LEARNING MANAGEMENT SYSTEM AND ITS IMPLEMENTATION

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Abstract: As the world is moving towards autonomous technology and every aspect of human lives is influenced by technology so does the academics and academic institutions, learning management systems work in academic institutes across the globe, this paper gives a comparison between different learning management systems and their comparative analysis, it will help any individual who wants to compare and choose the best learning management system with respect to the requirements of their institute.

1. INTRODUCTION

By the start of 21st century, every single aspect of human life is moving towards technology. The advancement in technology has changed the way humans live their lives, whether we talk about industry, market or academics. In the field of academics new and innovative ways of learning are constantly produced to make human lives easier as well as boost up learning [1]. For this purpose, learning management systems are being deployed across the globe. Few of the LMS include Blackboard, Moodle and success factors.

Moodle is an open source learning management system which is based on the web platform of PHP MySQL. It offers a dynamic environment for the education sector. It is used for the number of different services in an educational institute. Few of the uses of Moodle are *blended learning it* provides a learning environment using different platforms as well as new and innovative ways. *E-learning* is a mechanism *in which a*ll the students are provided with an E-Learning environment where the usage of paper environment is finished from the institutes using brick and motor system [2]. *Teacher Management a*llows the teacher to manage their classes, courses, students, to-do list as well as conduct assignments, quizzes and exams online.*Student Management* provides with the facility where students can download their course outlines, contents as well as upload assignments for assessment and attempt quizzes and exams. They

are also able to communicate with their lecturers, tutors, lab attendants as well as other students. *Course Management* allows new courses to be structured, updated or deleted. Add new content, assignments as well as quizzes. *Exam Management* system provides a dynamic and wide range of exam solutions, teachers can set up an exam, conduct it as well as evaluate it. *Report generation* Moodle allows the Administration to generate reports to evaluate the performance of each individual including teachers and students [3].

	Blackboard Learn(Release 9.1)	Moodle 2.0
Calendar/ Progress Review [3]	Instructors and students can post events in the online course calendar. Instructors can post announcements to a course announcement page. Students have a personal home page that lists all courses in which the student is enrolled, new email and all course and system-wide events from their personal calendar. Students can view their grades on completed assignments, total points possible, course grade, and compare their grades against the class performance.	Instructors and students can post events in the online course calendar. Instructors can post announcements to a course announcement page. Students have a personal home page that lists all courses in which the student is enrolled, new email and all course and system-wide events from their personal calendar. Students can view their grades on completed assignments, total points possible, course grade, and compare their grades against the class performance. *Students can subscribe to RSS feeds to be notified of changes to materials.*
Searching Within Course [3]	Students can search all discussion threads	Students can search all discussion threads. Students can search chat or virtual classroom session recordings.
Module Page [2,3]	Similar to dashboard notifications on the Blackboard home page. Modules contain information for instructors and students about new content and due dates for the current course.	Modules Upcoming events and recent activity both displayed left hand side of the course material. Can be docked as a tab to the left of the page.

Community Networking [3]	If allowed, at system level, students can create online clubs, interest, and study groups. These groups can have their own catalog, templates, discussion boards and more.	Major focus of Moodle 2.0 allowing different Moodle installations to network. Idea is for instructors to be able to access a location where they can share with peers - in their own topic - best practice, ideas and resources. Also allow users to join in with communities of practice that might be hosted by other sites. The functional aspect is to allow anyone to turn their Moodle site into a Moodle Community Hub, with seamless log-in between Moodles, but also with the login secure and fully controlled by site administrators
Course Menu [3]	Click '+' icon to access the choice list	Menu is automatically updated with links to new
Assignments [2, 3]	New 9.0 – Multiple attempts for submission (example revisions) New 9.0 – Assignment submission for groups by an individual.	Assignments can be completed online or offline (file uploads). Moodle allows for multiple file uploads. Also assignments are treated as 'draft' until the "send for submission" button pressed
Custom grading view and grading preferences [2, 3]	Smart view can be used and in turn made a favourite making it available from the front page example showing on instructor's front page students who are falling under a certain grade.	Enhanced Gradebook in Moodle 2.0, with functionality such as assignment of personal grade letters to percentages. Can also edit directly in spreadsheet view
	Blackboard Learn(Release 9.1)	Moodle 2.0
Group Organizing [3]	Group created first and then modified manually later to add users. Instructor can allow students to create their own self-enrolled groups and edit their student-created groups.	Groups created first then group members selected from list on same page. Automatic allocation available. Students can also self-select groups.

