

EFFECTIVENESS OF MOODLE-ENABLED BLENDED LEARNING IN PRIVATE INDIAN BUSINESS SCHOOL TEACHING NICHE PROGRAMS

Dr. Ela Goyal¹, Dr. Suhas Tambe²

^{1,2}SIES College of Management Studies, Navi Mumbai, Maharashtra, India - 400705

¹elagoyal@gmail.com, +91-9819743391

²suhastambe@hotmail.com +91-9323018415

Abstract: Educational methods have become advanced and changed dramatically in the last decade. The revolution in communication technologies, especially after the invention of the internet, has introduced new methods of teaching and new ways of managing education. Various Learning Management Systems, such as WebCT, Black Board and Learning Spaces are now available for these purposes. Both open source and commercial versions of these LMSs offer combined services such as creating learning material online and its distribution, facilitating communications between various users etc. The availability of Learning Management Systems has enabled stakeholders in creating a platform that aids in web-based teaching in a convenient and flexible manner. The present investigation is a quantitative study to analyze the effectiveness of the open source LMS/CMS (Course management system) MOODLE (Modular Object Orientated Dynamic Learning Environment) when used by the faculty and students of a private Business School in India teaching niche programs. The aim of this evaluation was to analyze the user-experience of employing MOODLE and also the benefits and barriers towards its use. The results of the study would be useful to the institutions trying to integrate technology in their teaching and learning processes.

Keywords: LMS, MOODLE, ICT, Business Education, Biotechnology Management Education, Pharmaceutical Management Education

MOODLE – AN OPEN SOURCE LEARNING MANAGEMENT SYSTEM

Learning Management Systems (LMSs) are the technologies in the field of education, which by integrating various features provide an excellent enriched media for learning. They provide a convenient platform for enabling the creation and distribution of teaching materials, ease of communications between different users, and allowing for collaboration. An LMS, by providing a uniform interface to various stakeholders such as students, teachers, authors, and administrators, is widely used as a source of learning materials. An LMS allows flexibility with respect to space and time by permitting advanced interactions between instructors and learners and ease of access to learning resources. It also functions as a single window for all kinds and levels of interactions for students, teachers and administrators (Georgiakakis et.al, 2005). Several institutions have started using LMSs to augment their existing resources and enable distance learning. Institutes also use LMSs to manage their teaching-learning resources. However, it must be emphasised that the success of LMSs in the institutional environment is largely dependent on the acceptability of the tool by the faculty since they in turn influence the use of LMSs by students (Al-Busaidi & Al-Shihi, 2010).

MOODLE (Modular Object Oriented Dynamic Learning Environment) is an open-source LMS that can be freely downloaded from the web (www.moodle.org). Martin Dougiamas at Curtin University in Western Australia (Dougiamas & Taylor, 2003) developed Moodle from a social constructivist perspective. Moodle has features not found elsewhere, including the ability to embed resources, communications and/or activities centred on a topic of study. The instructor may also specify a variety of modes of operation ranging from weekly formats to topic-based to social formats. It is free, in the sense, that the user can modify it for custom use. MOODLE has built up an extensive user community that adapts or customises the software for its own and others' use. Written in the PHP language with a significant evolution since 1999, MOODLE has been widely accepted and adopted as it aids teachers in creating online study materials of good quality. As of Nov 2014, about 68,889,923 registered users use it across 7,440,022 courses in 231 countries (<http://moodle.net/stats/>).

POTENTIAL OF LMS IN EDUCATION

An LMS guarantees the flow of information to and from students in a secure and efficient manner. The statistical analysis capability of the LMS allows teachers to assess the performance of the students. An elementary working knowledge of computers will enable the participants – teachers and students, to use the system well.

