Learning Management Systems usage on Higher Education Institutions

Rosalina Babo, ISCAP, Porto, Portugal, babo@iscap.ipp.pt
Ana Azevedo, ISCAP, Porto, Portugal, aazevedo@iscap.ipp.pt

Abstract

Learning Management Systems (LMS) are used all over Higher Education Institutions (HEI) and the need to know and understand its adoption and usage arises. However, there is a lack of information about how LMSs are being used, which are the most adopted, whether there is a country adoption standard and which countries use more LMSs.
A research team is developing a project that tries to fill this lack of information and provide the needed answers. With this purpose, on a first phase, it a survey was taken place. The results of this survey are presented in this paper. Another purpose of this paper is to disseminate the ongoing project.

Key words: Learning Management Systems, Higher Education Institutions, Online Surveys, e-learning, b-learning

1. Introduction

During the last years, the application of policies for Information and Communication Technology (ICT) in higher education have revealed that professors and policy-makers have to be convinced of the profits of using ICT before it is effectively implemented. Lots of universities have already productively introduced programs that conferred to ICT a more important and valuable position in their educational programs. (Sjoer & Dopper, 2006)

Nowadays, LMS are being used all over HEI, since, on one hand, there are different institutional cultures and characteristics and, on the other hand, there are several distinct LMS tools, it is expected to find out distinct experiences. The richness of each of the experiences can help the worldwide community to better understand how well LMS are being used.

Other studies have done an approach to these issues. For instance, the European survey (Mc Cullough & Aimard, 2006) intends to assess the state-of-art of e-learning, from the point of view of a vanguard group of stakeholders implicated in learning circumstances. There are considerable regional disparities inside Europe when we talk about the level of implementation of LMS (Paulsen, 2003). According to Paulsen, in 2003 American LMS were largely disseminated among European Institutions.

Institutions are dynamic systems, therefore they adapt to the best that the market offers. As an illustration we have the case of the Humboldt State University (Bradley *et al.*, 2007) where, between 1997 and 1999 they used ExamMaker, between 1999 and 2001 they used WebCT, and from 2002 until the present they have been using Blackboard as well as, since 2003 until the present, they have been using Moodle.

There is a feeling that there is a lack of information about how LMS are being used, which are the most adopted LMS, whether there is a country adoption standard, which are the countries that use more LMS, for instance. Consequently there is a need to know and understand LMS adoption and usage on HEI. Therefore, the goal of this project is to fill this gap. Then it is important to find out the reasons why a LMS is used, which are the scientific areas with the highest utilization rates, and also the gender and age with the highest utilizations rates. After that, it is vital to develop comparative studies between several LMS platforms and also comparative studies between the observed countries. It is also vital to evaluate the level of utilization of the platforms.

This paper presents the initial phase of the study, as well as the design of the next phases. In the next section some concepts about LMS are presented, and, in section 3, there are some aspects concerning the developed study design. After that, we present the obtained results in the first survey and finally, directions for the next phase of this project are presented.

2. Considerations on Learning Management Systems

According to (Watson & Watson, 2007), the term LMS is used to describe different educational computer applications. LMS is the framework that holds all sides of the learning process, including skills gap analysis. It is the infrastructure that is responsible to deliver and manage the infrastructural content, to identify and assess individual and organizational learning or training goals, to follow the process in order to reach those goals, and to collect and present data for supervising the learning process of an organization as a whole. (Ellis & Calvo, 2007) define LMS as "software systems designed to support student learning. They contain a number of presentation, assessment, communication, and management tools". Bailey (1993), quoted by (Watson & Watson, 2007), refers that, on education, LMS should fill certain demands. He tells that instructional objectives are tied to individual lessons and lessons are incorporated into the standardized curriculum. He also says that courseware extends several grade levels in a consistent manner. A management system collects the results of student performance and lessons are provided based on the individual student's learning process. According to (Wang & Chen, 2009), "an LMS employs a range of information and communication technologies to offer an online platform over the Internet, where a whole course can be planned, facilitated and managed by both the teacher and the learner". They present learning material management, discussion forums, group emailing, audio conferencing, video conferencing, text chat, and whiteboard and synchronous document sharing as the main functions of some of the LMS nowadays available for educational purposes.

The American Society for Training & Development in (Learning Circuits, 2005), proposes some useful requirements for a LMS. Initially, it is essential to enable integration with the human resources system and incorporate tools which enable the administration to manage user registrations and develop user profiles, set curricula and certification paths, assign tutors and tutorial content, administer budgets and prepare schedules for learners, instructors and classrooms. It is also important to provide access to content delivery involving the medium, method and learners. It is recommended to develop content, including authoring, maintaining and storing and integrate this content with third-party courseware. Other recommendations concern the assessment of learners' competency gaps and to manage skills acquisition and

status, to provide and support authoring assessments, to adhere to standards such as SCORM[1] and AICC[2], which allow for importing content and courseware that complies with standards regardless of the authoring system, support configuration of the LMS to function with existing systems and internal processes, and provide security such as passwords and encryptation.

