Evaluating a Learning Management System for Blended Learning in Higher Education

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Evaluating a Learning Management System for Blended Learning in Higher Education

***Abstract*— This paper focuses on the usage of a Learning Management System in an educational institution for higher education in in Greece. More specifically, the paper examines the literature on the use of different Learning Management Systems for blended learning in higher education in Greek Universities and Technological Educational Institutions and reviews on the advantages and disadvantages. Moreover, the paper describes the usage of Open eClass platform in a Technological Educational Institution, TEI of Ionian Islands, and the effort to improve the educational material by organizing it and adding video-lectures. The platform has been evaluated by the students of the TEI of Ionian Islands based on six dimensions, namely student, teacher, course, technology, system design, and environmental dimension. The results of evaluation revealed that Open eClass has been successfully used for blended learning in TEI of Ionian Islands. Despite the instructors' initial worries of student not participating their courses if their educational material was made available online and especially in video lectures; blended learning did not reduce physical presence of the student in the classroom. Instead it was only used as a supplementary tool in order to help students study further, watch missed lectures, etc.**

Keywords—Blended Learning; Learning Management Systems; e-Learning;

I. INTRODUCTION

With the rapid increase in Internet use, online instruction is now widely adopted in universities and other educational organisations (Huang et al. 2012). The online learning environments provide flexibility for students regarding time and place as well as a self-paced learning (Terrell & Dringus 2000; Graff 2003; Virvou & Alepis 2013; Alepis & Virvou 2014). As a result, many online activities have come to influence traditional learning. This new form of learning is called blended learning. Indeed, blended learning classes are the classes where face to face and online activities are integrated in a planned, pedagogically valuable manner and online activities replace some face to face time (So & Brush 2008; Olapirivakul & Sher 2006; Picciano 2009).

The evolving symbiosis of technology with traditional pedagogical approaches, facilitating content richness, flexible content access and alternative communication channels, may benefit the learning process (Nikolaidou et al. 2010). Researchers have argued about the advantages of the combination of face to face teaching and online learning and emphasize on the promotion of learner-centered, active and constructive learning (O'Donnell et al. 2006; Salomon & Ben-Zvi 2006; Stahl 2006; Giannousi et al. 2014). As a result, the use of computer-mediated communication (CMC) and e-Learning tools increases in higher education (Kanuka 2002; Collett & Caswell 2002; Rovai 2002; Stodel et al. 2006). According to a survey of the National Postsecondary Education Cooperative in 2006 and 2007, 61% of degree-granting postsecondary institutions run online courses (National Postsecondary Education Cooperative 2008).

For this purpose, different systems for e-Learning have been developed. However, a problem that these systems have is that they are static, not easily reusable and cannot address the needs of a higher educational institution such as a university that offers a variety of courses. This is especially the case of Technological Educational Institutions in Greece, which offers not only theoretical lessons but workshops as well. For this purpose, the Learning Management Systems (LMSs) seem to offer a very good solution, as they provide the instructors the capability of designing and administrate their courses as they want. In this way the blended learning is better supported.

In the last decade, in Greece, there was an effort to employ LMSs in all universities and TEIs. In this paper, we try to review the usage of LMS in different institution of higher education in Greece and focus on the case of TEI of Ionian Islands. The TEI of Ionian Islands is a higher education institution that has special character due to the fact that its departments spread in three different islands between Greece and Italy. Indeed, as Pituch & Lee (2006) point out, online learning systems that facilitate blended learning may better accommodate the needs of learners or instructors who are geographically dispersed and have conflicting schedules.

As blended e-Learning systems emerge perhaps the most prominent instructional delivery solution, it is vital to explore what determines learning satisfaction (Wu et al. 2010). Therefore, the LMS used in the case study described has been evaluated. In an e-Learning environment, several factors account for users' satisfaction. Those factors can be categorized into six dimensions: student, teacher, course, technology, system design, and environmental dimension (Sun et al. 2008). In view of these factors, we have implemented an evaluation experiment of a LMS used in TEI of Ionian Islands with the participation of students, who are the real users of the system.

The rest of the paper is organized as follows: Section 2 discusses related work in blended learning and Learning Management Systems in general. In sections 3 and 4, we try to analyze the usage of Learning Management Systems in higher education in Greece taking into account the publications of the past. In Sections 5 and 6, we describe the case of Ionian Islands and the

evaluation experiment conducted with the participation of real users. Finally, in the last sections we discuss the conclusions drawn by this work.

II. Blended Learning and Learning Management Systems

The integration of traditional classroom methods with online activities is called blended learning (Graham 2006; Macdonald 2008; López-Pérez et al. 2011). It has been suggested by many researchers that blended learning methods are effective in facilitating the process of online collaborative learning (Carr-Chellman et al. 2000; Gabriel 2004; So & Brush 2008). However, the success of blended learning is not only the result of the simple integration of two different forms of learning (De George-Walker & Keeffe 2010). The main advantages of this new form of learning mainly appear in situations where student numbers are high and, therefore, the existence of Information and Communication Technologies (ICTs) provides the opportunity to comprehend and extend the knowledge presented in a more efficient way (Singh 2010). For this purpose, blended learning models have been used more extensively in higher education than in lower levels of education (Garrison & Kanuka 2004).

