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Evaluation of the e-class platform of the LIS Dept., TEI of Athens

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Abstract

The Department of Library Science and Information Systems of the TEI of Athens is using a Moodle installation as its e-class platform for the past four semesters. Moodle is a freely distributed open source software, and has been one of the most popular Course Management Systems. The faculty has invested a significant amount of time and effort and has created 50 online courses, which provide students with all the necessary course material (multiple bibliographies, presentations, e-books and other text and multimedia resources). The online resources also include activity modules, assignments and quizzes that utilize the interactive and collaborative environment of Moodle.

This study presents the evaluation of the department's e-class, which has been based on two online questionnaires, one addressed to the faculty and the other to the students. The questionnaires attempted to collect data concerning the users' attitudes and profiles (visiting frequency, favorite activities) and their opinions about the functionality and usefulness of the e-class in enhancing the teaching and learning experience. The results fully confirm the faculty's view that the e-class is an indispensable addition to the departments teaching tools and demonstrate that it is extensively used and highly appreciated by both faculty and students.

e-class; moodle; evaluation; teaching; long distance learning; surveys; limesurvey

1. Introduction

The Department of Library Science and Information Systems of the TEI of Athens is using a Moodle installation as its e-class platform. Moodle (Modular Object Oriented Developmental Learning Environment,

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<http://moodle.org/>) is a freely distributed open source software, and has been one of the most popular Course Management Systems. It is the fastest developing free software in the field of the asynchronous long-distance learning. Up to now, it has more than 66,350 installations in 215 countries, hosting more than 6,237,106 courses and involving at least 1,286,847 instructors and 55,000,000 students[†].

Before 2010, the Department was using the institutional e-class, which offered very simple features. It was used only for posting course material, such as notes, presentations, etc, and it completely lacked interactivity. This installation fell to disuse due to the lack of staff and funding. The Department decided that it had to make do with its own resources and immediately searched for an alternative. After consultation with our computer science colleagues, it was decided that an open source application was the most viable solution, and a search of the relevant market indicated that moodle was the top choice: it was free, and it offered stability, support, ease of use and interactivity [1]. The universal use of Moodle for administering e-class services to the Department started in the winter semester of the academic year 2010-2011, and is now completing 4 semesters of operation. For the 3 first semesters, moodle was hosted in the Department's own server, but the installation was moved to a virtual machine offered by GRNET (<http://www.grnet.gr/>). GRNET provides infrastructure and networking support to the Greek academic community for free. The installation is fully supported by the department's staff, and from the administrative point of view everything runs smoothly. Two members of the faculty have administrative rights and create courses and users (teachers). After the course and user creation, each member of the faculty (from now on referred to as teacher according to the moodle jargon) has full access to all moodle functions for course content creation, and no other administrative intervention is necessary. Depending on the IT skills of each faculty member, a minimal training may be needed. Most of the faculty members adapted pretty easily and use the moodle features to various extents. Student register by themselves (an automatic e-mail confirmation is implemented for security reasons), and in order to access the course material (enroll in a course), they need a key which is provided by the teacher of the specific course. Students seem to be at home when working with the e-class.

In 2010, when the moodle installation first started to work experimentally, nobody believed that in a couple of semesters it would have become one of the main instruments of teaching. Thanks to the staff's enthusiasm and hard work, silently and progressively, an impressive amount of course material was created. What is important for the reader to understand is that the Department's e-class is a work in progress, with no official guidance or compensation. And more importantly, the whole undertaking was embraced with enthusiasm by the students, who registered massively and organized their school life around it.

Since the Department relies heavily on the use of the e-class, it was felt that a formal evaluation was necessary. The depth of the implementation of the moodle features by teachers and their impact on the learning procedure, and the extent of student utilization of the various learning activities and features should be fully measured and evaluated. Thus, two surveys, one addressed to teachers and the other to students were set up at the end of the spring semester of the current academic year in order to gather data about and analyze the experience and the attitudes of the involved parties. The results of these surveys will be presented and discussed in this paper.

2. Utilization of the e-class features by the teaching staff

There are many learning activities available in moodle [2-5]. Some of them are simple and static (referred to by moodle as "resources"), others are more complicated and interactive (referred to by moodle as "activities"). Resources include text pages, web pages, links (internal or external), labels (that may display text or images) and multimedia files [6]. On the other hand, activities include:

- Assignment: completed offline by the student, who uploads a file with his work for grading by the teacher.
- Choice: a single, multiple choice question that the teacher asks the class.

[†] <http://moodle.org/stats>, 15.07.2012.

