Learning Management System in Higher Education

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Abstract

Current educational trends, the emergence of the knowledge society, societal changes, and globalization influenced the higher education at the greater level and thus resulted in a quality education and quality assurance, the transformation of the education system and changes in teaching and learning approaches like virtual learning and more technologically enhanced learning. Among a wide range of ICT tools, Learning Management System has been introduced to academic institutions and industries not more than two decades. The presented overview of this paper is an effort which points towards the role of the LMS in teaching and learning pedagogy, access and flexibility, and cost effectiveness in higher education and it is suggested for higher education institutions to integrate the LMS into their teaching and learning process in order to achieve effective learning outcome. It allows the users to experience meaningful learning by different learning styles, matching individual’ Sneed, self-paced learning, and promoting lifelong learning. Most significantly, Learning Management System has provided easy access to and thus promoted flexibility in learning that one can learn from anywhere and at any time without place and time constraints.  

Keywords: Learning Management System, Higher Education, Virtual Learning, Information and Communication Technology, Teaching and Learning Process

I. INTRODUCTION

Higher Education is one of the major concern area which is recognized as an important factor, significantly contributing to the progress of an individual, social change and economic growth which leads to the holistic development of the nation. LMS has a wide range of products and services which can cater to the need of 21st century’s learners and instructors. The popularity of LMS among the universities is very high, so the changing needs of stakeholder in education made a pathway to move towards more virtual learning which emphasizing to save time and money and effective delivery of instruction. The current paradigm shift from traditional educational environments to online educational environments in higher education can also be seen as a challenge to create an active and interactive learning environment, one which gives the learner opportunity to engage and think in multiple ways (Bonk & Reynolds, 1997). Higher Education is changing very rapidly and trying to meet the needs of very diverse force which includes instructors, learners, administrators in the educational institute and also made a significant mark in the corporate and governmental sector where employer from various industries use training, staff development and recruitment for their purpose.

II. BACKGROUND

The history of the application of computers in education is filled with generic terms such as computer-based instruction (CBI), computer-assisted instruction (CAI), and computer-assisted learning (CAL), generally describing drill-and-practice programs, more sophisticated tutorials, and more individualized instruction, respectively (Parr & Fung, 2001). LMS has its history in another term integrated learning system (ILS) which offers additional functionality beyond instructional content such as management and tracking more personalized instruction, and integration across the system (Bailey, 1993; Becker, 1993; Brush, Armstrong, Barbrow, & Ulintz, 1999; Szabo & Flesher, 2002). The term ILS was originally coined by Jostens Learning, and LMS was originally used to describe the management system part of the PLATO K-12 learning system, content-free and separate from the courseware (R. Foshay, personal communication, October 24, 2006).

III. WHAT IS A LEARNING MANAGEMENT SYSTEM

A learning Management System is a web based or cloud based software program which assist in teaching learning process and helps in effective delivery of instruction, training and development program The Learning Management System facilitates instructors, learners and administrators to use and access of services and is beyond the restriction of time and place in teaching and learning process. Technically defined term for a learning management system is as: “A Learning Management System is a
software application for the administration, documentation, tracking, reporting and delivering by e-learning education courses or training programs.” (Ellis, Ryan, 2009). Learning Management System has two specifications which is largely affected the users: 1) LMS usability lies in the specified needs of an individual or an organization. It means may be an LMS could be useful and very effective for a university or academic purpose but it does not mean that it will suit to the industries as well 2) Technically well groomed assistant for the continuous support. Technical support makes us able to tackle any pitfalls or other issues which are hindering the best delivery of Learning Management System. Other popular names which are used interchangeably in the place of Learning Management System are Personal Learning environment (PLE), Course Management System (CMS), Virtual Learning Environment (VLE), E- Learning Courseware and Training Management system (TMS) where TMS is widely used in industries and business purpose and rest in terms like PLE, CMS, and VLE mostly serves the educational field.

IV. HISTORY OF LMS

Learning Management System has been an important part of our e-learning environment for more than 14 years. The chart below is a brief timeline of the evolution of the computer-based LMS, from its origins in 1960 at the University of Illinois to its latest innovations in the modern era (adapted from www.ispringsolutions.com):

