

THE STUDENTS' EVALUATION OF THE E-SUPPORT IN THE FULL TIME FORM OF STUDY

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Abstract

The assessment of the e-learning courses as supportive tools for a blended learning environment is important for making the courses more useful and effective. A questionnaire survey based on a multiple criteria model (HELAM) was developed and applied to 536 students in the full time form of study. The evaluated courses were based on the LMS Moodle system. The statistical analysis showed generally high satisfaction of the users with the courses. Some problems were found in the communication between the students and the teachers. The most important negative influence can have the low motivation of students who are ready to work at the minimal extent, only to pass the exam. Subsequent test dealt with differences in answers of students from different branch of study, different year, men and women. Dependency of the answers on gender was not statistically significant. The most remarkable differences in the e-learning courses evaluation were found for the groups of students from the second and third year.

Key Words

LMS Moodle, e-course, full time form of study, questionnaire survey, statistical analysis, tests of hypotheses

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Introduction

The paper is an extension of the article presented on the 9th International Conference on Efficiency and Responsibility in Education (Dömeová et. al., 2012).

The aim of this paper is an evaluation of the electronic support (HELAM model) from the student's perspective on the basis of a compiled survey. The methodology is derived from the HELAM Model (Ozkan and Koseler, 2009).

First part of the study concentrates on the frequencies of diverse answers. The second part evaluates relations of chosen variables. Following hypothesis will be tested:

- There are no differences in the students' attitudes towards the evaluated courses.
- There are no differences in the students' attitudes towards the teacher.
- There are no differences between the groups of students (e.g. men x women) and their relation to study.

The informational and communication technologies are highly developed and have spread into almost all human activities. The society prefers communication and knowledge orientation. The term "knowledge society" focuses on the need of knowledge and its exploitation for development and growth. Raising the educational level is an important priority of each EU member state and the goal of the Lisbon Strategy and agenda Europe 2020. The transition from the classical education to the computer supported teaching has changed the style of work of the teachers. The goal of the teachers should be creation of a functioning conception of education including the feedback.

The e-supported teaching builds up possibility for more people to enter the education. The new technologies as multimedia can

be included. There are also tools used for checking up the results of the students to let the teacher know if the students really have understood the lectures correctly. From the technological point of view the e-support is a set of mutually interconnected applications and processes.

The advantages of the e-learning courses in the combined education are in more effective exploitation of time. The students in the combined form of study have less contact lessons (about 1/3 or 1/2) comparing with the regular students. They can use the e-learning course for the preparation for the contact lesson and after the lesson they can use the exercises and self-tests for acquiring new information and skills. There are also other advantages as time flexibility, communication possibility, wide accessibility, interactivity, and illustrative nature. The disadvantage is definitely the fact that preparation of an e-learning course of a good quality is highly demanding on the teacher's time. The proper qualification and experience is also necessary. The e-learning is often connected with the combined or distance form of study. But it is successfully used in the full time form as well. In our article we focused on the views of the regular students.

The Czech University of Life Sciences Prague (CULS further on) supports the courses in LMS Moodle. These courses are oriented to basic principles of e-learning courses („multimedia principle, modality principle“) (Clark and Mayer, 2003). The content of courses which are now in operation can be divided into three groups: texts, videos, and software (Houška and Houšková Beránková, 2010). The main part of the study materials are the texts. These texts can be in a form of a web page (e.g. syllabus of the subject); text files, used before or after a concrete lecture (e.g. ppt format), assignments of exercises and homework (doc and xls formats).

Another form of the study support is multimedia presentations based on Adobe, Captivate, LaTeX, etc. These supports are useful for description of simple programs in which the authors record all activities on the desktop of the computer (Vydrová et al., 2010).

The electronic support is organized by a special department of the CULS „Department of Electronic Support“. The main goal is to develop the Moodle applications for different subjects. There are a designated person (called GAELP) for each other department who is responsible for the creation, maintenance, and coordination of the Moodle courses.