Figure 1.1[4]

2. HISTORY

Moodle was formerly developed by Martin Dougiamas to help educators create online classes with a give attention to interaction and collaborative construction of content, and it is in continuous evolution. The first version of Moodle was released on 20[th]August 2002. Nowadays the Moodle is being monitored and updated by Moodle HQ, an Australian company of developers which is supported by a network of eighty-four Moodle Partner

service companies worldwide [5]. Moodle's development has also been assisted by the work of open-source computer programmers. Moodle as a learning platform can boost existing learning environments. As an E-learning tool, Moodle has a variety of standard and ground-breaking features such as calendar and Grade book. Moodle is a leading virtual learning environment and can be used in many types of environments such as education, training, and development in business settings. Following are the versions of Moodle since the start of the production till date and their added features and final product.

Table 1: Comparative analysis between different versions of Moodle

Version	Release Date	Added Features
1.0	20-08-2002	Basic
1.1	29-08-2003	Basic
1.2	20-03-2004	Added logins
1.3	25-05-2004	Messenger
1.4	31-08-2004	Bulk logins
1.5	05-06-2005	Grade books
1.6	20-05-2006	Grading standards
1.7	07-11-2006	Calendars
1.8	30-03-2007	Same
1.9	03-03-2008	New grade book, Bulk user actions, Tagging.
2.0	24-11-2010	Integration with plagiarism detection/prevention tools
2.1	01-06-2011	Advanced grading methods like Rubrics
2.2	05-12-2011	Drag and drop files
2.3	25-06-2012	Same
2.4	03-12-2012	Same

2.5	14-05-2013	Badges
2.6	18-11-2013	Annotate uploaded PDF, bulk course creation, multiple calendars
2.7	12-05-2014	ATTO HTML Editor, responsive design, log in with email address,
2.8	10-11-2014	Text auto save, like, ratings
2.9	11-05-2015	Dashboard, View all grades
3.0	16-11-2015	4 new quiz types
3.1	23-05-2016	Competencies, recycle bin, global search, support for universal office converter
3.2	05-12-2016	Grading improvements, auto-login, sign-up improvements and SSO, new notification preferences
3.3	15-05-2017	PHP 5.6.5 as the minimum version required, open ssl and file info required, Font types available for Moodle icons

Features:
1.   Built for learning globally

Provides a web-based platform where user does not have to be on campus to access their accounts. They can access their courses, upload their assignments and attempt their quizzes from virtually anywhere in the world.

2.   Proven and trusted worldwide

As Moodle is being used from a long period of time, Moodle is pioneers in creating a dynamic LMS, Provides SSL encryption in the latest version, has high security protocols and is being used in the big names of academics such as Monash University, Federation University etc.

3.   Designed to support both teaching and learning

It is designed to create new innovative ways for teachers but still keeps the charm of traditional

teaching styles [6]. It supports teachers in providing students with new and better ways to learn using different content as well as different perspective of study.

4. *Easy to use*

Moodle is designed to be highly user friendly, as it is developed on the platform of PHP MySQL, it is highly dynamic and customizable, so one can customize it according to the requirements of their institute.

5. *Free with no licensing fee*

Moodle is completely free open source learning management system. One doesn't have to pay to get the license.

6. *All in one learning platform*

It provides a dynamic E-learning platform, which covers the entire academic usability; Moodle is more than enough for an institute to cover all their academic needs [7].

7. *Highly flexible and fully customizable*

As it is developed on PHP MySQL, it is highly robust and fully customizable, one can customize the theme or the way it is represented and even the way it operates [8]. So, every institute customizes it with respect to their own requirements.

8. *Robust, secure and private*

It's completely private as every user has their own access account. Their accounts are secured with SSl encryption logins and it is highly secured and maintains the data in worst conditions possible.

9. *Use anytime, anywhere and on any device*

As Moodle is a web-based dynamic software, it can be accessed on laptops, IPad and any other kind of handheld devices from anywhere across the world with a simple single requirement i.e. internet.

10. Comparative study between Moodle 2.7 and 3.2

Given below is the comparative study and analysis of the two versions of Moodle and its features.