Indeed, the use of different methods in teaching and learning enables students to comprehend the subject being taught better, clarify the rules and goals of the course and gives them a self-paced learning and greater flexibility (Ginns et al. 2007; Macedo-Rouet et al. 2009; López-Pérez et al. 2011). A closer examination reveals the ability of asynchronous Internet communication technology to facilitate a simultaneous independent and collaborative learning experience (Garrison & Kanuka 2004). However, there are also reports that students may encounter difficulties in adjusting to blended learning (e.g Bonk et al. 2002).

Blended learning is supported by Learning Management Systems (LMSs), which are mainly Course Management Systems (CMSs) that are extensively used for supporting blended learning. The main tools that all LMSs provide are:

- Asynchronous and synchronous communication
- Content development and delivery
- Formative and summative assessment

The asynchronous and synchronous communication may involve announcement areas, e-mail, chat, forums etc. The content development and delivery may involve learning resources, learning objects, files, links to internet resources, etc. Finally, the formative and summative assessement mainly involves tools for self-evaluation, multiple choice questions etc.

As a result, many LMSs have been developed for supporting blended learning such as WebCT (www.webct.com) and Cyber University of NSYSU (cu.nsysu.edu.tw). Such systems can provide instructors and learners with multiple, flexible instructional methods, educational technologies, interaction mechanisms or learning resources and applying them in an interactive learning environment to overcome the limitations of classroom and e-learning (Wu et al. 2010). However, the Learning Management Systems that have been more extensively used in Greece are Moodle, Blackboard System and e-class.

The Blackboard Learning System (http://www. blackborad.com) provides traditional instruction and powers pure distance learning providing specific utilities (Yaskin & Everhart 2002) such as content management and sharing, assessment management, gradebook and assignment management, collaboration and communication, student and instructor portfolio, etc. Blackboard system had been extensively used in educational instistutions in North America. Indeed, in a study in 2003 that involved 113 educational institutions all over the world, Blackboard is identified as a major American-based LMS (Paulsen 2003).

Although Blackboard is an effective and efficient LMS, it also has some drawbacks. As Ng (2008) point out some resources published in the Blackboard system cannot be shared by other users due to copyright problems. Other technical limitation is associated with the management of hyperlinks between and within documents.

Moodle, on the other hand, is an open-source learning platform designed to provide educators, administrators and learners with a single robust, secure and integrated system to create learning environments (www.moodle.org). The main advantage of moodle in comparison to other commercial LMSs is that the courses developed are based on the constructionist pedagody (Veglis & Pomportsis 2005). Other advantages include:

- Language packs in more than 80 languages
- Open source and therefore, free download, modification and distribution
- Different database software is supported
- elearning standards such as SCORM are adopted
- Many Moodle themes allow Moodle to be used easily on mobile devices.

Finally, the Greek University Network (http://www.gunet.gr) has developed the platform E-class (http://eclass.gunet.gr) that is based on Claroline (http://www.claroline.net). This LMS is also open source and, therefore, free to download, modify and distribute. The platform has been translated in more than 35 languages and used in over 100 countries. The users can create learning paths compatible to the elearning standard SCORM and provides a set of utilities for composing exercises, structuring agenda with tasks and deadlines, post notifications, writing collaborative documents, asynchronous communication such as forums, links to internet resources, publishing documents in any format, group management, learning objects etc.

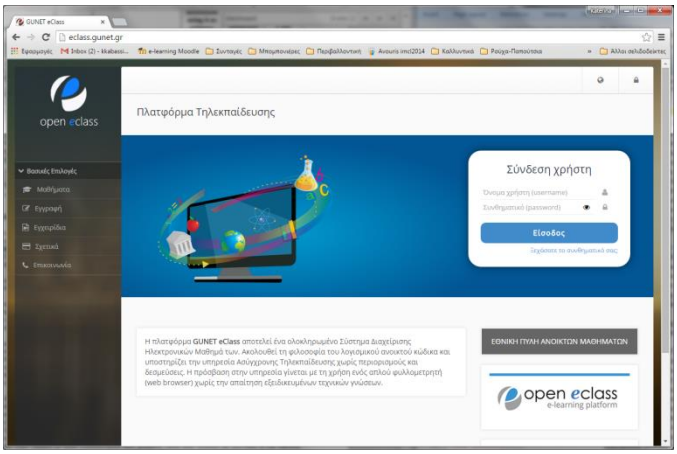

Figure1: Screenshot of Open e-class platform

III. LMS IN HIGHER EDUCATION IN GREECE

The rapid uptake of campus-wide Learning Management Systems is changing the character of the on-campus learning experience (Coates et al. 2005). Indeed, according to several studies (e.g. (Wang 2010)) delivering information via the web is gaining popularity among both students and staff. LMS can support an entire university's teaching and learning programs.