This support is used both for combined and regular students.

The information on effectiveness and exploitation of the Moodle courses are very important for the teachers. The information can be obtained through various types of surveys or inquires. The results of these surveys are important for the feedback from the student to the teacher. They can be used for:

- Implementation of e-learning into the education.
- Development of the educational activities.
- Diagnostics of further educational needs.

The goal of this paper is to investigate the satisfaction of students with the e-learning courses and to find possible relations between the attitude of the students and their devotion to a particular group (year of study, gender, etc.). Important is to find problems not only in the e-learning courses but also in the communication between the students and teachers.

The article contains a short introduction into the problems of the full time study with an electronic support. The methodology of the evaluation of courses using a hexagonal e-learning assessment model (HELAM) and applied statistical methods is described in the theoretical part. The main part incorporates

the application of the HELAM and the statistical methods and presents the results of the survey. The results are then discussed with the literature sources and the conclusions are formulated.

Materials and Methods

In our contribution we collected evaluation of e-learning courses from the regular students. To get their views we used a questionnaire survey based on a hexagonal assessment model. There were 19 questions and 536 respondents. The goal of the statistical analysis was to find out how the students evaluate the e-learning support, to determine the strong and weak points.

The questionnaire form has been constructed according to the HELAM hexagonal e-learning assessment model. This model deals with complex hexagonal evaluation of e-courses. The evaluation is based on six dimensions:

- System quality.
- Service quality.
- Content quality.
- Learner perspective.
- Instructor attitudes.
- Supportive issues (Ozkan and Koseler, 2009).

The scheme of the hexagonal e-learning assessment - see Figure 1.

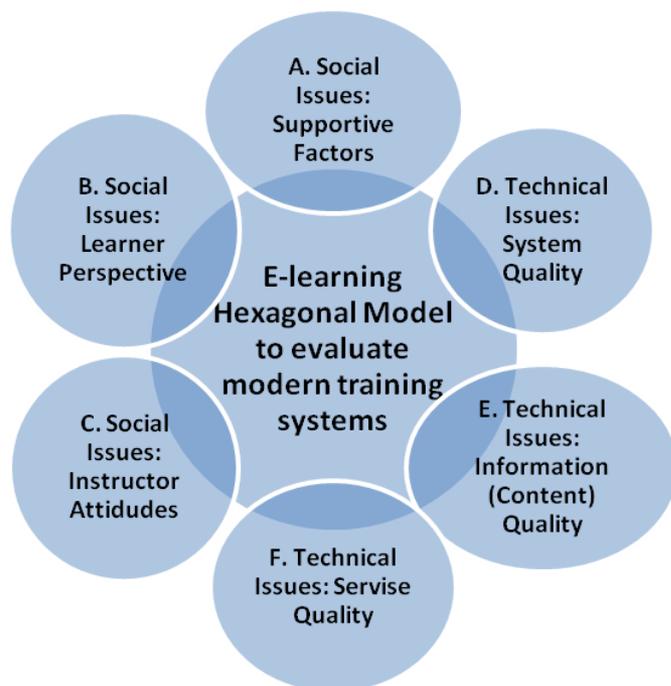


Figure 1: Hexagonal e-learning assessment model (Ozkan and Koseler, 2009)

Not all categories from the HELAM model were used in the question form. There were 19 questions from parts B and D which are oriented towards the students' views. The question form for all aspects would be too extended and the willingness to fill it is remarkably lower in such case. In our study, we reduced the number of questions and focused only on the students' point of view. The question was mostly formulated as a statement with

which the responder can express the degree of agreement or disagreement in a seven grade scale. The scale was used for the majority of questions and has the seven categories, see Table 1.

In the scale, the number of positive answers is equal to the number of negative answers. There is a neutral category "Cannot judge" for the case where the responder does not know how to answer. The scale is based on the ordinal information.