According to Maikish (2006), online teaching and learning environment can be beneficial to both the students and teachers, which work well for the education goals in terms of curriculum. "E-learning is widely used in universities, other educational institutions and commercial organizations all over the world. It is growing more and more popular, and an increasingly large number of institutions are working on creating better tools for e-learning" (Hölbl

and Welzer, 2010). Hsu (2011) stated in her study that face to face learning grouped with E-learning, bridges the gap between students and instructors. According to Alkhanak and Azmi (2011), students like to take those courses, which include the use of Information Technology and point out that activities offered through e-learning systems are more useful and valuable as compared to traditional classroom activities

LMSs are being widely adopted in higher education. A study done in the University of Minho surveyed students' experiences and perceptions with MOODLE and Blackboard. These two are the most commonly used LMSs in Portugal. This study analyzed the students' method of engagement with the course, their preferences of LMS, their level of satisfaction and their assessment of various functionalities and features of the LMSes. Overall, the students viewed an LMS as a complement rather than a substitute to classroom teaching and appreciated its contribution to their learning (Carvalho, Areal & Silva, 2011). A study done in Oman on the use of MOODLE showed that those students who were introduced to online learning environment through MOODLE, had encouraging, optimistic and positive approaches and attitudes towards MOODLE. Their learning was improved and their understanding of the course material was better. Most students preferred a face-to-face approach, supported with online material and activities (like E-mails or chat sessions etc.), as a favourite mode of learning (Ahmad & Al-Khanjari, 2011). Hölbl & Welzer, (2010) reported in their study of MOODLE that the attitudes and approaches of students were positive when using MOODLE as a learning tool, and they were satisfied that it was a suitable approach to modern teaching and learning. They believed that while E-learning is very useful, it could not replace face-to face learning, entirely. The students surveyed in this research were learning Informatics and Communication Technologies, and Media Communications. The most promising things students underlined were

- (1) Availability and ease of access to the teaching materials, exercises and updated information regarding their course, from anywhere outside of the classroom,
- (2) Collection of all the learning material in one place, and
- (3) Rapid feedback of their e-communications through online chat, sessions and exchange of e-mails on the course website,

A study on the use of MOODLE in Higher Education reported from Saudi Arabia revealed that it is used mostly for sharing and distributing learning materials. Most of the participants found it easy to use and were highly satisfied. Teachers appreciated the possibility of an out-of-classroom communication with students, and the ease with which the resources could be managed digitally and provided to the students at all times. Respondents also noticed positive changes in their courses after the adoption of MOODLE though female students shied away from using the system or used fake names to conceal their identities and registered with male names (Daoud, 2007).

A study done for an English language course in Slovenia showed that the MOODLE platform was helpful, useful and timesaving. Above all, it had a positive influence on the students' language learning. The results also showed that the learner type, i.e. whether a full-time or a part-time student, had no influence on a student's perceived usefulness of the virtual learning environment. Upon further examination of MOODLE, it was determined that all participants in the study downloaded lecture notes and homework activities (Zoran and Rozman, 2010).

A study done in Hong Kong discusses the benefits and issues in using MOODLE for understanding the use of ICTs in education among the students and teachers there. The investigators observed that in times when the education budgets are very low, use of open-source systems instead of licensed ones substantially reduce the costs for schools and universities. MOODLE can provide a low cost solution in classrooms, particularly for schools (Kennedy, 2005).

THE CONTEXT OF THE INDIAN PRIVATE BUSINESS SCHOOL

Like most countries in the world, in India too, educational institutions face financial constraints. While many teachers are aware of the usage and advantages of modern technologies, they continue to use the traditional chalkboard method of teaching, in significant numbers. Thus, there is a need for simple, cost effective technologies for managing learning in Indian educational institutions.

While many open source LMSes such as Claroline, ETutor, eFront etc and many commercially developed LMSes such as Blackboard, Learn.com, eCollege etc are available in the market, we decided to use MOODLE as the official CMS. The main reasons for adopting MOODLE as the official CMS were:

1. It was free and open source software. Since this was a new initiative in the institute, and was being done on an experimental basis, financial support was not sought for. Hence choosing licensed software was not feasible.
2. The software had all the required features that the researchers were evaluating for the purpose of the study.