- Wiki
- Forum and Discussion group
- Glossary: students add entries to predefined glossaries
- Database
- Lesson: a series of web pages displayed in a given order, where the next page displayed may depend upon a student's answer to a given question.
- Quiz
- Survey: teachers may only use precompiled surveys, in order to learn more about their students.
- SCORM (Sharable Content Object Reference Model)/AICC modules: Standardized modules containing web-based learning content that may be reused by any learning management system that supports this specification.

There are several plug-ins that extend the functionality of moodle [7]. In our installation, we aren't using any of them.

In the Department's e-class, each course is built around the main page of the course, which may include links to other web pages internal or external to the e-class web site, links to PowerPoint presentations, e-books, videos etc., archived inside or outside the e-class web site. The teaching staff uses the advanced features of moodle to various extents and for diverse purposes, some of them not even intended by their designers. For example, some of our colleagues use Choice for enrolling students to lab groups. Quizzes and glossaries are used by several of our colleagues. Some even tried to use fora and discussion groups for posting assignments and asked students to grade other students' work, unfortunately with little success. It seems that students are not confident to expose their work to the other students, but we are currently working on it and try to encourage such activities. Wikis, databases, and surveys are not systematically used. Lessons are not used also, because almost all of our colleagues use PowerPoint presentations instead. Most of the teachers use the moodle features for class management to various extents, implementing one or more of the following: student course enrollment, exams management, grading, posting grades, announcements, absences management, communication with students, mass e-mails, assignments posting, grading and management, etc. Class management through moodle simplifies every-day life and creates the feeling of community amongst teachers and students.

The following table (Table 1) presents some general data about the Department's e-class. All the active students (around 450) of the department are enrolled. On the other hand, 7 members of the teaching staff did not participate in the e-class during the last semester. The reason for this is that the Department relies heavily on contract teaching staff, which often changes from semester to semester and does not have the time and opportunity to adapt to every aspect of the Department's activities. The Department is currently working to remedy this situation.

Table 1. Some general data about the Department's e-class

software	Moodle
version	1.9
URL	http://ithaki.lb.teiath.gr/eclass/
teachers	30 (of 37)
students	451 (= active students of the Department)
courses	35 (of 43) theoretical + 15 (of 21) labs
administrators	2

3. Methodology

Data were collected by use of the statistical analysis functions of moodle and by questionnaires. Two surveys were created in LimeSurvey (<http://www.limesurvey.org/>), which is an open source free application for on-line questionnaire creation, administration and delivery. LimeSurvey was installed in the same virtual machine that hosts our moodle installation. The URLs of the two surveys are:

<http://ithaki.lb.teiath.gr/onlineSurvey/index.php?sid=17425&lang=el> teacher's survey

<http://ithaki.lb.teiath.gr/onlineSurvey/index.php?sid=98437&lang=el> student's survey

The teachers' questionnaire was communicated to the teaching staff by e-mail containing a link to the survey URL, sent on 13.6.2012. A second reminder e-mail was sent on 18.6.2012. A link to the students' questionnaire was posted in the e-class, and it was announced in the classes (13.6.2012) that the students were asked to answer it. A mass e-mail was sent to all students as a reminder on 4.7.2012. The data collection ended on 12.7.2012, and overall lasted for one month. 20 teachers and 151 students participated in the surveys. The accuracy of the results based on the samples and the populations is presented in the following table (Table 2).

Table 2. Populations and samples sizes and accuracy of the results

	teachers	students
population	37	451
sample (complete questionnaires)	20	151
error level (at 90% confidence level)	12.5%	5.5%
error level (at 95% confidence level)	14.9%	6.5%

The questionnaires were structured in three parts. The first collected personal data, such as the name and working status (contract or permanent) of the teachers. The students' questionnaire was anonymous, but collected data such as the semester and the date of enrollment in the Department. The first part ended with a question concerning e-class participation. In case of a negative answer, the survey ended there. The second part aimed at collecting data pertaining to the users' attitudes, such as visiting frequency and duration, favourite activities, etc. Finally, the third part included questions recording the users' opinions about the e-class and focused on the e-class evaluation. It also had an open question where the users could express their ideas for the improvement of the e-class. Many questions were Likert type questions, with a suitable scale of five ordered response levels, corresponding (see below) to a numerical scale from 1 to 5.

The first part of the data manipulation was done by LimeSurvey itself. The tabulated data were extracted to a spreadsheet for further analysis. For the Likert style questions, an average score was calculated by converting the five ordered response levels to an 1 to 5 numerical scale, and calculating the number average.