One group of questions contained complementary information for more detailed statistical analysis of outputs.

The last group of questions was identification of responders. The responders can be divided into group according to the branch of study, year of study, gender, and age. All students were from the full time form of study.

The answers were codified for easier manipulation with data. It means, each variant of answer got its code (Přibová, 1996). The codes are in the Table 1. The codes were spitted (see the last column of Tab. 1) for the test of statistical hypotheses.

We supposed for our survey that the responder takes the differences between neighbouring categories as the same. In such case the codes can be used not only as marks but also as numerical values of the answers. This presumption enables us to handle the scale as quantitative so that we get wider choice in the data analysis.

The statistical analysis was made by the statistical software SPSS version 19 and the MS Excel. The elemental analysis is based on the frequency distribution which gives the overview of the output values. The following analyses focused on the differences in answers between genders, age, branch of study and year of study. The significance level was $\alpha = 0.05$.

The dependency analysis of two variables was made in the contingency tables. The contingency tables are the basis for

finding dependencies (can be derived from the values in the table) and computation of the intensity of these dependencies (Pecáková, 2008).

The dependency analysis in the contingency tables was made with the Pearson's chi-square test, when the application condition for chi-square was not satisfied, the exact test Monte Carlo was applied. The test conclusion was based on the value of the p and the significance level α . The construction of the dependency rate was derived from the values of the Pearson's contingency coefficient (C_p).

Answer	Code	New code
Completely agree	1	1
Agree	2	
Partly agree	3	2
Partly disagree	4	
Disagree	5	3
Completely disagree	6	
Cannot judge	7	4

Table 1: Answer codes (Ozkan and Koseler, 2009)

The question form was distributed among the students of the CULS. They were students of the second and the third year of the branches "Agriculture Economics and Management" and "Entrepreneurship and Administration". They are quite experiences with the e-learning courses which are included in majority of the subjects.

There were 536 respondents, 194 males (32.2%) and 342 females (63.8%). The age of responders was between 19 and 31, majority (66.8%) were between 21 and 22. The gender and age distribution is in line with the distribution of all students of the target branches and years. The questionnaire was correctly filled by 227 students of the second year and 309 students of

the third year of the "Economics and Management" – further EAM (63.6%) and "Economic Policy and Administration" – further EPA (36.4%) of the full time form of study. There were 19 questions in questionnaire, 6 of them identification.

Results

Frequencies

The respondent can choose from the given scale (see Table 1). The frequency of answers is in the Table 2 in the attachment. Generally, the students see their e-learning support positively. The most frequent answers are positive: completely agree, agree and partly agree with the given statement. With the statement "The e-support of the contact education is a correct educational process." completely agree 236 students, agree 211 students, partly agree 79 students. The opposite views have 9 students and 1 is not able to judge. "With the e-support I can manage my study more systematically" – agree 93.1%; "E-support is generally useful for acquiring new knowledge and for preparation for concrete subject" – agree 97.4%. The students who are using the e-support for their self-study think that it is an effective educational tool in 94.2%, it is good for orientation in the contact lessons and the whole content of the subject in 94.7%. There are some reserves in formulation of tasks and questions, they are sometimes unclear (20.7%), and the e-support cannot capture attention (21.5%), and do not cover satisfactory volume of the study content (28.7%).

Some problems were found in the communication between the students and the teachers. "The teacher deals with the problems of students and tries to find solution" – agree 83%; "The teachers continuously update the study materials and correct the imperfections in the e-support." – agree 76.7%; "The teacher

immediately react to the emails and other questions” – agree 51.7%; “The teacher is advanced in the communication with students through Moodle” – agree 59.5%, “ The communication through Moodle is important” – agree 72.9%. To make the data more clear we connected the fields “completely agree” and “agree” 1+2; “partly agree” and “partly disagree” 3+4; “disagree” and “completely disagree” 5+6; cannot judge 7 –see Table 2.