Table 2: Features and versions of LMS

Features	Version 2.7	Version 3.2
Grade book	✓	✓
Bulk user action	✓	✓
Tagging	✓	✓
Plagiarism detection	✓	✓
Advanced grading (Rubrics)	✓	✓
Drag and drop files	✓	✓
Badges	✓	✖
Bulk course creation	✓	✓
Multiple calendars	✓	✓
HTML editor	✓	✓
Login with email	✓	✓
Text auto-save	✓	✓
Likes	✖	✓
Ratings	✖	✓
Dashboard	✖	✓
View all grades	✖	✓
Recycle Bin	✖	✓
Office converter	✖	✓
Notification preferences	✖	✖
Font types for icons	✖	✓

11. Grade book:

This feature provides a predefined book of grades for the evaluation of assignments, quizzes and exams of students. It provides ease for the teachers to evaluate as they have hardcoded marking key.

12. Bulk user action:

This feature allows users to communicate with huge number of other users directly and together, send them any notifications or share any files with everyone at the same time, it also allows a specific function to be performed

on the number of users together at the same time [9].

13. Tagging:

Tagging allows any specific user to tag other users in any notification or any content they want to share with any specific individual, it can be public or private tagging.

14. Plagiarism detection:

This feature allows the integration of software like Turnitin, which allows both students as well as teachers to check if there is anything which is directly copied from the internet. It helps students to improve their assignments and any other documents, as well as it helps teachers to evaluate assignments and other content efficiently.

15. Advanced grading (Rubrics):

Parameters have become popular with teachers as a method of connecting expectations for a project, providing focused feedback on works happening and grading final products. Although teachers tend to define the word "rubric" in different ways, Heidi Andrade's commonly accepted definition is a document that articulates the expectations for a job by listing the requirements, or what counts, and describing levels of quality from excellent to poor [10].

16. Drag and drop files:

This feature allows a user to directly drag n drop the files they want to upload, it is not required to go through the messenger upload anymore.

17. Bulk course creation:

This is one of the most important features, it allows a user to create number of courses together, the need of creating each course separately is no more required as it is much more time consuming and less efficient.

18. Multiple calendars:

This allows creating a different calendar for every different course or class and adjusting their calendar accordingly. It makes to management easy for all the courses and necessary actions required to complete it on the basis of dates and months.

19. HTML editor:

This is one of the most important features, it allows the administrator to directly modify, update and write new features using the HTML editor. They can modify the look and feel of their

website as well as how it operates from user's perspective.

20. Login with email:

This is a simple yet very important feature, it integrates users email id with the Moodle which helps the user to login to Moodle using their email address.

21. Auto-save:

Any work which is being done on Moodle, either it's an assignment made by student or quizzes made by teachers or any sort of information being typed or uploaded on Moodle is saved automatically.

22. Likes:

This feature allows users to like any comments, posts, announcements, content, courses and discussions; basically anything on Moodle is likable by its users.

23. Ratings:

This is a feature which allows students to rate teachers and vice versa. This allows students and teachers to evaluate their own performance, how students find their teaching style and behavior, because of this, teachers tend to work in the more efficient way to get their ratings improved.

24. Dashboard:

Dashboard is the front end display which gives access to all the necessary information to students as well as teachers on the front page of their Moodle.

25. View all grades:

Students can now access all their degree grades, detailed mark sheets, transcripts for each course, semester and the entire degree.

26. Recycle Bin:

Now deleted files are not permanently deleted from Moodle rather they stay in a recycle bin on Moodle which is now available as mentioned earlier.

27. Office converter:

Now users are able to convert their word files into PDF and other way around, it's a basic converter which allows the users to change any format of Microsoft office files.

28. Notification preferences:

Now users can define priority to their notifications. They can priorities it according to their own requirements.

29. Font type for icons:

This feature allows the administrator to change the font of icons present on Moodle according to the need of their organization and users.

3. CONCLUSION

On the basis of above-mentioned study, it is very clear that it clearly depends upon the requirements which learning management system one wants to use, which version suits their requirements at fullest. After above conducted study helped us choose Moodle 3.2 as it has added features like text auto-save, likes, ratings, dashboard, view grades in one precise screen, new test types, online recycle bin, support for office converter, grading improvements, auto-login, sign up improvements, notification preferences. Above mentioned features clearly fulfill requirements of our institute so we choose Moodle version 3.2.

4. REFERENCES

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