

Online Learning Management Systems: A Dire Need in the New Normal

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Abstract

Online Learning Management Systems are the application software for administration, documentation, tracking, reporting, automation and delivery of educational courses, training programs, or learning and development programs. They have become the necessity of the present environment in new normal era after Covid-19 impact. This paper discusses about some of the important LMSs and compares open source LMSs with commercially available LMSs.

Keywords: Corona Pandemic; Commercial LMSs; New Normal Environment; Online Learning Management System; Open Source LMSs.

Introduction

It has been observed that technology is advancing so rapidly that it has become necessary to be used in education sector. It is also noticed that the needs of both students and teachers are also changing and more and more access of online information and that of various educational resources is demanded by them. Various institutes/ universities of higher education worldwide have started online education for their clients, i.e., the students. Further due to Corona Pandemic disease, it has become essential to provide online education to the students, especially in higher education. University Grants Commission, New Delhi has also made mandatory that 25% education must be provided online even after the corona impact is over.

Thus, it has become necessary that there should be some mechanism so that the teachers could prepare their lectures in most effective way in the less time and encourage the students for self-study by removing the time and space hurdles. Hence, various means have been evolved for providing online education worldwide and Learning Management Systems are considered as

one of such developments for providing online education. Learning management systems were designed to identify training and learning gaps, utilizing analytical data, and reporting but they are focused on online learning delivery with a support for range of uses, acting as a platform for online content, including asynchronous and synchronous courses both. Though, LMSs were introduced in late 1990s but their use has increased multifold due to closing of institutes/universities after Corona attack in November 2019.

2. What an LMS Really Is?

LMS has its origin in Integrated Learning Systems (ILSs) which were computer-based systems to manage the delivery of curriculum materials to individual learners and were capable of providing comprehensive feedback to the learners and the teachers (Fitzgerald and Fitzgerald, 2002). Later, CMS, the Course Management System came into vogue which were a set of tools and software that helps us to create online teaching environment for course interaction. LMSs, the Learning Management Systems developed as similar set of tools like CMS that helps us to create online courses and create a virtual teaching environment. They help us to

do the administration, documentation, tracking, reporting, and delivery of educational courses, training programs, or learning and development programs.

Now-a-days; however, the term LMS is used to describe several different educational computer applications. But more generally: Learning Management Systems (LMSs) consist of online learning technologies for the creation, management, and delivery of course material (Sabharwal et al. 2018; Turnbull, Chugh and Luck 2019). They not only play an important role in enhancing and facilitating the teaching and learning but also enable the delivery of instructions and electronic resources to improve and augment the student learning in a collaborative environment. They also allow instructors to focus on designing meaningful pedagogical activities (Kattoua, Al-Lozi and Alrowwad, 2016).

Thus, a Learning Management System may be defined as the web-based or cloud-based software application for the administration, documentation, tracking, reporting, automation and delivery of educational courses, training programs, or learning and development programs (https://en.wikipedia.org/wiki/Learning_management_system). LMS provides a virtual platform for e-learning by enabling the management, monitoring student, delivery, tracking of learning, testing, communication, registration process and scheduling. Further, a LMS may include several time-saving features for convenience to instructors.

3. Advantages and Disadvantages of LMS

LMSs provide various advantages; however, Cavus (2015) has listed the following advantages for LMS. According to him, a good LMS:

- Guides the students in the direction of education using the delivery of knowledge in various forms, such as word, power-point, flash, video, audio, and so on.
- Encourages the students to do interactive applications and assess students' performance via homework and examinations.
- Facilitates communication between student-student versus student-teacher; for example, the discussion boards, chat, e-mail etc.; also, interact between student-lesson content, registration process and scheduling.
- Helps in the management of classes by keeping records for students, teachers, and the system.

Also help in entering the examinations and keeping record of the results.

- Helps in collecting the homework and grade keeping and track the student records. LMSs usually come with an integrated emailing tool that enables participants to email the important notification to the students.
- Helps the students in seeing their own education times, and distributing the e-learning contents on-line, and
- Shares the knowledge and ideas. However, some disadvantages are also associated with the LMSs. Most of them are (https://en.wikipedia.org/wiki/Learning_management_system):
- Implementation of LMS requires a well-built technology infrastructure.
- LMS can often come across as impersonal and lacking in the dialogue opportunities provided by in-person training.
- Having a learning module presented in only one style can make it difficult to accommodate different learning styles.