The Table 3 shows how the students prepare for the education and what are their relation to the study. Quite frequent were the answers partly agree and partly disagree, the answers completely agree and agree were less frequent. The most confusing result was obtained for the last question: “I occupy with the study in the minimal extent necessary to move forward to the next year.” Positive answer was in 269 cases, negative 263 cases, 4 students could not judge.

Question	Answer						
	1	2	3	4	5	6	7
I prepare continuously, equally in all subjects	33	119	184	86	88	23	3
My preparation consists only of homework and projects	38	184	170	83	53	7	1
I occupy with the study in the minimal extent necessary to move forward to the next year	39	93	137	96	132	35	4
I am disciplined in my study with the e-course and I am able to organize my time for home preparation	95	230	131	50	20	5	5

Table 3: The frequency of answers on chosen questions (source: own work)

Hypothesis Testing

The following part deals with detailed analysis of the relations between the chosen indicators. The goal of the analysis is to confirm or refute the statements in the introduction of the paper. The analysis concerns with the differences in gender, age, field of study, year of study, and the attitude to the study. The question is if these characteristics have or do not have influence on the evaluation of the course (including the online multimedia support) and the teacher.

The analysis is based on computation and testing the relations between chosen identification questions and the questions expressing the evaluation of the course, electronic support and the teachers using the electronic tools.

A re-coding was necessary before the analysis starts because the chi-square test cannot be applied in the case of seven degrees’ range. The new codes are in tab. 1 in the column “new code”.

The respondents who answered “cannot assess” (original code 7, new code 4) were not included into the dependency analysis.

The dependency tests search for the relations between basic identification signs and the statements related to the general and concrete evaluation of e-course, evaluation of teacher, and of the supplementary questions dealing with student’s attitude to the study in general. These supplementary questions can be given also to a logical context with the attitude to the teaching in the e-courses. This is the reason why the analyses are completed also with the proof of relations between these questions.

The questionnaire contained five parts plus identification part. The questions in the first four parts were tested with the variables gender, age, field of study, and year of study. The question from the last, fifth part were tested with the values of variables “I prepare continuously, equally in all subjects”

and “I am disciplined in my study with the e-course and I am able to organize my time for home preparation.” Because of an extension of the survey only relations with the proved mutual dependency on the significance level $\alpha = 0.05$ were classified.

The students – responders evaluated different courses and different teachers.

Evaluation of the questionnaire - Part I

The first part of the questionnaire focuses on the general questions about the e-course. It contains six questions. The dependency was found between the answers to the question “E-support helps me to reach better study results” and the field of study.

This question was answered by 332 students from the field EAM, 59.54% agreed. In the study field EPA 43.52% from the total number of 193 agreed. The statistically important difference between the study fields was proved ($p = 0.002$). The other dependency was proved for the above mentioned question and the gender. 334 women answered the question; 50.90% agreed with the statement. The share of positive answers for men was higher by 7.74%. The total number of answers from men was 191. All mentioned dependencies are weak. The values are in Table 4.

Identification questions/General questions about the e-course	P-value	Pearson's coefficient
Study field / E-support helps me to reach better study results	0.002	0.154
Gender / E-support helps me to reach better study results	0.001	0.164

Table 4: The observed dependencies in the Part I of the questionnaire (source: own work)

Evaluation of the questionnaire - Part II

The second part of the questionnaire contains six questions concerned with a concrete course. There were found five dependencies out of all possible ones. The dependency between the answer and the study field was proved for the question “The content of the e-support is sufficiently comprehensive; contains everything substantial.” 39.58 students of the field EAM and 31.25% students of EPA agreed. This is also in line with the results for first part of the questionnaire.

For the variable “year of study” three dependencies were found. There is the dependency for the question “The e-support helps me in better orientation in the presence teaching.” The second year students agreed in 83.70% out of the total number of 227; the third year students agreed only in 71.75% (out of 308).