3. Comfort of use by faculty and students: Two faculty members were already aware about MOODLE. This helped in its acceptance by the other faculty members and in imparting trainings. Hence, it was advantageous to choose MOODLE over others.
4. Infrastructure requirements: the software was installed on the college server itself, without incurring any additional cost for hardware.
5. Since some of the teachers were aware of the software and volunteered to take up the administration responsibilities and facilitate the usage of MOODLE, no extra cost was incurred for providing support to the users.

Hence, the researchers used MOODLE LMS in this study, which did not put any financial burden on the institute and was simple to learn and adopt.

At SIES College of Management Studies,(SIESCO) a private Business school operating in Navi Mumbai, India, MOODLE has been employed as the official CMS for a few of our courses. We have recognized MOODLE as an excellent hybrid tool encompassing modern technology along with traditional methods of teaching.

The aim of the following study was to analyze the effectiveness of MOODLE (in imparting education) as felt by faculty and students of the institute. Through this study the researchers have tried to evaluate students' and faculty's experience of using MOODLE. This process is required to gain the necessary insights to enable the successful implementation and support of the system.

While faculty participation was voluntary, student participation was mandatory, but restricted to the courses taught by the participating faculty. Hence, the number of faculty participants was low.

MOODLE AS A POTENTIAL CHANGE AGENT FOR INDIAN BUSINESS SCHOOLS

Business education in India is very challenging for both teachers and students. Apart from the intensity of conducting different kinds of classroom and out of class activities for students, such as projects, presentations, multiple kinds of assignments, teachers must also complete other routine tasks such as marking attendance of students, examination supervisions, continuous assessments and grading of students etc. As a result, a lot of time is spent on work that can be better done on a CMS platform thus enabling the teacher to have more time for self-development work such as writing research papers, attending conferences etc. Thus, MOODLE can be a potential change agent while ensuring that overall quality of education does not get impaired in any way. Besides, it can be a useful tool for those students who need to conform to curriculum requirements such as assignments, tests etc while away from the institute transiently, completing field projects or internships in industry. Video lectures can also be uploaded for those students who are completing their education through a distance mode, this giving them the same opportunities for learning as regular students and allowing them to complete class room requirements as regular students.

RESEARCH OBJECTIVES AND METHODOLOGY

The objectives and aims of the study are the following:

1. To study the effectiveness of MOODLE as an education management tool.
2. To determine and analyze the benefits of and barriers to the use of MOODLE.
3. To determine usefulness of various features of MOODLE
4. To evaluate the overall experience of students using MOODLE as a learning tool

The sample for the study was the students and the faculty of Pharmaceutical Management and Biotechnology Management Programs, The sample size was 89 students and 9 teachers. The investigators installed MOODLE on a server in the institution's premises and provided user ids to all students and faculty members. They demonstrated the use of MOODLE to all participants. Presentations on the important features of the software and its use were prepared and circulated among the teachers through e-mail. After the participants gained confidence, the course management part (distribution of class notes and news updates) and the evaluation part (quizzes and assignments) were facilitated through MOODLE. The students who were in the last semester of their courses and were away on projects also used this software to keep in touch with the course activities. They were asked to submit projects and assignments through this software only.

The principal method of study was a questionnaire-based survey done to get the feedback of the student participants. Eighty students responded to the questionnaire.

Although there were nine teachers teaching in these programs, only three faculties used the new system of LMS. 2 were from biotechnology and one from finance specialization. All three had a good technical competency.

Statistical analysis was done on the responses to understand the effectiveness and acceptance of the LMS by the students. Frequency distribution and mean were calculated using SPSS.

THE MOODLE EXPERIENCE IN AN INDIAN BUSINESS SCHOOL

Demographics of students: The large majority of students were in the 21-25 age group (80%), which fits the general profile of master level students. 56% of the students were female while 44% were male.