In 1960 PLATO came into existence. It is Programmed Logic for Automated Teaching Operations was the first computer-based learning system and online community. The term “LMS” was first coined to refer to the management part of the system. In 1983 Project Athena was launched. It was a huge stride in distributed computing. Project Athena was a joint project of MIT, Digital Equipment Corporation, and IBM. During 1990 FirstClass was introduced. FirstClass was originally designed by SoftArc for the Macintosh platform, and pioneered many of the features still in use in today. The year of 1997 has experienced the launch of the Interactive Learning Network. Now one of the two companies forming BlackBoard, Inc., CourseInfo created the Interactive Learning Network and installed it on several campuses including Cornell University and Yale Medical School. In 2002 Moodle was introduced. It is open-source LMS revolution began with Moodle, offering free opportunities for teachers and trainers worldwide to create and administer training. The Year 2004 has seen the launch of SCORM. SCORMs a set of standards for training technology designed by the Advanced Distributed Learning Initiative. Superseding SCORM 1.1 and 1.2, SCORM 2004 is the version still in use today by many learning management systems. VirtualOn Demand came into existence in 2005. Released by NACON Consulting, VirtualOn Demand was the first distance education system to allow users to train in software programs with only a web browser. Later, the US Army began using the system to train IT support personnel. In 2008 Eucalyptus started the basic aim is to provide free, open-source private cloud technology was born with the release of Eucalyptus, the API for building Amazon Web Services environments. From 2012+ onwards LMS started taking advantage of cloud technology, SaaS LMSs allow companies and campuses to access the full suite of tools via the Web without installing a single piece of extra software on a local PC or mainframe.

V. LMS AND HIGHER EDUCATION

Society has shifted from the Industrial Age into what many are calling the Information Age (Reigeluth, 1994; Senge, Cambron-McCade, Lucas, Smith, Dutton, & Kleiner, 2000; Toffler, 1984). Today’s education system remains mired in the Industrial Age, putting the onus for learning in teachers, encouraging students to remain passive, and treating all students as if they are the same and forcing them to do the same things in the same amount of time (Reigeluth, 1994). This forces achievement to vary among the students, leaving the low-achieving students behind and holding the higher-achieving students back (Reigeluth, 1997). This requires the current higher education system to shift towards an entirely new paradigm of teaching and learning. In an Information Age appropriate paradigm of education, students will be allowed as much time as they need to achieve mastery as well as allowed to move on immediately upon demonstrating that mastery, requiring a customized pace and sequencing of instruction (Schlechty, 1991). So the information age model of higher education with the help of LMS will assess learners’ current knowledge and skill level, work with instructors and learners to identify appropriate learning goals, identify and choose instruction appropriate for the individual learner. Ultimately, LMSs playing bigger role in higher education and can be seen as follows: 1-provide more constructivist theory-based instruction, focusing on flexibility, learner defined goals (Reigeluth & Garfinkle, 1994), 2-support collaborative learning inside and outside of the school in order to extend the learning environment to the home and further involve parents (Taylor, 2004), 3-better address personalized assessment, progress tracking, reporting, and responsiveness to learner needs (Reigeluth & Garfinkle, 1994), 4-truly become systemic, integrating systems seamlessly to allow for improved collaboration across systems and among stakeholders (Sherry, 1993), 5-improve support for professional diagnosis and development for stakeholders, including teachers, and improve cost effectiveness and better leverage existing resources currently available in schools and LMSs (Szabo & Flesher, 2002). The growth in the usages of LMS in higher education has been described in Figure 2.

A. Advantage of Learning Management System in Higher Education:

One of the most important features of LMS is to provide an environment for learning and teaching without the restrictions of time or distance (Epping, 2010). LMS is widely used in many higher education institutions. According to Morris (2004), Allen
and Seaman (2005), If any institutions planning to operate traditional courses online, a Learning Management System is the top most necessities in order to the proper organization of content, courses, faculty, students and grades.

LMS also provides tools for multimedia contents, assignments, and supporting interaction, including discussion groups, chat sessions, and online quizzes and examinations. Bonk and Graham (2006) discussed the benefits of online learning which can be categorized into three aspects:

1) Pedagogical Improvement:
Each LMS follows more or less some pedagogical strategy regardless of whether developers used it intentionally or not. However, only some LMSs seem to be built intentionally based on a specific pedagogical strategies. MOODLE is a good example of such pedagogical strategies, these pedagogical strategies can be based on concepts of learning theories such as behaviourism, cognitive theory, and constructivism. Another good example is that LMSs can emphasize from a pedagogical point of view is a more learner-entered approach or teacher-centred approach.

2) Increased Access and Flexibility:
Access is one of the most important key factors which influence the growth of learning environments, LMS makes learning possible, even when learners have most of their learning experiences far from instructors or other learners.

3) Cost-Effectiveness:
Online learning is one of the best solutions in cost effectiveness in higher education as it provides an opportunity for reaching a large, globally dispersed audience in a short period of time with consistent content delivery.

B. Function of LMS in Higher Education:

As stated earlier Learning Management System is a software based application which help us to administrate, document, track, report and evaluate the teaching learning process, training programs, virtual classes, and e-Learning programs. Functions of Learning Management System can be broadly divided into 4 major parts and then sub parts will be discussed under the main category:

1) Stakeholder Functionality-In this part the participant or stakeholder has their own space by which they are able to access the following services:
   1) View the status of course and completion of courses.
   2) Facility to print or view the certificate.
   3) Manage, add or delete the content of the course or modules. b) Introduce new courses. c) Setting the course calendar.