The other dependency was between the question “The content of the e-support is sufficiently comprehensive; contains everything substantial” ($p = 0.015$). The agreement came from 43.56% of the second year students and from 31.35% of third year students.

The third dependency is between the year of study and the question “I am generally satisfied with the e-support” ($p = 0.002$). 74.89% students of the second year and 61.56% students of the third year agreed. There was also a dependency between the mentioned question and the variable “age” ($p = 0.020$). The younger students agreed in 70.53% cases while the older in 63.46%. The strength of the dependency was weak according to the Pearson's coefficient. The values of p and Pearson's coefficient are in the Table 5.

Identification questions /Questions on concrete course	P-value	Pearson's coefficient
Field of study / The content of the e-support is sufficiently comprehensive; contains everything substantial	0.031	0.114
Year of study / The e-support helps me in better orientation in the presence teaching."	0.005	0.140
Year of study / The content of the e-support is sufficiently comprehensive; contains everything substantial	0.015	0.015
Year of study / I am generally satisfied with the e-support	0.002	0.153
Age / I am generally satisfied with the e-support	0.020	0.120

Table 5: The observed dependencies in the second part II of the questionnaire (source: own work)

Evaluation of the questionnaire - Part III

The third part of the questionnaire deals with the evaluation of the teachers with the focus to the communication between the teacher and the students. It is necessary to say in advance that the students evaluated several teachers in different subjects. The results therefore cannot be related to a particular person.

In this part 12 dependencies were proved. Due to the high number of dependency only the strong (Pearson's coefficient above 0.2) are commented here. All strong dependencies are related to the sorting variable "year of study".

The first proved dependency was found for the question "The teacher deals with the problems of students and tries to find solution". 74.32% of the second year and only 53.38% of the third year students agreed. The second dependency is for the question "The teacher promptly reacts to emails and other

questions". This statement is valid according 74.32% students from the second year and for 53.38% of students of the third year. "The teacher is proficient at communication with students through Moodle"- the statement confirmed 77.85% of the second year students and 53.27% of the third year students. The above mentioned dependencies indicate that the students of the second year are more satisfied with the communication with the teachers. The results of all proved dependencies are in Table 6.

Identification questions /Evaluation of teachers	P-value	Pearson's coefficient
Field of study / The teacher deals with the problems of students and tries to find solution	0.043	0.109
Field of study / The teacher continuously updates the study materials and corrects the imperfections in the e-support.	0.049	0.113
Field of study / The teacher is proficient at communication with students through Moodle	0.021	0.145
Year of study / The teacher gives clear and understandable information on the evaluation system	0.006	0.137
Year of study / The teacher deals with the problems of students and tries to find solution	0.000	0.210
Year of study / The teacher continuously updates the study materials and corrects the imperfections in the e-support.	0.000	0.181
Year of study / The teacher promptly reacts to emails and other questions	0.000	0.240
Year of study / The teacher is proficient in application of all the content of the course.	0.000	0.208

Year of study / The teacher is proficient at communication with students through Moodle	0.000	0.247
Year of study / I think that the communication with teacher through Moodle is important and helpful	0.001	0.169
Year of study / The results of examinations and other tasks are reported in time via Moodle	0.004	0.146
Age/ The teacher is proficient at communication with students through Moodle.	0.034	0.136

Table 6: The observed dependencies in the part III of the questionnaire (source: own work)

Evaluation of the questionnaire - Part IV

The part IV of the questionnaire concerns with the students' attitude to the study. Six dependencies were found. The first is the dependency of the answers of the students EPA and EAM to the question "I am disciplined in my study with the e-course and I am able to organize my time for home preparation" ($p = 0.048$). From the total number of 338 students of EAM 59.17% agreed; from 193 of EPA students agreed 64.77%.