Practically no student had an experience of using MOODLE prior to joining the courses. Nearly 30% had permission to work on projects outside the institute and hence were less likely to come to classes and could benefit more from the distance learning facility of MOODLE. A significant majority of the students were very positive about the distribution of notes through this forum (72%). Similarly, 89% of the students felt that this was a good tool for uploading class assignments and submitting reports. 82% of the students felt that MOODLE was a good way of marking attendance. 83% of the students felt that MOODLE was a good system of putting up class notices. However, when it came to class assessments approximately only 40 % felt that this tool was good for conducting objective and subjective tests while 25-31% felt that this was not a good tool at all. 62 % students felt this was a good tool for uploading personal user profiles (Fig 1).

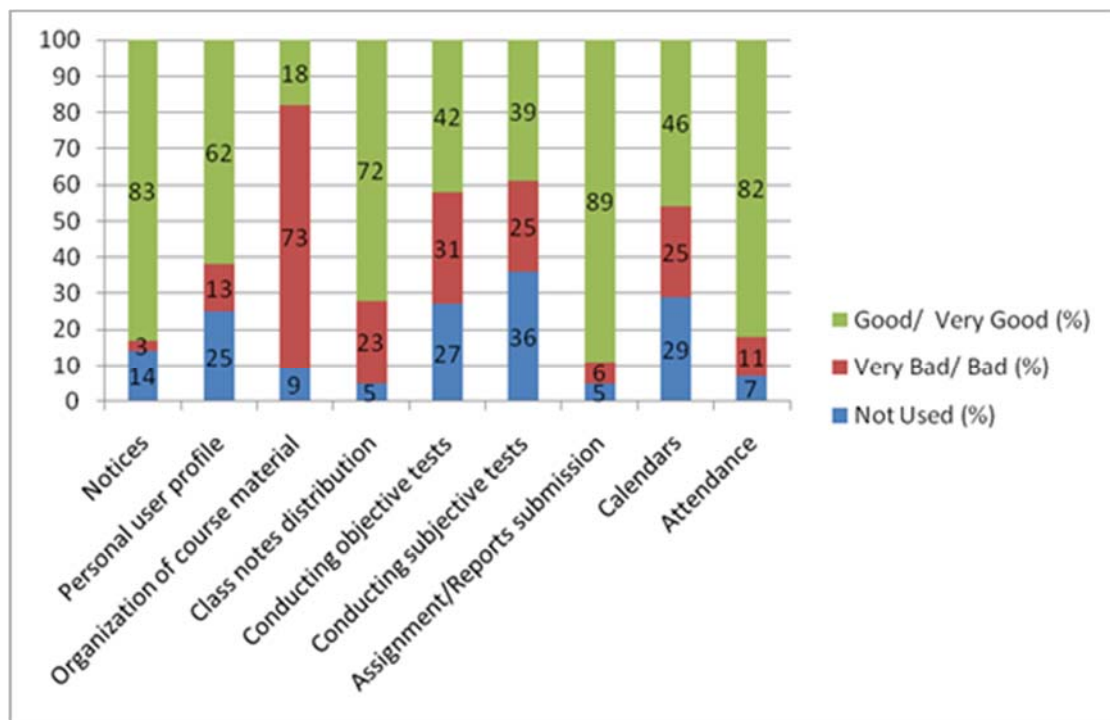


Fig 1: Students’ experience of the various features of MOODLE

When surveyed with respect to barriers using MOODLE, not a single student reported that he/she did not possess the necessary technical skills. This shows that the technical competency of all the students was good and they could adopt MOODLE well. However, 9% reported that they felt, using MOODLE was extra work and 5 % reported they did not like the technology. Of the 91 % students using MOODLE, nearly 50% of these (44% overall) reported that they did not face any barriers at all. While 25% faced problems related to network and bandwidth, 8% reported that they did not have the required technical support. Only 9 % reported that they had alternative options (Fig 2).