4. Results and Discussion

Apart from the data collected through the surveys, important data were also collected by use of the statistical analysis functions of moodle itself and are presented in the following table (the first four rows), together with general numerical data pertaining to both surveys (the second part of the table), which are self-explanatory.

The first row shows the total views of all courses for the winter semester 2011-2012, while the second the average views per student per course for the same period. There were courses with as high as 3000 views and 100 average views per student per course. The next row shows the total learning resources and activities for the whole e-class installation, while the fourth row the average learning resources and activities per course. Concerning the average duration of participation, some teachers included their participation in the previous e-class installation, which explains the 4.5 semesters average participation.

Table 3. Data collected by use of the statistical analysis functions of moodle and general numerical data for both surveys

	teachers	students
total views (last semester only)	-	85537
average views per student (last semester only)	-	20.4
total learning resources and activities (last semester only)	1251	-
average learning resources and activities per course (last semester only)	25	-
complete questionnaires	20	151
e-class participation	19 (95%)	146 (96.7%)
average duration of participation (semesters)	4.5	3.8
average number of courses (in total)	2.9	16.7
average number of courses with active participation (last semester)	-	8.7
average duration (hours) of connections per week	3.3	see fig. 1d below

The answers to both questionnaires are presented in the following graphs. The first graph group that follows (Fig. 1) shows the visiting and updating frequency of the e-class content, together with the frequency of the e-class usage in the class and the average duration of connections per week for students. Fig. 1a indicates that both students and teachers visit the e-class quite frequently, with students being a little more regular: almost 40% of both user groups visits the e-class at least once a day. More than half of the teachers replied that they use the e-class in the class at every lesson (Fig. 2a), and a substantial 58% of them that they update the content of their courses (Fig. 1c) quite regularly. 2 out of 3 students spend more than 2 hours per week connected to the e-class (Fig. 1d).

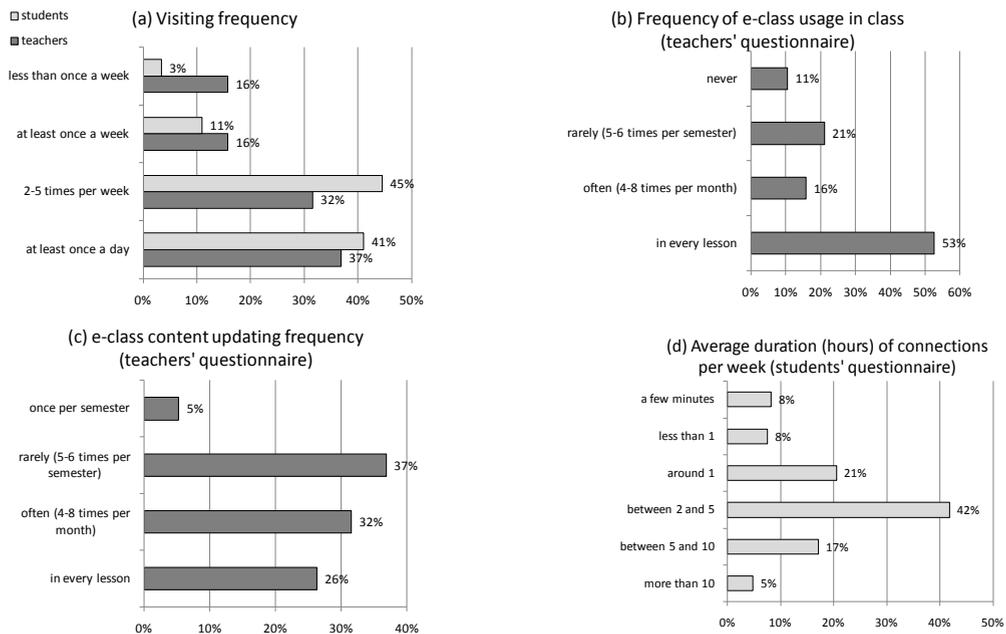


Fig. 1. Visiting and updating frequency of the e-class content; frequency of the e-class usage in the class; average duration of connections per week for students

The following graph (Fig. 2) shows the favourite activities for both groups when they visit the e-class, as the number average of the Likert scale score of each activity (see methodology section above). According to it, students usually visit the e-class in order to download learning material (such as notes, presentations, bibliography, etc.), to prepare for the exams, to get information about the school life (for example to find announcements about lessons that may be rescheduled), learn their grades and absences and to upload exercises, assignments and papers. Teachers usually visit the e-class in order to upload teaching material, to inform students about content updates (in the class) and use it to support their teaching, to grade exercises, assignments and papers and for communication. The two user groups exhibit similar behavior in general, but students appear to appreciate more than teachers the usefulness of the e-class for the exams preparation and for learning their grades and absences. On the other hand, teachers seem to use more than students the built-in communication functions of moodle. This leads to a first useful conclusion, that a directive should be issued to all teaching staff to use the e-class for the student preparation for the exams and for the dissemination of students' grades and absences.

