Blended Learning in Higher Education using MOODLE Open Source Learning Management Tool

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Abstract: Both e-learning and in-person pedagogy has become more famous in higher education in recent years that is termed as blended learning. The paper will describe why blended learning is so significant in higher education. Blended learning is possible in modern era using information communication technology (ICT) based learning management tools. Learning Management tools can be classified as: commercial systems and open source systems. Open source system provides affordable solutions in effective way compared to the commercial ones. This paper will provide more advantages of open source learning management tools in comparison of commercial systems. The paper will also compare MOODLE with other open source learning management systems such as ATutor, Eliademy and Forma LMS. At last paper will provide a case study of MOODLE that demonstrate how it is an effective in blended learning in higher education.

Keywords: Blended Learning, E-Learning, Information Communication Technology (ICT), Open Source System, Learning Management System (LMS), Modular Object-Oriented Dynamic Learning Environment (MOODLE)

I. INTRODUCTION

Blended Learning or Hybrid Learning combines the pedagogy of classroom learning with the suppleness of e-learning. Blended learning is vary based on number of aspects of teaching-learning such as learning outcomes, characteristics of students, regulations etc. Blended Learning increases the access and flexibility of learners so this strategy is most suited for higher education. The section-II of the paper will discuss the significance of blended learning in higher education. Information Communication Technology (ICT) plays a vital role in the implementation of this promising pedagogy of teaching-learning. Information Communication Technology (ICT) based learning management tools are the base of blended learning. Learning Management tools provide framework that touches all facets of the learning process. Learning Management tools not only deliver the content of the course but also provide course administration, tracking, reporting and performance management of students [7]. Learning Management tools are available as proprietary or open source based software [3]. Open source based Learning Management Software have numerous advantages over proprietary based software. Modular Object-Oriented Dynamic Learning Environment (MOODLE) [4][5][2] is one of the most popular open source based learning management system that comprises of managing courses, managing administration, tracking progress of students, scheduling of course, establishing discussion forum, student orientation etc. Besides MOODLE, other open sources such as ATutor [6], Eliademy and Forma LMS are also very popular. The section III of the paper will compare MOODLE with these three learning management systems. Finally, the section IV of the paper will discuss the case study of MOODLE in context to the "Smt. Chandaben Mohanbhai Patel Institute of Computer Applications", a constituent of the NAAC "A" grade university "Charotar Univesity of Science and Technology (CHARUSAT)".

II. SIGNIFICANCE OF BLENDED LEARNING IN HIGHER EDUCATION

In India, student enters in higher education (i.e. graduation and post-graduation level) at age between 18-23 years. The mind set of higher education student is totally different than that of school level student, so traditional in-person pedagogy of teaching-learning is not sufficient for higher education. To achieve effective learning outcomes at higher education, the teaching-learning pedagogy must be student centric. Neither in-person nor online pedagogy alone is effective for higher education. Blended learning that mixes both in-person and online teaching-learning methodology proves to be significance for higher education for many reasons such as:

- The students having age more than 18 might have social responsibilities (i.e. to attend social functions, to take responsibilities of parents in their absenteeism etc.) so they could not attend all the classes.
- Higher education in India is more expensive so students might do job for couple of days in a week and it is not possible for them to attend lectures physically on those days.
- Due to the equal opportunity of higher education, the ratio of girls in higher education is about 45% [1]. Girls have certain additional house hold responsibilities that prevent them to attend classes physically.
- Students of higher education cannot be forced to attend all the lectures like schooling students.
- Certain critical diseases prevent students to attend all classes physically.
- Due to several reasons, sometimes students are not able to attend the classes with full concentration.
- Sometimes students miss the initial classes of the day as they have to reliant on public transportation for commuting.

III. COMPARISION OF MOODLE WITH OTHER OPEN SOURCE LEARNING MANAGEMENT SYSTEMS (LMS)

Besides MOODLE, several other open source leaning management systems are very popular in market and widely

Smt. Chandaben Mohanbhai Patel Institute of Computer Applications (CMPICA) is a leading institution in Gujarat and affiliated to Charotar University of Science and Technology. CMPICA has adopted blending learning pedagogy for last five years. CMPICA has configured open source learning

