 to 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 to 36, figure 2).

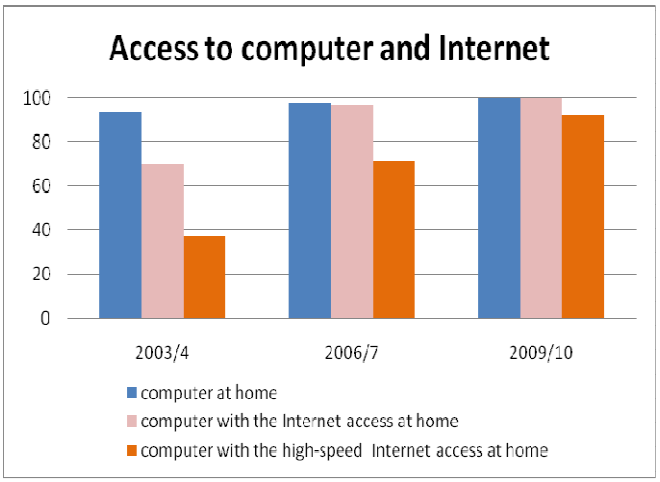

Fig. 2 access to the computer and Internet

B. Table 2, figures 3 to 5: description

Figures 3 to 5 present results of students´satisfaction with various tools provided by the LMS WebCT. 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 displayes numbers of those who did not use the tool. The results divided into three figures (4 to 6) because of required file formatting. Figure 4 presents positive values (Y+++ - Y+), figure 5 displayes negative data (N- - N---) and in figure 6 *Not Used* tools are shown.

Tab. 2 evaluates 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	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

Tab. 3 evaluates 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	0
Dictionary	3	16	11	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

Tab. 3 data on Not Used tools (%)

	Not Used 2003 / 2006 / 2009		
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	-	-	-

Data in tables 2 to 4 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 Dictionarywhere 3 to 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.

Figures 3 to 5 display the development and changes in using the Discussion tool during the monitored period. While in 2003/4 totally 79 % (49 + 18 + 12) evaluated it positive, 2 % of students slightly negative (N--) and 19 % did not use it at all, in 2006/7 the positive evaluation reached 94 % (61 + 21 + 12) and 6 % did not use it, and in 2009/10 totally 92 % of students (63 + 29) considered the discussion tool contributive, and 8 % did not use it.

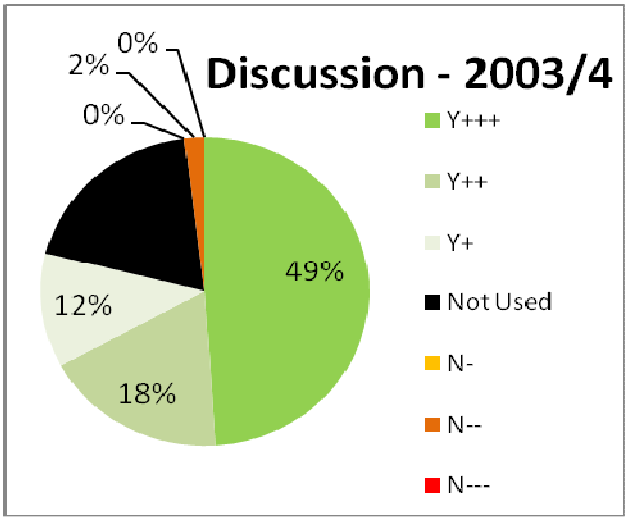

Fig. 3 discussions in 2003/4

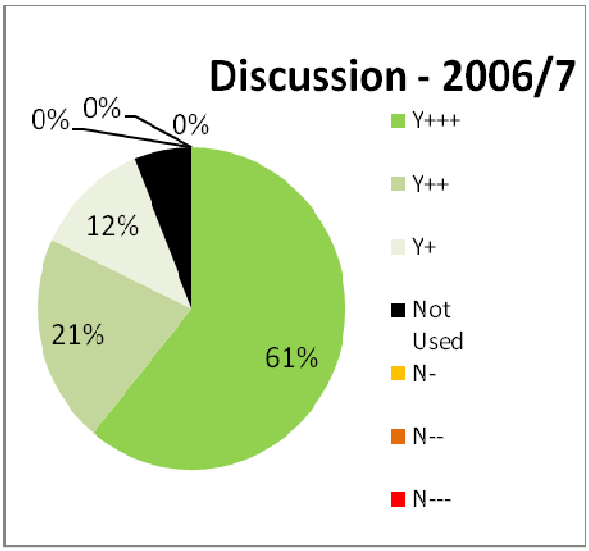

Fig. 4 discussions in 2006/7

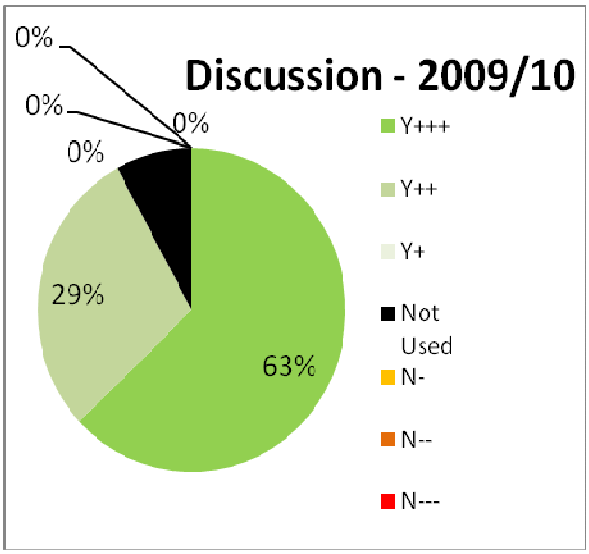

Fig. 5 discussions in 2009/10

Table 6 deals with necessary financial requirements in distance on-line courses. The figure provides data of two types. First, in the upper part the total sum of money is presented. Second, individual student´s evaluation is provided in the lower part of the figure.

Tab. 6 financial requirements and student´s evaluation

Amount (CZK)	2003/4	2006/7	2009/10
0	33	41	22
1 to300	38	26	41
301 to 500	14	14	29
501 to 800	5	7	0
801 to 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

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 figure 10 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 to 17 % of them consider high. These figures changed slightly during the monitored period.

VI. Interpretation and Discussions of the Results

Although the calculation of 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. 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 enroll 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 the 2003/4 academic year.

In the field of tool evaluation it is highly positive that most tools are appreciated (A+++ to 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. [12]

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 [13]. 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 [14]. Only limited number of studies have demonstrated that students learn more effectively if their learning style is accommodated [15]. 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 15]. Mitchell et al. concludes that making the educational process too specific to a user may restrict the others [16].

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 processs from the both student´sand teacher´s point of view is its greatest advantage. Computer literacy is being understood to be essential by all students and most teachers [17]. Didactics accepting the ICT implementation is the field is being developed.

VII. Conclusion

It is obvious that results were influenced by the fact that respondents were related to the field of Information and communivćation 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 futher 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 [17].

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