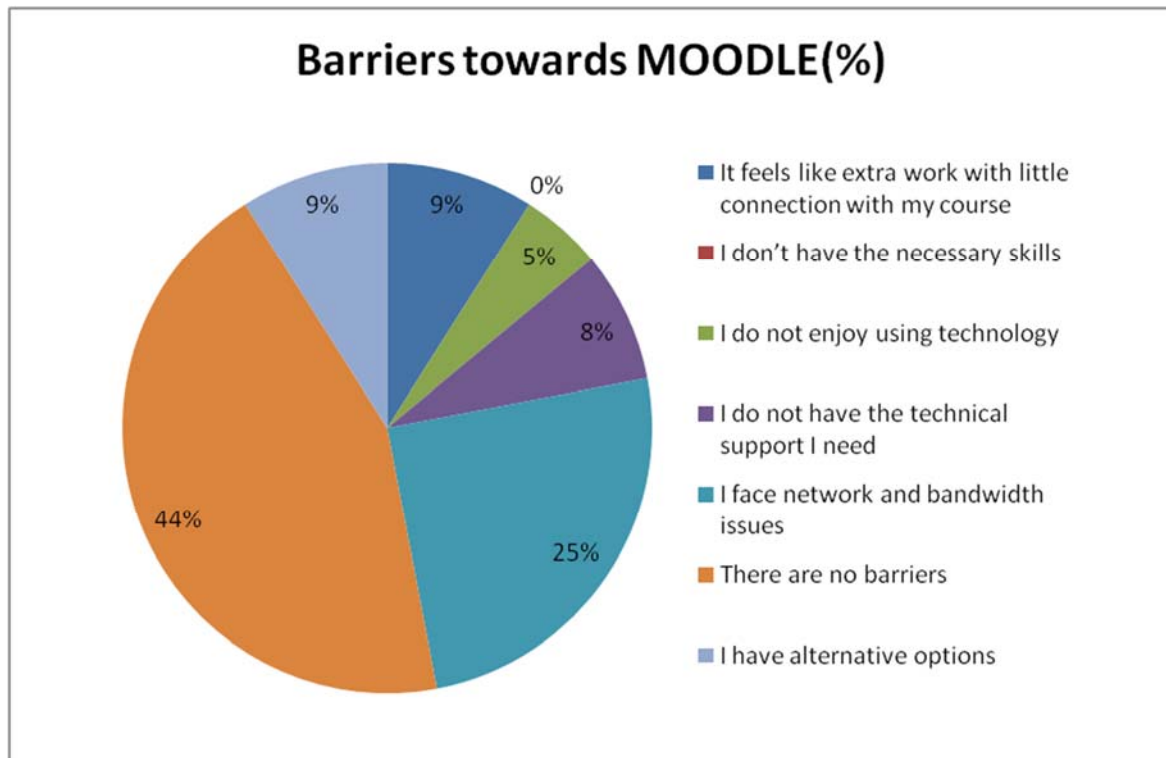


Fig 2: Barriers towards MOODLE, as felt by the students

When asked about the effectiveness of different features of MOODLE, 70-80 % of the students reported an improvement in the learning and/or planning of class activities. 41% of students found that the uploading of syllabus and session plans on MOODLE improved their learning, while 29% found that this improved the planning of class activities. Nearly 11% found improvement in both these activities. 20-33 % students did not use MOODLE for accessing the calendar, for submission of assignments and sharing materials. However, at least 60% reported an improvement in learning and planning of class activities when using MOODLE for sharing of study material, submitting assignments (59%) and using the calendar (64%). With respect to class notes material, 39% students reported an improvement in learning, about 14.3% in planning of class activities and 23.2 % reported improvement in both. (Fig 3)