Table 1 Comparison of MOODLE with other open source LMS

Sr. no	Feature	MOODLE	ATutor	Eliademy	Forma LMS
1.	Software Type	Stand alone, Cloud, SaaS	Stand alone, Cloud	Stand alone, Cloud	Stand alone, On Premise
2.	Discussion Forum	Online forum for groups or sub-groups of students	Private mail Facility	Online forum for groups or sub-groups of students	Online forum from third party plugs in
3.	Online journal	Possible	Not possible	Not Possible	Possible
4.	Video services	Possible	Not possible	Possible	Possible
5.	Student Portfolio	Effectively done	Not possible	Done but not so effective	Done but not so effective
6.	Implementation	Easy	Difficult	Difficult	Difficult
7.	Strength of community	High	Low	Low	Low
8.	Functionalities	More than all other	Less than MOODLE	Less than MOODLE	Less than MOODLE
9.	Architecture	Simple with solid design	Complex	Complex	Complex
10.	Authorization	Good	Good	Not Good	Not Good

used by educational institutions such as ATutor, Eliademy and Forma LMS. Following table describes the comparison of MOODLE with above mentioned open sources.

IV. CASE STUDY OF MOODLE FOR BLENDED LEARNING

Fig 1. Users of MOODLE

management system MOODLE for teaching-learning process. All faculty members use this system for numerous tasks such as
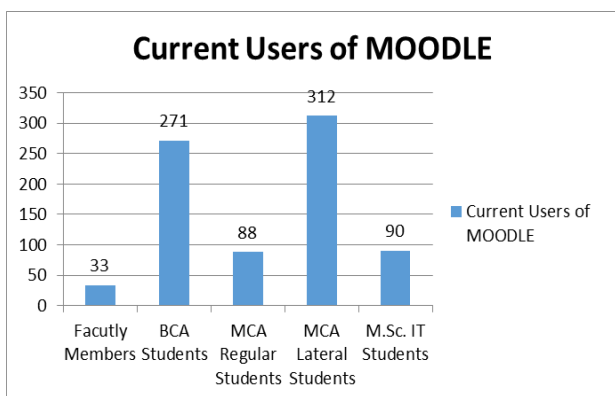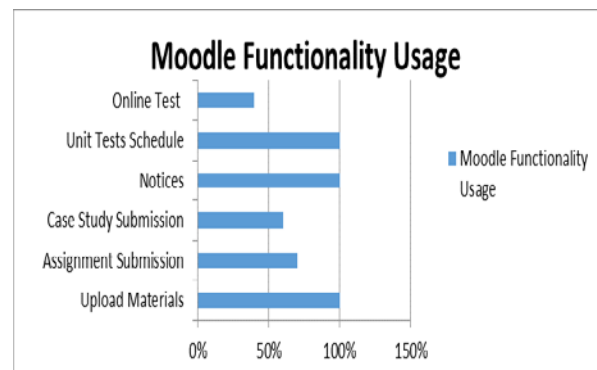

Fig. 2 MOODLE Functionality Usage

to upload lecture notes, assignments, old papers, notices, unit test schedules etc. Faculty members ask assignments and case studies online from students. Faculty members also take tests
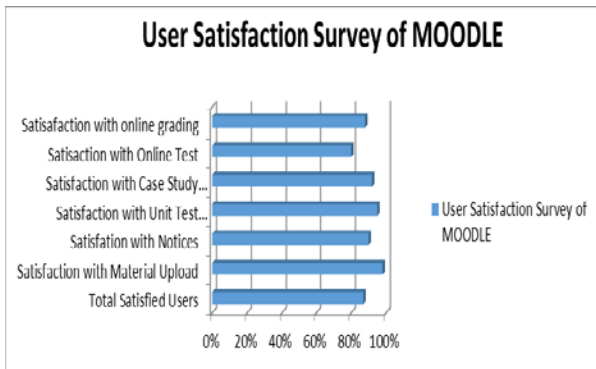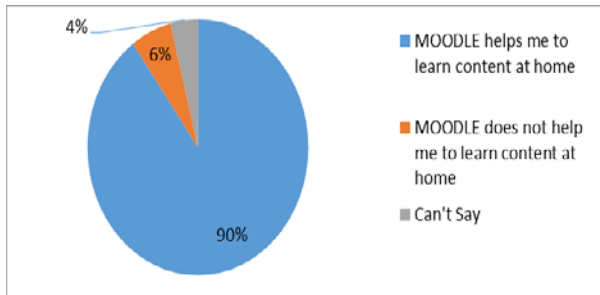
Fig 3. Users satisfaction survey

Fig 4. Users Feedback about MOODLE

online through MOODLE. Following are several statistics about MOODLE at CMPICA:

V. CONCLUSION

Blended learning is the boon for modern educational organization. Cost effective blended learning is possible through open source based learning management system. MOODLE is an ideal learning management system that comprises of much functionality and those could be achieved through simple architecture. Students satisfaction is the main objective of modern educational systems and that is achieved by combination of in-person and online education by medium open source LMS like MOODLE.

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