2) Management of Information:
   1) View and track the history and present status of participants.
   2) Reports and statistics available about the course and participants.

3) Assessment:
   1) Help us to upload and retrieve assignment and resources.
   2) Allow to create online stand-alone assessment.
   3) Provide grades and final output of learning.

C. Categories of Learning Management System:

Learning Management System has different categories depending upon their usage and accessibility. Popularity of major LMS in education has been described in Figure 3. Different LMS according to their categories: 1-Open Source Learning Management System- The open source LMSs are learning management platforms which are available under a public free license, providing users the rights to use, to change, to study, to create and to distribute the results, free of charge, to anyone and for any purpose. MOODLE, SAKAY etc. are most popular name in this category.2-SAAS/Cloud Based Learning Management System. Cloud based learning management comes with cloud computing features and deliver the education online to any student, at anytime and anywhere around the world, the only must requirements to be fulfilled being the existence of an Internet connection and of a tool (i.e., computer, tablet, smartphone). Digital Chalk, Docebo SaaS LMS, TalentLMS, Firmwater LMS, Litmos LMS, etc. are some famous names in this category. 3-Proprietary Learning Management System- These systems have been licensed by their developers under the legal rights belonging to the copyright owner/s. Design2Leran, ANGEL (property of Blackboard Inc.) are the popular one in this category.

By observing the user pattern of LMS we can say that here are the three stakeholders: The Learner- are the main users of LMS and they are the first consumer of the services. The Instructor- instructor uses LMS to guide, supervise, assist and evaluate learners. The Administrator- keep the proper flow of operation of services and its users.

D. What can an LMS do in Higher education?

Landsberger (2004) discussed LMS’s functions in higher education instruction and classified them as: 1) A course-organizing tool, such as a replacement to a traditional syllabus, grade books and testing tools; 2) A dynamic tool to facilitate the process of learning, such as synchronous and asynchronous discussion groups; 3) A space to enhance student collaboration.
With its various functions, LMS serves different learners’ characteristics, different learning styles and outcomes. Also, students can see the course syllabus to see how instructors teach courses before signing up for a course (Landsberger, 2004; Suwannatthachote and Monsakul, 2007). LMS can be associated with two more major functions which is managing the course and information exchange between instructors and learner.

Hence course management is purely depends on the instructor, but information exchange gives opportunity to both learner and instructor to interact wilfully to achieve the specific learning goals and make the teaching learning process more effective and more suitable. Hayward (2009, cited from Adams 2011) showed LMSs through a five level of hierarchy:

1) Classroom management—which facilitate lecture notes or other learning aids for a particular lecture (e.g., lecturer creates a website to distribute materials).
2) Course management—this support to span multiple class sessions across an entire course with common objectives, adding tools for evaluation, feedback and discussion.
3) Curriculum management—provides meta-tools (e.g., content tagging and objective management) to handle relationships among a set of courses. These tools can be used to index a curriculum across a program or identify common attributes across courses.
4) Learning management—information is organized around the learner. This facilitates self-directed learning as students can choose from a variety of learning opportunities, and can progress at different rates over time depending on individual goals. Students may have a private area within the system to assemble selected resources (facilitating the use of an e-portfolio).
5) Community management—enables boarders to extend beyond the class, course, curriculum or the traditional campus learner and allowing for multiple learning contexts and organizations.

![Fig. 2: Higher Education LMS Market Share For Institutional Adoption](http://Eductechnica.com)

Source-Http://Eductechnica.com

### VI. CONCLUSION

Learning Management System provides a very authentic and structured experience of virtual learning. Without Learning Management System it would be most difficult to plan, implement and deliver the instruction and training in an effective way. Though LMS is a web-based system, the use of the LMS is not limited to online classes only. LMS has been widely used and will continue to grow in future in higher education institutions and Industries. It does not limit to the online environment, but also improve and integrate into the hybrid and web-enhanced teaching and learning environment. The uses of LMS to facilitate interaction enhance learning abilities and support higher-order learning, including problem solving, critical thinking, and collaboration skills (Smaldino, et al, 2005; Suwannatthachote and Monsakul, 2007). In supporting such idea, Chickering and
Gamson (1987 as cited in Waterhouse, 2005), explained that eLearning functions suited a pedagogical theory, the Seven Principles for good practice in undergraduate education -- instructional guidelines applied to eLearning context. The seven principles include: good practice encourages contact between students and faculty; good practice develops reciprocity and cooperation among students; good practice uses active learning techniques; good practice gives students prompt feedback; good practice emphasizes time on task; good practice communicates high expectations; and good practice respects diverse talents and ways of learning. The presented overview in this paper was an effort which points towards role of LMS in teaching and learning pedagogy, access and flexibility, and cost effectiveness in higher education and it is suggested for higher education institutions to integrate LMS into their teaching and learning process in order to achieve effective learning outcome.

REFERENCES