There were also two dependencies on the year of the study. The first was for the question "My preparation contains only home works, projects, etc.". The positive answer gave 34.26% of the second year students and 46.75% of the third year students. The second dependency deals with the view of the second and third year on the statement "I am disciplined in my study with the e-course and I am able to organize my time for home preparation" ($p = 0.002$). 54.02% of the second year students and 66.49% of the third year students agreed.

The following three relations showed dependency on the gender. "I prepare continuously, equally in all subjects" ($p = 0.002$) was agreeable for 11.47% of women and 3.38% of men. The statement "I occupy with the study in the minimal extent necessary to move forward to the next year" ($p = 0.005$) was acceptable for 20.59% women and 32.29% of men. The last dependency was connected with the statement "I am disciplined in my study with the e-course and I am able to organize my time for home preparation" ($p = 0.007$). Positive answer gave 65.19% of women and 54.17% of men.

All the six proved dependencies are weak see Table 7.

Identification questions / Student's attitude to the study	P-value	Pearson's coefficient
Field of study / I am disciplined in my study with the e-course and I am able to organize my time for home preparation	0.048	0.106
Year of study / My preparation contains only home works, projects, etc.	0.001	0.161
Year of study / I am disciplined in my study with the e-course and I am able to organize my time for home preparation	0.002	0.150
Gender / I prepare continuously, equally in all subjects	0.002	0.153
Gender / I occupy with the study in the minimal extent necessary to move forward to the next year	0.005	0,141
Gender / I am disciplined in my study with the e-course and I am able to organize my time for home preparation	0.007	0,136

Table 7: The observed dependencies in the part IV of the questionnaire (source: own work)

Evaluation of the questionnaire - Part V

The last part of the evaluation deals with the e-courses themselves. In this part, 12 dependencies were proved. The classifying criterion was if the students are disciplined, if they prepare continuously and if they are able to schedule their study time. According to answers to these questions the students were divided into two groups: “disciplined” and “undisciplined”.

Due to the high number of the dependencies only those with the Pearson’s coefficient above 0.2 will be mentioned.

The statement “E-support is generally useful” ($p = 0.000$) was acceptable for 91.69% of student who are disciplined and able to organize their own time. The members of the groups who do not prepare properly agree only in 66.67%. The similar difference was for the statement “E-support helps me to reach better results in the study”. The disciplined group agreed in 61.06%, the undisciplined agreed in 41.67%. 80% of disciplined students agreed with the statement “E-support helps me in better orientation in the presence education”; the undisciplined agreed in 66.67%. The statement “I think that the communication with teacher through Moodle is important and helpful” was acceptable for 66.04% of disciplined students and by 42.11% of undisciplined. All the proved dependencies are in Table 8.

Student’s attitude to the study / Statements about the e-courses	P-value	Pearson’s coefficient
I prepare continuously, equally in all subjects / The e-support is generally useful	0.003	0.171
I prepare continuously, equally in all subjects / I am generally satisfied with the e-support	0.002	0.175
I prepare continuously, equally in all subjects / I think that the communication with teacher through Moodle is important and helpful	0.017	0.163

I prepare continuously, equally in all subjects / The e-support of the contact teaching is a correct process	0.020	0.146
I prepare continuously, equally in all subjects / The e-support helps me to reach better results in the study	0.014	0.153
I am disciplined in my study with the e-course and I am able to organize my time for home preparation / The e-support of the contact teaching is a correct process	0.006	0.163
I am disciplined in my study with the e-course and I am able to organize my time for home preparation / The e-support helps me to study more systematically	0.000	0.191
I am disciplined in my study with the e-course and I am able to organize my time for home preparation / E-support is generally useful	0.000	0.257
I am disciplined in my study with the e-course and I am able to organize my time for home preparation / The e-support helps me to reach better results in the study	0.000	0.212
I am disciplined in my study with the e-course and I am able to organize my time for home preparation / The e-support is an effective teaching tool	0.002	0,176
I am disciplined in my study with the e-course and I am able to organize my time for home preparation / The e-support helps me in better orientation in the presence education	0.000	0.210
I am disciplined in my study with the e-course and I am able to organize my time for home preparation / I think that the communication with teacher through Moodle is important and helpful	0.000	0.258

Table 8: The observed dependencies in the part V of the questionnaire (source: own work)

Influence of the study discipline

The dependencies found in the part V showed clearly that the disciplined students evaluate the e-course in more positive way than the undisciplined students. The students who work unsatisfactory see the courses more negative or do not have any own attitude – Table 9.