In Greece LMS have been starting to be used after 2000. For example, Aristotle University of Thessaloniki (AUTh) installed the Blackboard Learning System in 2003. (Veglis & Pomportsis 2005). In an effort to expand the usage of LMSs in higher education in Greece in a uniform way, the Greek University Network (GUNet) distributed the platform E-class. Furthermore, it provided support for the implementation of the eclass platform in any institution by facilitating its installation and operation. In addition, the eclass platform provides an internal structure for each lesson, which promotes communication between learners and educators, learning with active participation and ensures open and free access to educational material (Papachristos et al. 2010).

As a result, the Open e-class platform was adopted by most of the Universities and TEIs. Indeed, reports have been found for the usage of e-class in TEI of Chalkida (Papazoglou et al 2005; Spathopoulos 2007), Alexander TEI of Thesaloniki (Tzitzolaki et al. 2014), University of Thrace (Vernadakis et al. 2009), TEI of Epirus (Giannelou et al. 2005), TEI of Athens (Georgouli et al. 2005; Karolidis et al. 2005; Tsiakas et al. 2005), TEI of Lamia (Tziallas et al. 2005), Hellenic Open University (Papadakis et al. 2005), TEI of Crete (Vassilakis et al. 2005; Kalogiannakis et al. 2005), TEI of Larissa (Blanas 2008), Harokopio University (Chalkias & Anagnostopoulos 2004) etc.

Pange & Lekka (2012) in a pilot study of examining the educational packages offered via Internet by Universities and TEIs in Greece, they found out that 72% of the randomly selected courses were delivered by Open eClass. Although the official LMS of most Universities and TEIs is Open e-class, the flexibility of moodle as well as the fact that it does not cost anything have made it attractive to many universities who use it as a secondary LMS. However, the use of moodle is not official in most cases.

IV. EVALUATING THE USE OF LMS IN HIGHER EDUCATION IN GREECE

Several studies (Ansorge & Bendus 2004; Boggs et al. 2004; Jones & Jones 2005; Vernadakis et al. 2009) reported that CMS have contributed positively to both instructional and learning needs. Therefore, in this section we will present different studies that are associated with the usage of Open e-class in Universities and TEIs in Greece.

More specifically, Kabouridis (2010) describe a study on the use of e-class in the department of Mechanical Engineering in TEI of Patras. The study participated tutors in a semi-structured interview and students answering a questionnaire. The main conclusion of this study was that the stakeholders of the University in 21st century must realize that cannot ignore the new academic framework of the e-education.

Similarly, Leventidis et al. (2005) and Georgouli et al. (2005) argue that the incorporation of distance learning tools and specifically the open source e-learning platform e-class has paved a new road in the educational procedure and enriches the traditional teaching methods by encouraging the interaction among teachers, students and educational material.

The usage of Open e-class in TEI of Chalkida is described in Papazoglou et al. (2005) and Spathopoulos (2007). More specifically, Spathopoulos (2007) conducted a study about the use of e-class in the Department of Aircraft Technology at the Technological Education Institute (TEI) of Chalkida and concluded that the e-class platform was user-friendly and had easily and inexpensively been used to supplement a traditional classroom with a virtual one. This supplement had considerably reduced the amount of administration and management time required for the subjects taught and the students were very positive as they felt that the teaching quality has been improved.

Chalkias & Anagnostopoulos (2004) and Nikolaidou et al. (2010) describe the usage of open e-class in Harokopio University. The latter authors have conducted an evaluation study of the LMS with the participation of students, instructors and infrastructure-technology specialists to evaluate the ecosystem of blended learning. The most interesting observation of this research is that despite the instructors' initial worries; blended learning did not reduce physical presence of the student in the classroom, neither face-to-face instructor –student communication. Vernadakis et al. (2009), on the other hand, in a study for the acceptance of the Content Management System in the University of Thrace had less positive perception toward physical education courses using this CMS than other students.

Such worries were also noted in Tzitzolaki et al. (2014) who described a study on e-class with the participation of professors in the Alexander TEI of Thessaloniki. They observed that the subjects maybe did not use the ICT tools because they doubt if these tools reinforce the educational process or because of the intervention of some psychological factors (such as ignorance, fear or insecurity) affect their perceptions.

Possitive attitude on the platform is reported in the study of Giannelou et al. (2005) in TEI of Epirus. The study conducted by the department of Informatics at TEI of Athens also reports very encouraging results about the eclass usage (Georgouli et al. 2005) as students characterize e-class as user-friendly and this results to better adoptability. However, the main advantage of the eLearning platform usage is that it increases student's homework time and improves student's scores. A different electronic study but the same educational institution, is conducted by Tsiakas et al. (2005). The results of the study they conducted revealed that every innovation in the field of education attracts students' interest and students must be encouraged to develop initiative and pursue knowledge, rather than merely react and absorb.