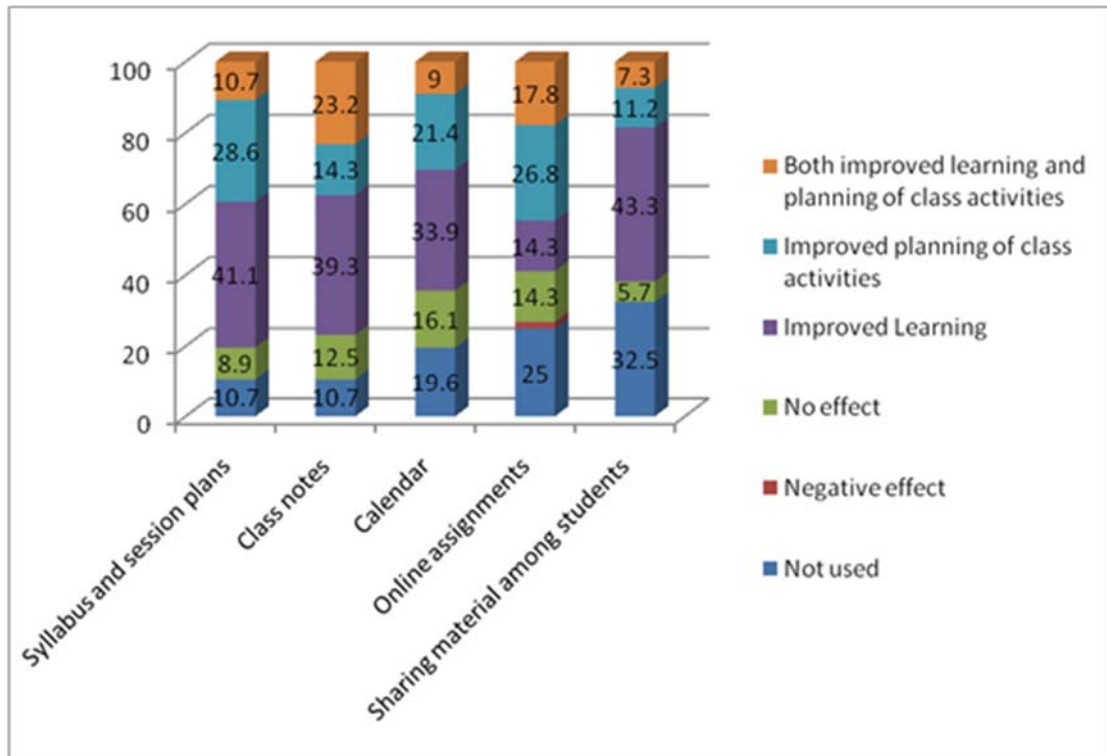


Fig 3: Effectiveness of different features of MOODLE

When asked to rank the different benefits of MOODLE usage, students reported this was a very good tool for sourcing study material. This benefit was ranked the highest. Student also rated the fact that it is convenient to use as very high (2.16). All other features i.e., time saving, improvement of learning, keeping update and planning of learning activities scored between 2.18 and 3.63 (Table 1).

Table 1: Benefits of MOODLE (Rank)

Benefit	Mean
Easy Access to Class Material	1.77
Convenience	2.16
Saved Time	2.18
Keeping Track of the latest developments in the course	2.39
Improved Learning	2.59
Helped in planning the course activities	2.63

The respondents were asked to rate their experience of using MOODLE with respect to the points listed in the table on Likert scale (1 being strongly disagree and 5 being strongly agree). Students found MOODLE easy to use as evidenced by the high mean value of 4.16 (out of a maximum of 5). Students also judged them very competent at handling MOODLE (3.79) and found it useful for staying updated (3.41) and accessing class material when absent (3.79). Importantly, students felt that support for MOODLE was available when they needed it to do their course work (3.82). MOODLE made it convenient for students to do their activities (3.39), better plan their class activities (3.14). Importantly students also found that they could refer to their notes of previous semesters using MOODLE. Overall, student found MOODLE to be an effective educational tool (3.8) (Table 2).