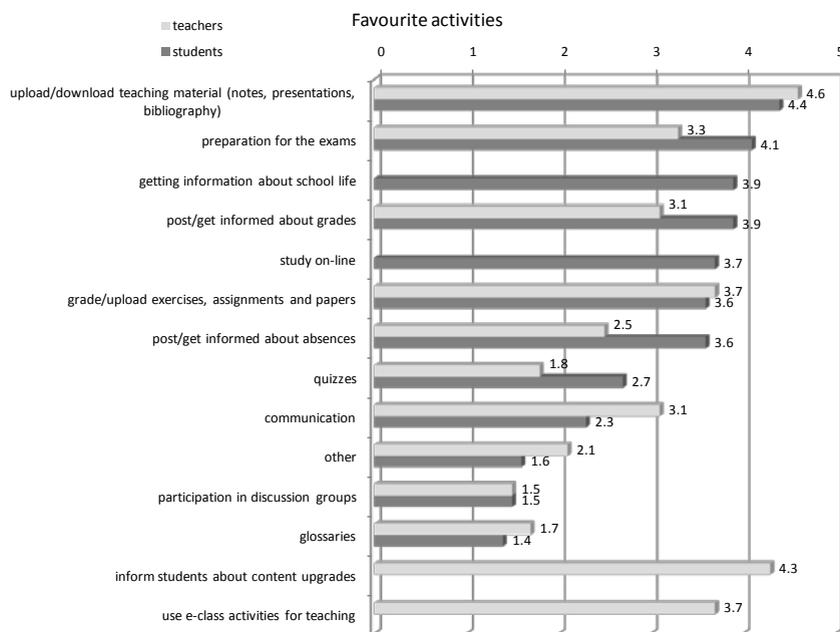


Fig. 2. Favourite activities of students and teachers. Numbers represent the number average of the Likert scale score of each activity.

The educational impact of the various activities was also evaluated (Fig. 3). Both students and teachers rated high the online studying, the assignment activities and the quizzes. It is obvious that teachers overestimate slightly the educational impact of all the activities as compared to students. On the other hand, it seems that on average, students consider the glossary activity and the participation in discussion groups as rather indifferent activities from the educational point of view. It is also obvious from Fig. 2 that neither students nor teachers are really involved in such activities. The same is partly true for quizzes, where students (score 2.7) are more involved than teachers (score 1.8). Nevertheless, quizzes seem to be considered to have a good educational impact according to both students and teachers. It seems that these three activities are not implemented to a significant extent and are not highly appreciated, with the exception of quizzes, which although scarcely implemented, seem to have gained students and teachers appreciation. We believe that these three activities have much to offer, and must encourage their implementation to a wider extent.

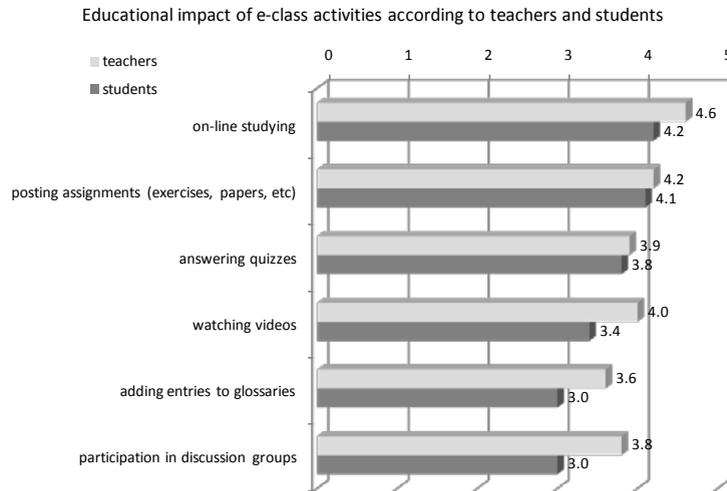


Fig. 3. Educational impact of e-class activities according to teachers and students. Numbers represent the number average of the Likert scale score of each activity.