Similarly, students in TEI of Crete appear to be more stimulated when they have to attend a course through the e-class platform (Vassilakis et al. 2005; Kalogiannakis et al. 2005). In Vassilakis et al. (2005) study in TEI of Crete it is concluded that access to distant resources is rapidly becoming common place and the platform's users consider that they are more active and productive in the asynchronous e-teaching environment, although they have not fully exploited it yet.

Georgouli et al. (2006) attempted to analyze the use of the asynchronous e-learning platform, the e-Class, at the TEI of Athens and compare the results of this analysis to observations made at the Department of Informatics of the Universidade Nova de Lisboa that used Moodle. The e-Class open source asynchronous e-learning platform has proven to be a valuable, extensible, versatile and powerful tool that can assist many educational tasks. Similar were the finding of the study of Tziallas et al. (2005) at TEI of Lamia, where it was reported that the simplicity of the platform and the fact that it is free are the main advantages for the usage of e-class.

Some studies focus more on the functionality of the platform. For example, Leventidis et al. (2005) analysed the various tools of the platform and found out that the most popular tools were agenda, announcements, assignments and forum. However, as Papachristos et al. (2010) in an extensive study on the use of the platform have observed, many features are not fully activated or updated. Additionally, in many cases the educational material was found to be either repetitive or very poor. Furthermore, the use of multimedia is recorded, even though it is still at a basic level (eg, presentation software, photographs, drawings, images) without often using animation or video.

Papachristos et al. (2010) also reported that another serious problem is the lack of availability of courses in foreign languages, which does not give any opportunity to attract international students. Other limitations were also found in a survey conducted by Lagiou et al. (2014) about the use of web 2.0 tools in adult education. Some of the problems identified involve semantic modelling of the course learning objectives and a mapping of how activities, materials and assignments address the learning objectives. They also note the importance of mobile devices as a supplementary tool in their learning activities.

V. The Case of TEI of Ionian Islands

TEI of Ionian Islands is a Higher Education Institution that has its departments spread in three different islands, namely Zakynthos, Kefalonia and Leykada. These islands are located in Ionion Pelagos, which is between Greece and Italy. The students are Greek from different parts of Greece. This special character of this educational institution increased the need for a Learning

Management System that provides the educational material through the internet to all students and instructors. Additionally, collaborative learning may be better supported by the use of such platforms.

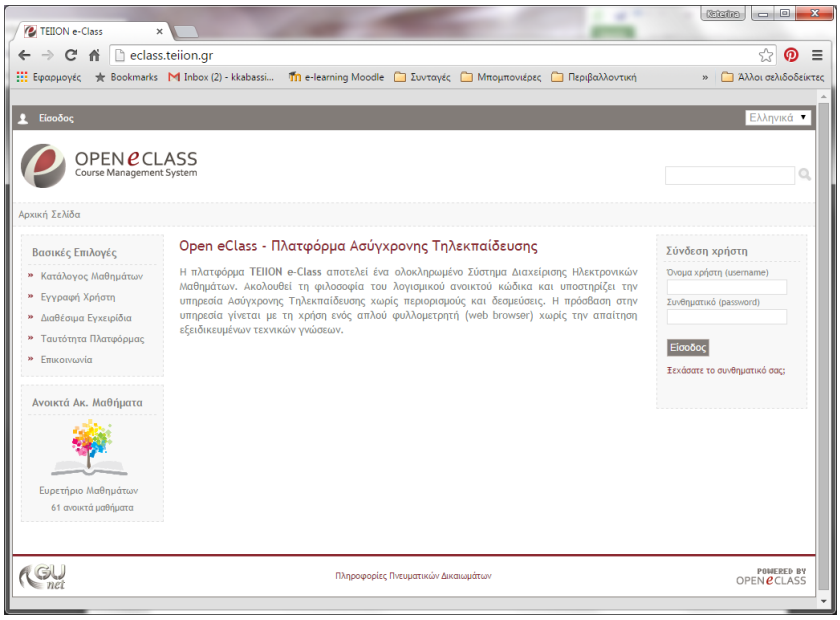

Figure 2: Screenshot of the Open e-class platform in TEI of Ionian Islands

The Open e-class Platform was established in TEI of Ionian Islands in 2006 and it has today 337 courses and 289 instructors that use the platform. Today, over 70% of institution's current available courses are supported through this platform. However, the instructors mainly use the platform as a supplementary tool for disseminating their files and they do not make use of all the platform's features.

As a result, the last two years, the institution runs the open courses project (http://opencourses.teiion.gr/) that aims at introducing the platform to the tutors and the students and enhancing the teaching material provided in the courses provided by the LMS. For this purpose each department of the TEI of Ionian Islands uses the open e-class platform to provide blended learning to the students of these courses. There are courses that are organized to provide material mainly in text whereas for some other courses some video-lectures have been prepared. The tutors selected to participate the project based on their interest in having video-lectures as learning material. Furthermore, the project introduced tutors to subject copyright issues, either in disseminating their work or even in using 3rd-party material.