Table 2: Student experience of using MOODLE

Statements on MOODLE	Mean
MOODLE is easy to use	4.16
The training I received was sufficient for me to start using MOODLE	3.79
Whenever I was not able to attend college, MOODLE was useful to keep me updated with the latest developments in the course	3.41
MOODLE helped me access all the class material even when I was not at college	3.79
MOODLE makes it more convenient to do my course activities	3.39
Using calendars, I was able to do better planning of my class activities	3.14
MOODLE made it possible for me to refer to my notes from earlier semesters	3.27
Support for MOODLE was available when I needed it for my coursework	3.82
MOODLE helped me to better communicate with the instructor	3.16
MOODLE helped me to communicate and collaborate with my classmates	3.14
MOODLE helped me to get a prompt feedback from the instructor	3.04
Based on all the above features, I feel that MOODLE is an effective educational tool	3.8

PILOT EXPERIENCE – CLEARLY POSITIVE

Since this was the first phase of MOODLE implementation at the Institute, it was incorporated in those programs whose academic heads were comfortable with the technology and who saw a lot of potential in its uses. Since the entire faculty did not embrace it wholeheartedly, it was not made compulsory for the faculty. However students were expected to be more receptive to its use and hence it was made compulsory for them.

An online mode of course management was found convenient by the students since, it enabled them to get class notes while away from the institute. They could access the course details, class notes, calendar etc anytime. Importantly this also offered a mode for them to submit their class-work and assignments without actually meeting the teachers. However, students felt this tool was still wanting as far as assessments of students were concerned. This may have been because there were very few teachers who used this tool for their assessments. Students were also reluctant to put up their personal profiles on MOODLE. Although 62% students felt it was a good tool for this purpose, not a single student did so. They were not worried about putting up class assignments on MOODLE, since they were not able to see each other’s work. Students welcomed the idea of putting up class notices on MOODLE indicating that they preferred this mode to a notice board since this was convenient and was available on their desks through their laptop computers. Students of Management studies in our institute are expected to have their laptop computers with them always when in the institute. Very few students reported they did not like the technology. However 9% students said they felt it like additional work, probably finding that accessing MOODLE online to be more time consuming. Perhaps these students felt submitting assignment through email and simply copying lecture notes from colleagues or teachers was better. However, an important understanding that emerged from this study was that students could use this forum for referring to class notes from previous semesters. This also means that MOODLE can serve as a lifelong repository of various components of any teaching program or courses taught through this mode. Assignments, class notes, notices, calendars etc could be stored on MOODLE with the purpose of accessing the same in the future for reference.

Overall, the software was found to be beneficial in the context of a small private Indian B-school. With limited resources and niche programs, there was a need for a technological solution only for a small group of stakeholders. The investigators found that MOODLE very well fitted this requirement and hence successfully adopted it. Further, there was no additional cost incurred for the use of MOODLE– the software was downloaded and installed free of cost on the already existing server in the college. The internal faculty of the institute provided the administration and support. This initiative of using an LMS in the researchers' institute was an experiment and choosing MOODLE for this experiment posed no financial burden to the institute.

CONCLUSION

Our findings indicated that teaching institutions and students have still a long way to go before incorporating such tools in a fully-fledged manner in managing education and learning. Teachers need to be informed about the usefulness of such tools before implementing them on a larger scale. More importantly, they would need a lot of hand holding while they chart their way around such tools. Students on the other hand were a lot more receptive towards this particular tool. Of course, these students were from a technical background, being graduates in Science/Pharmacy and were not wary of using technology for their studies. It remains to be seen whether students from other more general management programs would respond similarly.

The major finding in this study has been that students can adapt themselves quite readily to an online mode of teaching as far as these two courses go (Biotech Management and Pharmaceutical Management). They were eager learners, which probably explains their cooperation in this study. However, there are still many challenges. One of these was some students felt it to be additional work and the reluctance of a lot of faculty to implement this in their courses. These could be made more receptive by encouraging them to be active participants in deciding how best to use MOODLE for online teaching. Another approach could be that of adopting a blended environment where face to face learning/teaching could be supplemented by the various options offered in MOODLE, such as assignment submission, messaging, class notices, attendance, session plans, academic calendars, class notes etc. Thus, information technology could play a more supporting role in managing education, which is imparted in a conventional manner. Weaver et. al. had a similar conclusion while using WebCT at Monash University, Australia (2008). Ahmad and Al-Khanjari (2011) also concluded that when using MOODLE, it could influence positively the learning and understanding of students, in conjunction with classroom teaching. As in the present study, the latter concluded that students were positive about E-learning and felt that availability of teaching materials, calendars etc. are additional positive features of MOODLE.