LMS are a powerful technology that has not achieved its full potential yet. As far as we know, understanding the actual aspects of LMS usage in HEI is an issue that is not sufficiently explored on research. Consequently, this is an interesting aspect to be explored and studied.

3. Study Design

The lack of information inside the field of Learning Management Systems, lead to the project Learning Management Systems on Higher Education Institutions (LMS on HEI) (Babo & Azevedo, 2009a). The necessity to share these concerns among other researchers with the same interests emerged. First of all, the project team needed to find out other researchers' LMS implementation teams, among the HEI community. Therefore, in order to achieve this aim, the project team developed a small survey to identify those possible future partners. The survey (Babo & Azevedo, 2009) was designed to be very small for two main reasons:

1. First of all, its specific aim: to find out partners for this project, theirs geographical locations, and an overview of the most used LMS ;
2. According to some researchers (Sparks *et al.*, 2006) "results indicate that on average a low-involvement person reads only the first two questions of a survey and completes the rest of the survey without reading the remaining questions.".

The survey was based on Limesurvey (Lymesurvey, 2009). This is an open source tool, used to build online surveys, developed in PHP language. The platform enables a large variety of types of questions, and provides statistical analysis of the data. It also allows to export the tables of results with different formats (.XLS, .TXT, .SAV, .CSV, and .XML).

3.1. Data Collection

In order to find out respondents to this survey, a two-fold plan was developed:

1. Emails sent out to several mailing lists of international associations, such as ISWORLD (Association for Information Systems, 2009).
2. Trying to involve other fields, emails were sent out to all the International Offices which usually have several HEI contacts in other scientific fields besides information systems.

[1] SCORM - Sharable Content Object Reference Model - is a set of of technical standards which specify how e-learning software should be built. Itis the de facto industry standard for e-learning interoperability (Rustici Software, 2009)

[2] AICC standards apply to the development, delivery, and evaluation of training courses that are delivered via technology, i.e., more often than not, through learning management systems.AICC stands for the Aviation Industry CBT [Computer-Based Training] Committee (AICC), which is an international association of technology-based training professionals that develops training guidelines for the aviation industry. (Boggs, 2009)

It was sent an e-mail to the respondents acknowledging the collaboration, and asking them to spread the survey through their own networks.

3.2. Results of the survey

With this survey we obtained 51 respondents from 19 different countries, from 5 continents. 42 of them were interested in continuing to be a part of the study. In Table 1, we can find a distribution of the respondents interested in being part of the study by country.

Country	Number of Respondents
USA	12
Australia	5
Portugal	4
Italy	3
South Africa	2
Turkey	2
Norway	2
Sweden	1
Indonesia	1
Hong Kong	1
Barbados	1
Germany	1
Colombia	1
Tanzania	1
France	1
UK	1
Croatia	1
Romania	1
Mozambique	1

Table 1 - Countries distribution of the respondents interested in being part of the study

Another result was that the most used LMS, among the respondents' institutions, were Moodle (Moodle, 2009), Blackboard, WebCT (Blackboard, 2009), and Sakay (Sakay Project, 2009), as can be seen in Table 2.

Moodle	18
Blackboard	14
WebCT	14
Sakay	3

Table 2 – Most used LMSs among respondents' institutions

Moodle appears as the most used LMS. Nevertheless, Blackboard acquired WebCT in 2006 (Bradley *et al.*, 2007) and, for this reason, both should be seen together, making a final result of 28. Afterward, Blackboard seems to be the most used, followed by Moodle and lastly by Sakay. Other referred LMS were, ItsLearning, Desire2Learn, Claroline, METU Online,

Chisimba, High Learn, Formare, Learning Space, First Class, Dokeos, eCollege, Class Fronter, KEWL. In addition, some of the respondents mentioned that they used custom made LMS (Burlea & Burdescu, 2009). An issue considered important is that 14 of those HEI bring up that they are using more than one LMS. One HEI is using 4 different LMS, which is the higher presented number.

The results can be seen as an evolution. In the past years, the proprietary platforms were the most used but nowadays, an increase of open source platforms usage can be observed (Bradley *et al.*, 2007). Consequently, there are not many studies regarding the usage level of such tools, concerning students, teachers, tools functionalities, usability, and the entire technological environment.

4. Future work

While there are several studies evaluating tools in order to compare their functionalities (Arh & Blazic, 2007; Uzunboylu *et al.*, 2006), it was not found any research regarding the usage level of the LMS on HEI. Therefore, the next phase of our study will be the evaluation of the usage level of the different LMS. Generally, both proprietary and open source LMS provide several functionalities, such as, Electronic distribution of course syllabi, grades and teachers feedback to students, ability to post hyperlinks to websites, provide forum for the exchange of ideas, provide wikis which allows students to swap ideas and information on projects, provide chat rooms for real time discussion, facilitating emailing and messaging among the participants (teacher/students, students/students), facilities for students to submit work assignments electronically, provide the means to administer quizzes and texts online (Janossy, 2008). It is frequent to observe that despite LMS on HEI is offered and usage stimulated, only a few of those functionalities are adopted, either by teachers, or by students.