The result of the project was that the LMS was significantly enhanced the platform with updated material and provided video-lectures. Zhang et al. (2006) conducted an extensive research which revealed the benefits from e-learning and especially video. Indeed, they report that video allows students to view actual objects and realistic scenes, to see sequences in motion, and to listen to narration.

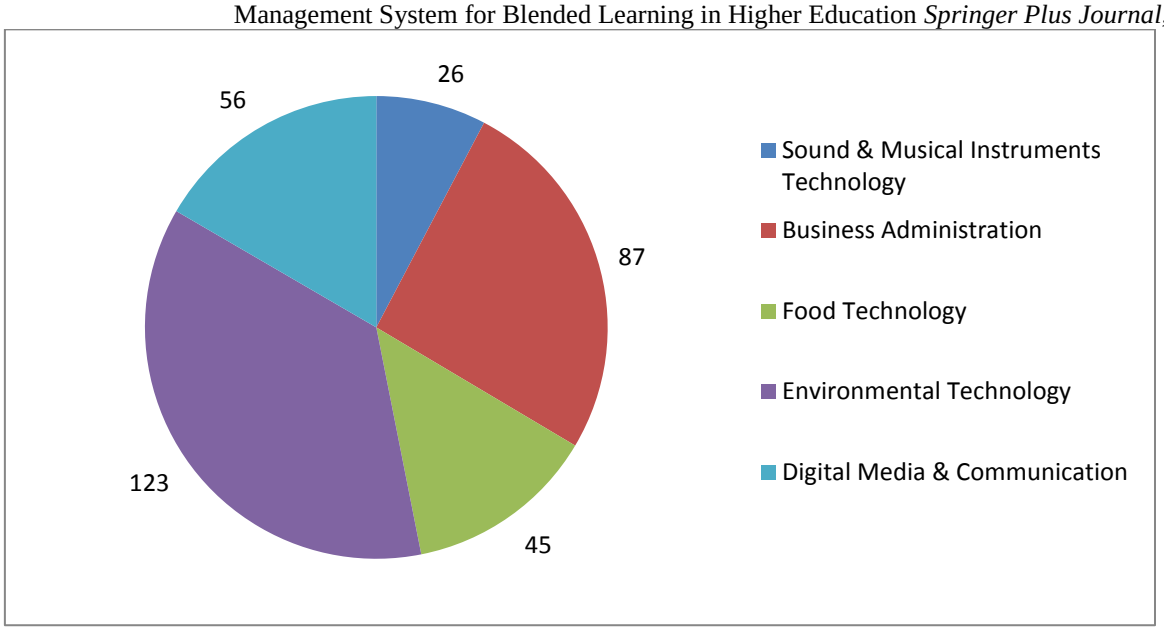

Figure 3: Usage of the Open e-class platform by the different departments in TEI of Ionian Islands

Figure 3 presents the departments of the educational institution and how much each department uses the platform. Indeed, the departments that seems to use more the platform is Environmental Technology and Business Administrator due to the fact that each one has two different faculties. Furthermore, the subject of the department seems to play an important role in the usage of the LMS. For example, the instructors of the department of Digital Media and Communication use the platform more extensively compared to the instructors of the department of Sound and Musical Instruments Technology or the department of Food Technology.

By means of use, the platform visitors mainly target the two larger departments, namely Business Administration (39%) and the department of Environmental Technology (34%), which host the main amount of institution's students, and also have the most significant LMS technologies pervasion and acceptance percentage. Then the departments of Food Technology and Digital Media & Communication also have adequate visitors (12% each) and only the department of Sound Technology and Musical Instruments has limited visitors in its courses.

There is a significant increment of visitors during the three yearly exam periods, January-February, June and September, but also a constant number of visits during the semester's period, which indicates exactly the complementarity and utilization of on-line courses in real-time teaching process.

VI. Evaluation Experiment

In an e-Learning environment, several factors account for users' satisfaction. Those factors can be categorized into six dimensions: student, teacher, course, technology, system design, and environmental dimension (Sun et al. 2008). Taking into account these dimensions a questionnaire was designed. Except for the demographic questions e.g. sex, academic semester etc, the questionnaire contained questions for the six dimensions described above (Table 1).

Platform – General Questions	**Coursework frequency at your department (weekly)**
	Frequency of usage of the electronic platform e-class (weekly)
	At which academic year did you learn for the electronic platform e-class?
Student	**What internet connection do you have in your house?**
	How familiar are you with the p/c usage?
	How familiar are you with the asynchronous e-learning systems?
Teacher	**What do you think that the professor/teacher should take account in order to make his/her teaching more effective?**
Design	**Are you satisfied with the remote monitoring (e-distance learning) of the education process through the e-class electronic platform?**
Courses	**How many times have you visited the electronic platform e-class?**