Statement	Agreed	
	Disciplined	Undisciplined
E-support is generally useful	91.69 %	66.67 %
E-support helps me to reach better results in the study	61.06 %	41.67 %
E-support helps me in better orientation in the presence education	80.00 %	66.67 %.
I think that the communication with teacher through Moodle is important and helpful	66.04 %	42.11 %

Table 9: The differences in evaluation of the e-support according to the study discipline (source: own work)

From the above mentioned results follows that the study discipline is weaker with the high year of study, more disciplined are women and students of the EPA field – Table 10.

Statement	Agreed	
	More disciplined	Less disciplined
I am disciplined in my study with the e-course and I am able to organize my time for home preparation	64.77% EPA	59.17% EAM
I am disciplined in my study with the e-course and I am able to organize my time for home preparation	54.02% 2 nd year	66.49% 3 rd year

I am disciplined in my study with the e-course and I am able to organize my time for home preparation	65.19% women	54.17% men
I occupy with the study in the minimal extent necessary to move forward to the next year	20.59% women	32.29% men
I prepare continuously, equally in all subjects	11.47% women	3.38% men
My preparation contains only home works, projects, etc.	34.26% 2 nd year	46.75% 3 rd year

Table 10: The differences the study discipline (source: own work)

Discussion

The evaluation by the users is crucially important. Taking into account the users preferences can rapidly improve the exploitation of any e-course or its part and consequently improve the effectiveness of the whole educational process.

Pituch and Lee (2006) argue that if users do not use a learning system or a website based on learner preferences, they will not benefit from it. Therefore, when conducting relevant research, one needs to take learner preferences into consideration as the following studies highlight: Ozkan and Koseler (2009), Shee and Wang (2008) and Yang and Chan, (2008). The importance of learner preferences is also in the study of Karoulis et al. (2006), in which they compared an expert-based evaluation methodology for a computer-based learning environment with an empirical (user/learner-based) evaluation methodology in order to see to what extent they differed from each other. Their results showed that both evaluation approaches perform adequately, but that the empirical evaluation approach was preferable, because this kind of evaluation can not only reveal the problems of real users.

This study does not investigate the preferences of different teaching materials but discovered that the relation to the e-support is highly dependent on the general attitude to the study.

To set up proper methodology of the evaluation is very important. The correspondence can be found in the suggestion of multi-dimensional set of criteria but the number of criteria and their grouping differs from author to author. As the e-learning presents an intersection between a world of information and communication technology and a world of education (Stankov et al., 2004) the application of criteria from these fields is understandable.

Ozkan and Koseler (2009) have six groups of criteria in their HELAM model. Five dimensions of the evaluation criteria proposed (Liu and Cheng, 2008):

- Learner preferences.
- Web usability.
- Learning materials.
- Technology integration.
- Functionality of assisting.

Shee and Wang (2008) present a hierarchical system with four dimensions:

- Learner interface.
- Learning community.
- System content.
- Personalization.

Their system led to a final evaluation using AHP multiple attribute decision model. An artificial intelligence fuzzy logic algorithm was used by Cavus (2010). Alkhatabi et al. (2011) conducted firstly an original users'

satisfaction survey. Following this, in the second phase, the proposed quality framework with 14 quality attributes was populated with the average scores for each quality attribute.