Besides, the teachers who are willing to adapt their curricula from face to face lectures to online lectures may face the problem.

4. Types of Learning Management Systems

Learning Management Systems can be following types according to different categories:

- Open Source Learning Management System
- Cloud Based Learning Management System
- Proprietary Learning Management System

Open source LMSs are the learning management platforms which are available under a public free license, for 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.

Cloud Based Learning Management System comes with cloud computing features and deliver the education online to any student, at anytime and anywhere around the world, but the only must requirement is the existence of an Internet connection and of a computer, tablet, or a smartphone. Digital Chalk, Docebo SaaS LMS, TalentLMS, Firmwater LMS, Litmos LMS, etc. are

the names to be included in this category.

While Proprietary Learning Management System are the licensed software developed by their developers under the legal rights belonging to the copyright owner/s. Design2Learn, ANGEL LMS are the popular software in this category.

However, more commonly there are two types of Learning Management Systems in present environment: Open Source LMS and Commercial LMS. But, if a software is open source, this does

not always mean it is free, and being free does not always mean the software is open source. However, by analyzing widespread options offered as open source in LMS software (Moodle, Sakai, Dokeo etc.) it can be seen that they are free, but software with closed-source codes (Blackboard, SAP, HCM, LMC etc.) are paid.

Table 1 based on Ulker and Yilmaz (2016) compares various features of Open Source versus Commercial Learning Management Software:

Table 1: Open Source versus Commercial LMSs.

Features	Open Source LMSs	Commercial LMSs
Fee	Mostly all products in the market are completely free of charge.	There are priced for license and license renewal.
Technical support	Technical support takes place in the form of asking questions/receiving answers in user forms and published documents. But professional consultant is required in cases of inadequacy.	Company offers technical support as per the service agreement.
Hardware and Scalability	LMS can be scaled in a way to serve for 50 users to 5,000 users in the same quality.	Scalability within certain limits is guaranteed by the supplier company.
Development	It is possible to make unlimited development with the programming language of the LMS as per needs. In addition, ready-made solutions can be obtained by purchasing plugins adequate for the needs of LMS.	Developments are rest with supplier company's initiative. Company may improve the product with a view to keep customer satisfaction high but these developments may not meet the specific needs of the organization. In this case, as per the agreement, additional payments may be required to overcome such issues.
Security	Organization must take measures to protect all data in the LMS. Since open-source systems are developed and tested by thousands of people, their security vulnerabilities can be detected quickly and updates for the system are published.	System security is usually guaranteed by the supplier company. System may remain vulnerable in possible security vulnerability, and data loss and data leakage may occur. Reliability and competence of the company must be analyzed.
Integration	All projects may be implemented as much as the LMS architecture allows because source codes are open source for adaptation to existing and external systems.	There is a dependency to the supplier company regarding the integration because source codes are closed. Integrations can be provided with two questions: What does the supplier company offer in terms of integration and promise to provide with additional payments? Are there special applications offered for organizations?

5. Brief Description of Popular LMSs

Angel LMS, Blackboard, D2L and eCollege and also the Moodle are very commonly used and popular LMSs. Moodle is so popular that it is used worldwide and has been translated into 100 different languages. Each of them is briefly detailed out below:

5.1. Angel LMS

Angel LMS is the product of Indiana University-Purdue University, Indianapolis which was created using early system concepts. It was released by the newly formed CyberLearning Labs, Inc. in July 2000. The company has since changed its name to Angel Learning and later, it was acquired by

Blackboard Inc. in May 2009. Angel LMS is used by universities and proprietary schools including K-12 schools and districts, community colleges to create Virtual Learning Environments for online learning and to offer hybrid or blended (web-enhanced) classes (https://en.wikipedia.org/wiki/Angel_Learning).

5.2. Blackboard Learn

Blackboard Learn, earlier known as Blackboard Learning Management System, is a virtual learning environment and learning management system developed by Blackboard Inc. It is a Web-based server software which features course management, customizable open architecture, and scalable design that allows integration with the student information systems and authentication protocols. Its main purposes are to add online elements to courses traditionally delivered face-to-face and to develop completely online courses with few or no face-to-face meetings (https://en.wikipedia.org/wiki/Blackboard_Learn).