	Why did you decide to attend online courses through the e-class electronic educational platform?
	Were there reasons that prevented you from monitoring online courses?
	Did the availability and the promotion of the educational material help you? Justify your answer
	How sufficient was the educational material in relation to the courses' requirements/demands?
	Where did the video lectures help you?
	How much did the video lectures help you for the final exams?
	What do you think for the development of the open electronic courses via e-class?
	How satisfied are you on the video lectures in relation to the requirements of the course?
	Do you think that it's better for the face-to-face teaching, e-learning or combination of the two?
Environment	**The video lectures prevented you from attending classes at your University?**
	Do you find attractive the idea of the existence of video lectures?
	Are you interested in the existence of video lectures for workshops?
	Are you more interested in attending via internet video lectures or video workshops?
	Would you be interested in the creation of a chat-room (via e-class) to chat with the instructors?
	Would you find interesting the idea of creating a forum?
	Does the existence of the electronic material online help you cooperating with your classmates?
Technology	**What do you think about the technology? Do you believe that it permitted sufficiently the transmission of the course via Internet?**

Table 1: The questions of the questionnaires categorized into six dimensions

The questionnaires were given to 324 students that were randomly selected from all the departments of the TEI of Ionian Islands. The questionnaires were distributed during the courses and the collected questionnaires were further analyzed to check the Open e-class in terms of the dimensions that are related to the student, teacher, course, technology, system design, and environment.

Generally, the students participating the experiment got familiar with the electronic platform e-class in the first year of their studies (88%) and use it since then as a supplement of the traditional coursework. Attending lectures in University is not obligating for theoretical lessons but is obligating for workshops. Taking into account this fact, most of students (53%) attend classes 4 to 5 times a week and visit the electronic platform just 2 to 3 times a week (45%). This shows that the system is used as a supplementary tool but has not equal importance to lectures and cannot in any case replace the role of the teacher and the face-to face communication.

As far as the dimension student is concerned, the participants were asked about the familiarity with computers and internet. Most of the students indicated that they are familiar with pc usage. Most specifically, 87% of the students stated that they are familiar with the computers more than average. Additionally, 58% of the students stated that were also quite familiar with asynchronous e-learning systems. However, almost a quarter of the students (26%) do not have a domestic internet connection at home.

As far as the dimension teacher is concerned, the students were asked about the actions s/he should take to improve the course. Some of the suggestions involved improvement of his/her communication skills (27%), personalization of the educational process by taking into account the level of its students (23%) and simplification of the course (15%).

Almost half of the students (55%) stated that they were not satisfied with the distance learning provided by the platform. This is not really surprising as the platform the latter year has been enhanced with educational material and information about the courses. The rest of the users were averagely satisfied with the platform (37%) and only a few were very satisfied.

The dimension about the courses involved several questions and revealed that 84% of students thought that there was no preventing reason for not monitoring online courses. Additionally, 79% of the students participating the evaluation experiment visited an average to many times the electronic platform. The main reasons for students to visit the Open e-class platform to view the supplementary material for the courses were further reading (32%), a missed lecture (18%), studying deficiency (15%) and distance (15%) (Figure 4). Indeed, 72% of the student indicated that the availability and the promotion of the educational material in the Open e-class platform helped them more than enough.

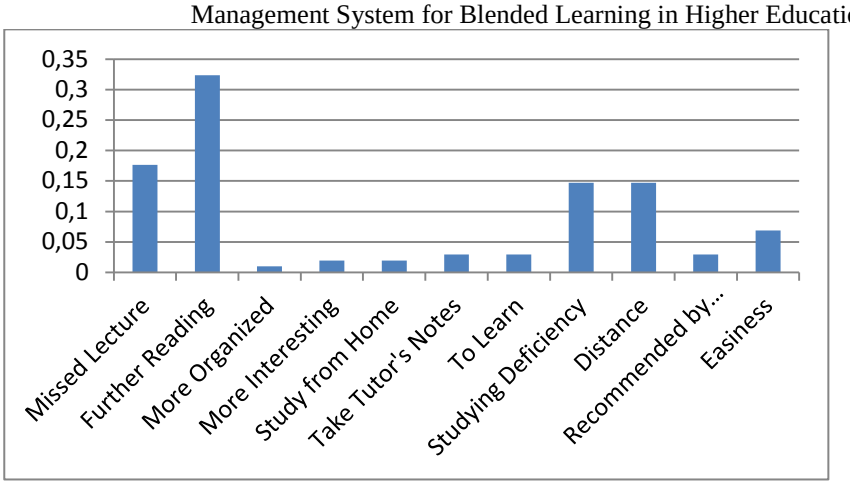

Figure 4: Answers in the question "Why did you decide to attend online courses through the e-class electronic educational platform?"

41% of students found averagely sufficient the educational material in relation to the courses' requirements/demands and another 23% found it very sufficient (Figure 5). 58% of the students asked during the evaluation experiment think that the development of the open electronic courses via e-class was good, while asking for better organization and enrichment of the educational material. 12% thought that the material provided and the organization was sufficient. 27% asked for more courses in the Open e-class platform and only 3% stated that they did not use the platform at all and read the educational material only through books and printed notes.