In a second phase of our project, we intend to develop a common framework to understand the usage level of LMS. The first step is to find out whether there is any proposed model for evaluate LMS usage and if it fits our goals. Janossy proposed a “workable metric for measuring the usage of a C/LMS, to make it possible to compare usage between units of a university and between universities… The formation of this model proceeds from the definition of five overall ‘levels’ of possible C/LMS use.” (Janossy, 2008).

Considering that these studies will be implemented in each of the partners’ universities there will certainly arise some interesting case studies.

5. Acknowledgments

We thank Patrícia Mansilha and Joana Neves for their research assistance on the project. The comments and suggestions of the reviewers Isabel Mota and Fernanda Gonçalves significantly improved the English language of the paper. The research was so far partially supported by the Erasmus Programme.

References

Arh, T. & Blazic, B.J. (2007). A Multi-Attribute Decision Support Model for Learning Management Systems Evaluation. In Proceedings of the First International Conference on the Digital Society (ICDS'07), 11-15.

Association for Information Systems (2009). Association for Information Systems. Retrieved July, 30th 2009 from http://home.aisnet.org/.

Babo, R. & Azevedo, A. (2009). A survey: Learning Management Systems on Higher Educatioon Institutions. Retrieved July, 30th 2009 from http://ceise.iscap.ipp.pt/limesurvey/index.php?sid=28972&lang=en.

Babo, R. & Azevedo, A. (2009a). Learning Management Systems on Higher Educatioon Institutions. Retrieved July, 30th 2009 from http://ceise.iscap.ipp.pt/lmsproj.

Blackboard (2009). Blackboard. Retrieved July, 30th 2009 from http://www.blackboard.com/.

Bradley, M.; Carter, J.; Fitzsimons, D.; Graham, J.; Hurlbut, N.; Marshall, D.; Penney, M.; Quarle, R.; Rafferty, C.; Shellhase, J.; Steinberg, S.; Stone, T.; Tuttle, S. & Duzer, J.V. (2007). Learning Management System Evaluation Report. Executive Summary, Humboldt University.

Burlea, A. S. & Burdescu, D.D. (2009, May).Open Social Responsibility: The contribution of the platform TESYS to raise and train awareness of Corporate Social Responsibility, Presented at The First Meeting of the Project LMS on HEI, Porto, Portugal.

Ellis, R. A. & Calvo, R.A. (2007). Minimum Indicators to Assure Quality of LMS-supported Blended Learning. Educational Technology & Society, 10(2), 60-70.

Janossy, J. (2008, April).Proposed Model Evaluating C/LMS Faculty Usage in Hhigher Education Institutions, Presented at MBAA Conference, Chicago, IL.

Learning Circuits (2005). A field guide to Learning Management Systems. Retrieved June 29, 2009 from http://www.e-learningguru.com/wpapers/lms_fieldguide1.pdf.

Lymesurvey (2009). Lymesurvey: The Open Source Survey Appplication. Retrieved July, 30th 2009 from http://www.limesurvey.org/.

Mc Cullough, C. & Aimard, V. (2006). E-Learning in Europe: how do Trainers, Teachers and Learners Rate e-learning?. Survey Report, CEDEFOP.

Moodle (2009). moodle.org - Open-source Community-based Tools for Learning. Retrieved July, 30th 2009 from http://moodle.org/.

Paulsen, M. F. (2003). Experiences with Learning Management Systems in 113 European Institutions. Educational Technology & Society, 6(4), 134-148.

Sakay Project (2009). Sakai Project Home . Retrieved July, 30th 2009 from http://sakaiproject.org/portal.

Sjoer, E. & Dopper, S. (2006). Learning Objects and Learning Content Management Systems in Engineering Education: Implications of New Trends. European Journal of Engineering Education, 31(4), 363-372.

Sparks, R.; Desai, N.; Thirumurthy, P. & Kistenberg, C. (2006). Measuring E-Commerce Satisfaction: Reward Error and the Emergence of Micro_surveys. In Proceedings of the IADIS Intenational Conference e-Commerce 2006, 44-50.

Uzunboylu, H.; Özdamh, F. & Özçinar, Z. (2006). An Evaluation of Open Source Learning Management Systems According to Learners Tools. In Méndez-Vilas, A.; Martín, A. S.; González, J. M. & González, J. M. (Eds.), Proceedings of the 4th Internacional Conference on Multimedia and Information and Communication Tecnhologies in Education: Vol. 1. Current Developments in Technology-Assisted Education: General Issues, Pedagogical Issues (pp. 8-12). Badajoz, Spain: FORMATEX.

Wang, Y. & Chen, N.S. (2009). Criteria for Evaluating Synchronous Learning Management Systema: Arguments from teh Distance Language Classroom. Computer Assisted Language Learning, 22(1), 1-18.
Watson, W. R. & Watson, S.L. (2007). An Argument for Clarity: What are Learning Management Systems, What are They Not, and What Should They Become?. Tech Trends, 51(2), 28-34.