5.3. D2L

D2L or Desire2Learn is a cloud-based software that is developed by Brightspace Learning Management System. A beta version of its redesigned interface

using responsive web design that offer full functionality on mobile devices was launched in the year 2016. However, it was released in the year 2017. It has made Brightspace into line with Instructure Canvas LMS (<https://en.wikipedia.org/wiki/D2L>).

5.4. eCollege

eCollege was founded in 1996 as Real Education Company that went public in 1999. It provides on-demand e-learning solution.

5.5. Moodle

Moodle is an open-source and free learning management system (LMS) which was developed in PHP. Its first version was released in the year 2002 under GNU General Public License. Moodle is very popular among different universities and schools of managements. It can be used to create private organizational websites that enables teachers to conduct online courses for students (<https://en.wikipedia.org/wiki/Moodle>).

Moodle works particularly well when combined with face-to-face learning – also known as blended learning. A comparison of Moodle with other software from different features is made in table 2.

Table 2: Comparison of Moodle with Other LMSs.

Features/Name	Moodle	Angel LMS	Blackboard Learn	D2L (Desire 2 Learn)	eCollege
Communication Tools					
Discussion Forum	Yes	Yes	Yes	Yes	Yes
Discussion Management	Yes	Yes	Yes	Yes	Yes
File Exchange	Yes	Yes	Yes	Yes	Yes
Internal Mail	Yes	Yes	Yes	Yes	Yes
Online Notes	Yes	Yes	Yes	Yes	Yes
Real Time Chat	Yes	Yes	Yes	Yes	Yes
Whiteboard	Supported by adding 3rd party modules	Yes	Yes	Yes	Yes
Productivity Tools					
Bookmarks	No	Yes	Yes	Yes	No
Calendar/Progress Review	Yes	Yes	Yes	Yes	Yes
Searching Within Course	Yes	Yes	Yes	Yes	Yes
Work Offline/Synchronize	No	Yes	Yes	Yes	No
Orientation/Help	Yes	Yes	Yes	Yes	Yes
Student Involvement					
Group Work	Yes	Yes	Yes	Yes	Yes
Student Portfolios	Yes	Yes	Yes	Yes	Yes

Administration Tools					
Authentication	Yes, admin can allow guest user	Yes, admin can allow guest user	Yes, admin can allow guest user	Yes, admin can allow guest user	Yes, admin can allow guest user
Course Authentication	Yes	Yes	Yes	Yes	Yes
Registration Integration	Yes	Yes	Yes	Yes	Yes
Course Delivery Tools					
Test Types	Yes, Multiple choice	Yes, Multiple choice	Yes, Multiple choice	Yes, Multiple choice	Yes, Multiple choice
Automated Testing Management	Yes	Yes	Yes	Yes	Yes
Automated Testing Support	Yes	Yes	Yes	Yes	Yes
Online Grade book	Yes	Yes	Yes	Yes	Yes
Course Management	Yes	Yes	Yes	Yes	Yes
Student Tracking	Yes	Yes	Yes	Yes	Yes
Content Development Tools					
Accessibility Compliance	Yes	Yes	Yes	Yes	Yes
Course Templates	Yes	Yes	Yes	Yes	Yes
Customized Look and Feel	Yes	Yes	Yes	Yes	Yes

6. New Emerging LMSs

Some popular LMSs were described in earlier section but as we know due to Corona -19 impact, many other choices have also emerged in online education system. Hence, some more new LMSs have emerged in the scenario. Some of them are briefly detailed out below:

6.1. Adobe Captive Prime (www.adobe.com)

Adobe Captive Prime is a cutting edge LMS that is used to help to convey an upgraded and agreeable learning experience for users. It has an artificial intelligence-based social learning ability that help to empower learning in the progression of work and permit companions to gain from one another.

6.2. Canvas (canvas.net)

Canvas is an open source LMS that is free for teachers and makes instructing and learning simpler regarding execution, reception, client service and the achievement. Canvas is versatile, dependable, and adaptable, intended to move and let you do your thing. Its interface and highlights are created to spare the time and exertion, bringing about getting embraced quicker and more profound than numerous other Learning Management Systems.

6.3. Chamilo (chamilo.org)

Chamilo LMS is backed up by the Chamilo Association to maintain a clear cut communication to the customers and to build a network of service providers and software contributors. It is devoted

under GPLv3 or superior. It offers easy-to-use authoring tools for creating online training that meets all learning preferences.