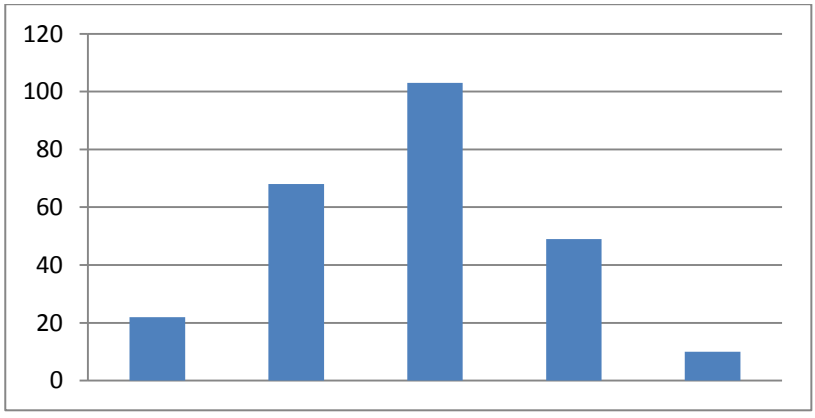

Figure 5: Answers in the question "How sufficient was the educational material in relation to the courses' requirements/demands?"

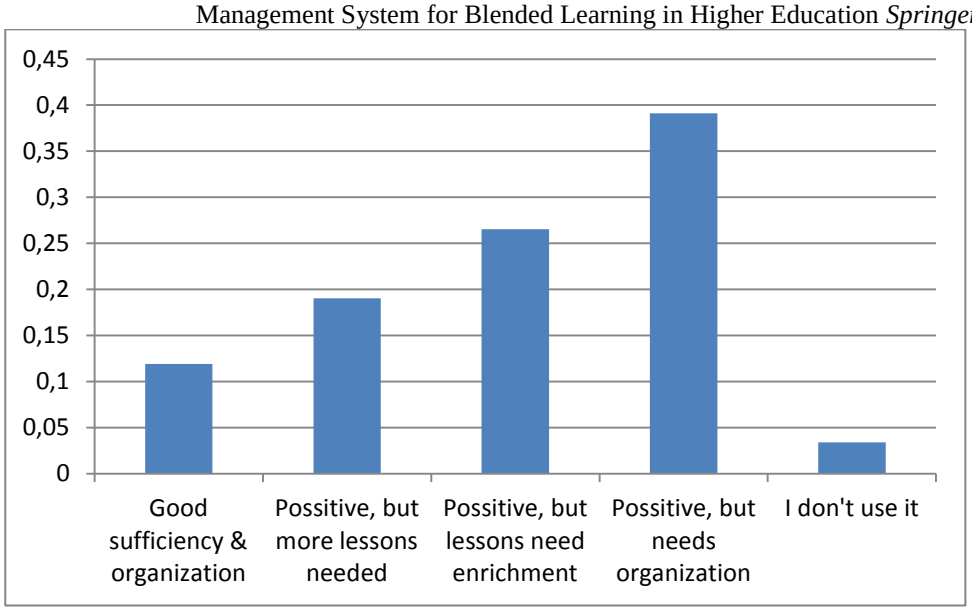

Figure 6: Answers in the question "What do you think for the development of the open electronic courses via e-class?"

A main part of the questions that evaluated the dimension about the courses was about the video lectures. Students stated that they were not so satisfied (90%) of them in relation to the requirements of the course but they were highly valued as a further reading material (29%) or note-taking supplement (21%) (Figure 7). These results are rather expected due to the fact that the time the evaluation experiment took place, the departments of TEI in Cephalonia Island had no course in the Open e-class platform that had uploaded video lectures, the departments in Leykada Island and Zakynthos Island had only one in each department. As a result, only a few users were familiar with the video lectures in the educational platform. The main conclusion drawn by the whole experiment is that most of the students (74%) prefer a combination of the face-to-face teaching and e-learning.

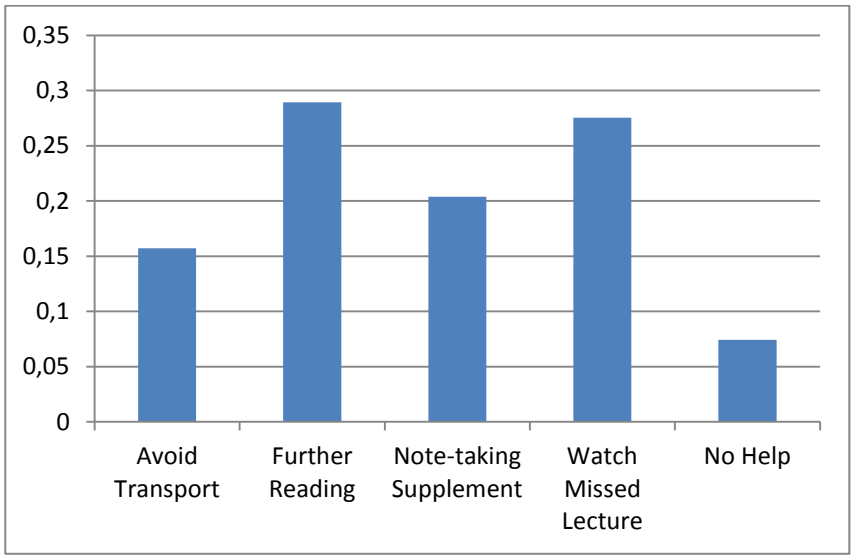

Figure 7: Answers in the question "Where did the video lectures help you?"