Another way of evaluation uses data mining techniques. The necessary modification of course content, structure and navigation can be based on students' usage information, preferably even following a continuous empirical evaluation approach (Ortigosa and Carro, 2003). Specific evaluation techniques are directly supported by the Moodle system including statistics, visualisation, clustering, and classification (Romero et al., 2008).

Regardless of the huge variety of evaluation methods with numerous common points used a detail analysis of the goal and the object of the evaluation is necessary prior to application of a concrete criteria. The ability and difficulty to collect relevant data might be also a determination.

Conclusion

The analysis of the survey generally shows that the students have commonly positive attitude to the e-learning support of the classical courses. The e-support is mostly taken as a source of information, a container of texts, pictures and videos. It serves also as a direction sign for the self study. It enables the student to understand better the content of the subject, continuities and relations.

The survey also proved amazingly low motivation for study, concretely low motivation to learn and understand new things without direct relation to the certification or graduation.

More surprising information brought the more detailed analysis of the mutual dependencies between the answers. It proved that the evaluation of the e-support as well as of the teachers is

highly dependent on the students' relation to his or her study duties. Relatively high percentage does not study continuously and does only the minimum to get to a following year. Many students are not able to organise their own work (see tab.3). The detailed analysis found that these less disciplined student are more demanding for a better e-support, they see the teachers less qualified and require more and better materials and faster answers from teachers.

The methodology of the evaluation is a task for a further investigation because there might be numerous approaches. It seems to be necessary to change the methodology of the survey. The results of this survey do not bring reliable evaluation of the e-courses because the answers were not dependent only on the quality of the courses but to a high extent on the students' attitude to the study. The survey gave evidence that the less the students are working (are interested, motivated, able to study) the more they are demanding, the more they are critical (see tab. 9). The improvement of the e-course probably will not solve this problem.

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Question	1+2	3+4	5+6	7
The e- support of the contact education is a correct educational process.	83.4	15.86	0.56	0.19
With the e-support I can manage my study more systematically.	64.92	33.02	1.68	0.37
The e-support is generally useful.	88.24	10.45	1.12	0.19
The e-support helps me to reach better results.	52.61	42.54	2.8	2.05
The e-support makes the communication with the teacher easier.	31.35	50.37	9.71	8.58
The e-support is very effective tool.	67.35	30.41	1.3	0.93
The e-support helps me in better orientation in the contact education.	76.68	22.2	0.94	0.19
I acquire better the content of the subject thanks to the e-support.	68.85	28.92	1.68	0.56
The examination tasks and questions are in the e-support clearly formulated.	47.95	43.28	3.92	4.85
The content of the e-support can capture attention.	36.57	55.04	5.6	2.8
The content of the e-support is covering all substantial.	36	53.73	8.77	1.49
I am generally satisfied with the e-support.	66.97	31.71	0.94	0.37
The teacher informs clearly and understandably about the system of evaluation.	75.00	22.95	1.12	0.93
The teacher deals with the problems of students and tries to find solution.	60.26	33.58	2.8	3.36
The teachers continuously update the study materials and correct the mistakes in the e-support.	52.06	33.03	2.8	12.13
The teacher immediately reacts to the emails and other questions.	34.89	23.88	2.05	39.18
The teacher is advanced in using all the content of the e-support of concrete subject.	70.9	19.78	1.12	8.21
The teacher is advanced in the communication with the students via Moodle.	42.72	22.2	1.68	33.4
The communication with teacher is important and helpful.	48.88	31.16	2.99	16.98

The results of exams and tasks are announced in time via Moodle.	64.74	24.82	4.29	6.16
I prepare continuously, equally in all subjects	28.36	50.37	20.71	0.56
My preparation consists only of homework and projects	41.42	47.21	11.2	0.19
I occupy with the study in the minimal extent necessary to move forward to the next year	24.63	43.47	31.16	0.75
I am disciplined in my study with the e-course and I am able to organize my time for home preparation	60.63	33.77	4.66	0.93

Table 2: Relative frequency times 100 in % (source: own work)