6.4. Docebo (www.docebo.com)

Docebo that is developed by L&D groups in 2005 is a cloud-based LMS that helps in the learning innovation by applying new advances including artificial intelligence. It also supports the manners in which individuals learn, as opposed to directing them. Docebo Learn LMS is appraised for its convenience, high configurability, vigorous learning the board, conveyance functionalities, and moderate month to month dynamic client valuing model. Docebo is compatible with SCORM 1.2 and 2004 as well as Tin Can.

6.5. LearnUpon (www.learnupon.com)

LearnUpon is a solitary arranged powerful, yet easy-to-use, Learning Management System that helps to deliver corporate training at scale. It is easy to use with superb help group, who help in organizations of all sizes far and wide convey high sway preparing that powers long haul development. Team accomplices with every individual client to consistently add an incentive past the stage.

6.6. OpenedX (open.edx.org)

OpenedX is a device enabling students to get to online course content, including recordings and reading material. In addition, one may check its advancement in the web-based instructional

class. A dashboard is also there through which the online educator can select online students, produce reports, and control a web-based instructional class as it runs.

6.7. Talent LMS (www.talentlms.com)

TalentLMS is another trusted LMS that helps the organizations to construct and preparing programs that will bring about more grounded groups. TalentLMS is the main preparing stage that permits anybody to construct courses in minutes and dispatch them before the day's over—regardless of their experience with LMSs.

6.8. TotaraLearn (www.totaralearning.com)

TotaraLearn is a corporate-oriented LMS solution that meets all the necessities identified with representatives' jobs, preparing requirements and goals through the powerful conveyance of individual learning plans. Totara LMS provides a functionally rich e-learning platform which can be implemented quickly and at a low cost of the proprietary solutions.

6.9. SAP Litmos (www.litmas.com)

SAP Litmos is an incredible, grant winning LMS that can be executed as an independent arrangement or in mix with a strong course library, SAP Litmos Training Content. It empowers and focused on learning, supports worker commitment, and ensures the brand by keeping the association agreeable. SAP Litmos Training enables staff by arriving at students directly in the progression of work.

7. LMS in Higher Education

Higher Education is one of the major areas which is recognized as an important factor that is significantly contributing to the progress of an individual, social change and economic growth which leads to the holistic development of the nation. Learning Management Systems are used all over the world in institutes of higher education. Hence, there is a need to know and understand its adoption and usage arises. Babo and Azevedo (2011) mentions that on the one hand, there are different institutional cultures and characteristics, and, on the other hand, there are several distinct LMS tools.

LMS has a wide range of products and services which can cater to the needs 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 the time and money and effective delivery of instruction (Chaubey and Bhattacharya, 2015). Further, the richness of each of the experiences can help the worldwide community to better understand how LMS are being used.

It is seen that Learning Management Systems have different categories depending upon their usage and accessibility. But more commonly, there are three stakeholders: the Learner, who are the main users of LMS and they are the first consumer of the services; the Instructor- who usages LMS to guide, supervise, assist and evaluate learners; and the Administrator, who keep the proper flow of operation of services and its users. So, the choice of selecting a good LMS may be rested on the stakeholders. However, after comparing six open source software, Cavus and Zabadi, (2014) have identified Moodle as one of the best software which is user friendly and provide access to information easily.

Conclusion

Concluding, it can be said that Learning Management Systems which satisfy the need of online education in the new normal time, seem to be immense important because they are not only fulfilling the present needs but also have paved the way for future education that will be mostly online. However, the evaluation of LMS is to be done as far as the selection of LMS is concerned, but in general, open source LMSs are appropriate for companies operating in the field of technology, for start-ups and SMEs with budget constraints. While on the other hand, commercial LMSs are suitable for organizations that does not have software technologies as their main line of work and also do not have the objective of contributing to open source systems and for businesses without any budget problems as suggested by Ulker and Yilmaz (2016).

Though, some barriers exist in implementing the use of LMSs but the ways to overcome them should be identified in order to ensure that all institutions are able to adopt a system to improve the performance of students (Alenezi, 2018). The provision of training for the students as well as for the teachers may be helpful to remove the barriers to some extents. Hence, there is a dire need of support and promotion from institutional authorities

for adaptation of the LMSs to have an equitable and virtual learning environment. However, the selection may be the choice, but adaptation is must to survive in the coming education world.

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