One of the main concerns of the teachers of TEI was that if they made video lectures of their lessons then the students would not participate in the courses actively. Contrary to what these teachers thought, 86% of students don't think that the video lectures

really prevented them from attending classes at University but used them mainly during the final exams period as an additional reading material (53%). 67% of students find really attractive the idea of the existence of video lectures for all courses uploaded in the Open e-class platform and 76% of the students also stated that it would be interesting to have video lectures for workshops. Almost half of the students completing the questionnaires would like to have both video lectures and video workshops. However, the students that prefer video lectures only for the theoretical lessons (31%) are more than the students that prefer video lectures for the workshops (15%).

The students also stated a preference for collaboration with each other through the platform. More specifically, 79% of students would like to have a chat-room and 79% of them would like to have some kind of asynchronous communication, such as a forum. However, the educational material provided through the platform proved to be a mean of collaboration between the students according to the 74% of the students participating the experiment.

With respect to the dimension technology, 74% of the students believe that technology permitted sufficiently enough the transmission of the course via Internet.

VII. Conclusions

In this paper we tried to evaluate the Open e-class platform as a mean for providing blended learning in an institution for higher education in Greece. For this purpose, a review of the different studies, which were associated with the usage of Open e-class in Universities and TEIs in Greece, has been conducted and focuses mainly on the main advantages and disadvantages derived by tis usage in all institutions.

Special emphasis has been given in the usage of the Open eClass platform in TEI of Ionian Islands, an educational institution that they used Learning Management Systems to improve its educational process. The special character of this educational institution that has its departments spread in three different islands increases the need for an educational platform that provides learning material via the web. In this case the departments may share material and the tutors can more easily cooperate with each other and promote their course to the students.

Indeed the analysis of usage of the platform Open eClass in institutions for Higher Education in Greece revealed that the positive effects of the LMS in students and instructors. An advantage that was revealed by the usage of a LMS was the improvement of the teaching quality by promoting blended learning. Indeed, in many cases it was reported that the platform played an important role in the educational process as a supplementary tool.

The open e-class platform has been established in TEI of Ionian Islands since 2006. However, only the last year there has been a systematic effort to organize courses according to a specific template, review copyrights and enhance the educational material with video lectures. The last semester an evaluation experiment took place. The experiment aimed at evaluating the platform based on a six dimensions model proposed by Sun et al. (2008). The experiment revealed that most of the student get familiar with the platform in the first year of their studies and use it as a supplementary tool but cannot in any case replace the role of the teacher and the face-to face communication with him/her. They generally use the platform to acquire information for further reading, a missed lecture etc.

Despite the instructors' initial worries of student not participating their courses if their educational material was made available online and especially in video lectures; it was made clear that blended learning did not reduce physical presence of the student in the classroom, neither face-to-face instructor –student communication. Indeed, the evaluation experiment revealed that most of the students prefer a combination of the face-to-face teaching and e-learning. Of course, there had been studies (e.g. Vernadakis et al. 2009) that had less positive perception towards blended learning but this may be depending on the way blended learning is implemented.

Almost half of the students in our evaluation experiment stated that they were not satisfied with the distance learning provided by the platform, which is rather expected as the platform only the latter year has been enhanced with educational material and information about the courses. Contrary to their general feeling, 64% of the student found the educational material sufficient and really helpful.

The students of TEI of Ionian islands were also asked about the video lectures. Video lectures were available only in a few courses and, therefore, were not considered adequate and satisfying. However, they were highly valued as a further reading material or note-taking supplement. One of the main concerns of the teachers of TEI was that if they made video lectures of their lessons then the students would not participate in the courses actively. Contrary to these negative perceptions, most of the students thought that the video lectures did not really prevent them from attending classes at University but helped them complementary to the face-to-face lecture. An interesting finding was that students wanted the video lectures to be expanded in workshops and not

only in theoretical lessons. An interesting dimension of the platform revealed by the students is that the platform can promote collaboration by providing tools for synchronous or asynchronous communication

One problem of the platform identified in the literature and confirmed by this research is the lack of availability of courses in foreign languages, which does not give any opportunity to attract international students. Furthermore, the usage of mobile application has been overlooked although the students use such devices quite often.

It is among our future plans to expand further the platform by implementing more courses and video lectures and run a more general evaluation experiment after two years so that students have the time to get more familiarized with the platform and the educational material.

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IX. COMPETING INTEREST

Katerina Kabassi kai Ioannis Dragonas have done the literature review and have written introduction and conclusions of the paper. All the authors of the paper have worked equally for the evaluation experiment.

X. AUTHOR'S CONTRIBUTION

All authors have worked equally for all the parts of the paper.

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