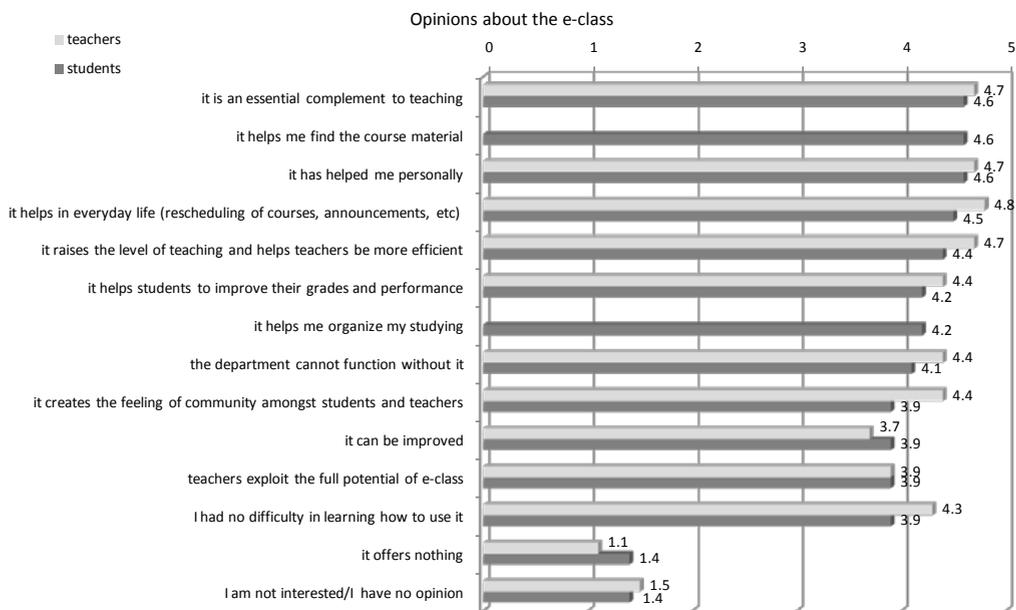


Fig. 4. Opinions of teachers and students about the e-class. Numbers represent the number average of the Likert scale score of each opinion.

Fig. 4 presents the opinions of the involved groups about the e-class. The participants had to choose from a list of predefined statements, and grade them according to a typical Likert scale. Most statements were common (or suitably adapted) for both students and teachers. The fact that the average scores for most of the positive statements is above or near 4 indicates the participants' agreement to them, which in turn shows that

the e-class is appreciated and extensively used by both involved groups. It is important to note that all participants disagree/strongly disagree with the one negative (“it offers nothing”) and the one neutral statement (“I am not interested/I have no opinion”) concerning the e-class.

Concerning the technical aspects of the e-class, participants agree that all technical elements are at least satisfactory, since they agree/strongly agree with the statements seen in the next graph (Fig. 5).

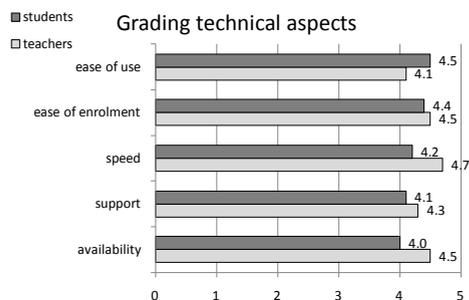


Fig. 5. Grading technical aspects of the e-class. Numbers represent the number average of the Likert scale score of each opinion.

16 out of 35 answers to an optional open question asking students for suggestions for the improvement of the e-class demanded the participation of all the teaching staff and the coverage of all courses. To the same question, 3 out of 5 teachers asked for more support in using the software.

5. Conclusions and Outlook

Results indicate that the e-class is an indispensable teaching tool and demonstrate that it is extensively used and highly appreciated by both faculty and students. The impressive volume of the already existing course material serves very well the educational targets of the e-class, and from the technical point of view, the e-class infrastructure runs smoothly and fulfills the expectations of all the parts involved. Nevertheless, several issues emerged as a result of this study. First and most important, the Department must enforce the participation of all the teaching staff in the e-class and the coverage of all courses. Second, an organized training of the teaching staff seems to be necessary, in order to enable them to delve more deeply into the advanced features of moodle. Other issues include: the issuing of a directive to all teaching staff to use the e-class for the student preparation for the exams and for the dissemination of students’ grades and absences. The encouragement of the use of quizzes, glossaries and discussion groups, and of interactive and collaborative activities in general as much as possible. Finally, we believe that this survey marks the end of the Departments’ e-class infancy and sets the foundation for a more mature and organized effort. In a future research we will try to verify our inkling that the performance of the students has improved after the introduction of the e-class, and that the class attendance is better for courses with a well organized e-class – which is contrary to what one may expect!

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