Similarly, another study done in Ghana reported an insight into the benefits and challenges of moving a face-to-face class to partly online. The investigators based their study on the experience of practitioners using Moodle. They concluded that there was exposure to and gain in enormous amount of knowledge as well as technological skills when using a hybrid approach. Further, the study also concluded that the use of Moodle enhanced the teaching and learning styles of both the teachers and learners (Hanson and Asante, 2014).

As seen in the present study, with the positive feedback from the students and a successful adoption of MOODLE by the teachers, it was possible to present a case, about the effectiveness of using technology in a business school, to the institute's management. Since then the institute has implemented MOODLE on a larger scale for all its full time courses, thus making it an effective change agent

REFERENCES

- [1] Ahmad, N. & Al-Khanjari, Z. (2011), Effect of MOODLE on learning: An Oman perception, *International Journal of Digital Information and Wireless Communications (IJDIWC)*, 1(4), pp. 746-752.
- [2] Al-Busaidi, K. A., & Al-Shihi, H. (2010), Instructors' Acceptance of Learning Management Systems: A Theoretical Framework, *IBIMA Publishing Communications of the IBIMA*, pp. 1-10.
- [3] Alkhanak, S. A. K. & Azmi I. A. G. (2011), Information technology usage and attitudes towards online resources-Students perspective, *African Journal of Business Management*, 5(7), pp. 2582-2589.
- [4] Carvalho, A., Areal, N., & Silva, J. (2011), Students' perceptions of Blackboard and MOODLE in a Portuguese university, *British Journal of Educational Technology*, 42(5).
- [5] Daoud, A. M. (2007), e-Saf MOODLE LMS in Saudi Higher Education: Implementation and Experiences, *Conference of MIT & Learning International Networks Consortium*, pp. 205 -210.
- [6] Georgiakakis, P., Pappasalouros A., Retalis S., Pappaspyrou, N & Siassiakos K. (2005), Evaluating the Usability of web-based learning management systems, In Zaphiris, P., Lambropoulos, N. & Zacharia, G.

- (2005). *ICT in Diaspora, Special Issue, THEMES in Education*, University of Ioannina. Athens: Ellinika Grammata, 6(1), pp. 45-60.
- [7] Hanson, R. & Asante, J. N., (2014), An exploration of experiences in using the hybrid MOODLE approach in the delivery and learning situations at the University of Education, Winneba, Ghana, *Journal of Education and Practice*, 5(12), pp. 18 -23.
- [8] Hölbl, M. & Welzer, T. (2011), Students' Feedback and Communication Habits using MOODLE, *Electronics & Electrical Engineering* [serial online]. July 2010; (102): pp. 63-66. Available from: *Computers & Applied Sciences Complete*, Ipswich, MA (2010). Last accessed December 14, 2014
- [9] Hsu, L. (2011), Blended learning in ethics education: *A survey of nursing students*, *Nursing Ethics*, 18(3), pp. 418-430.
- [10] IEEE Learning Technology Standards Committee. 2000. Draft Standard for Learning Technology Systems Architecture (LMSA), November 2000.
- [11] Kennedy, D. M. (2005), Challenges in evaluating Hong Kong students. Perceptions of MOODLE, *Ascilite 2005: Balance, Fidelity, Mobility: maintaining the momentum*, pp. 327-336.
- [12] Maikish, A. (2006), MOODLE: A Free, Easy, and Constructivist Online Learning Tool, *Multimedia & Internet@Schools*, 13(3), pp. 26-28.
- [13] Zoran, A. G., & Rozman, K. (2010), Students Perceptions of Using MOODLE, *MOODLE.si 2010, 4th International Conference Proceedings*, Koper, 21 May 2010.

Website references

- [1] www.moodle.org Last accessed on 14th Dec 2014
- [2] <http://moodle.net/stats/>, Last accessed on 14th Dec, 2014