



TECHNOLOGY ENABLED LEARNING THROUGH MOODLE

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ABSTRACT

The advent of the Internet and various multimedia approaches have opened the gates for teachers in the field of design and development of course materials, in Higher education. India has seen tremendous growth in the Information Technology sector. Despite the widespread use of mobiles and computers across various sectors in India, the digital divide still exists. The growing adoption of technology in education, combined with the focus on technology-supported learning makes it easier for teachers to reach out to the students through the use of Learning Platforms like Moodle. The faculties share their experiences and challenges faced in introducing Moodle, technology-supported learning, and in the development and delivery of programmes in English and the regional language – Marathi. This paper also highlights the issues and concerns of teachers and learners regarding the lack of infrastructural facilities at the Institute of Distance and Open Learning. There is an increasing requirement that the study materials and online instructions are made available in regional languages. To meet the growing need in distance-learning, a technology-enhanced learning programme is adopted to enrich and support the teaching-learning process, among faculties and learners through Moodle. This study investigates the teachers' and learners' experiences in the use of Moodle.

KEYWORDS: Moodle, Distance-Learning, Teacher Education, Open Education Resources, eLearning, Case Study.

INTRODUCTION

For a country like India, technology plays a vital role in distance education, where access to education and delivery of education is a massive challenge. In India, there are Dual-Mode Universities as well as Open-Universities. The University of Mumbai is a dual-mode university, which means the syllabus for the conventional and distance-learning programmes are built on a similar framework, and the overall administration of the programme is through the same management. University of Mumbai's, Institute of Distance and Open Learning operates as the distance learning section of the university and has an enrolment of approximately 80,000 learners in each academic year for its 34 courses and 14 programmes (IDOL-University of Mumbai, 2010).

Most Open-Universities in India use technologies like Computer Aided Learning; Computer Assisted Instructions and Virtual Country-Wide classrooms. While in dual-mode universities like the University of Mumbai, especially its distance learning division Institute of Distance and Open Learning, content in the form of the printed materials are predominant, and the introduction of technology-based teaching has had the least impact. Larger institutions need to adopt technology-based learning in order to

assist their large number of students to cope with the system. Administrative tasks like online admission and generation of hall tickets for examination were the only places where technology was considered. Unfortunately, it did not make its way in pedagogical processes in the Institute of Distance and Open Learning. Although desktop computers and laptops are provided to both administrative and academic staff, they lacked training in the effective use of technology in their respective departments.

The state government has encouraged the introduction of Information and Communication Technology in schools. The university itself was promoting online initiatives, and the Distance Education Council had agreed to provide support to all programmes that implemented online learning. Government's policy decision to ensure technology-based education in India at all levels (K-12 -Higher Education) has set the ball rolling for executing it. The objective of universalizing access to online education was to reduce gender, social, and regional gaps in enrolment and facilitate student retention. Measures have been taken to improve the quality of online education, with the initial focus in Science and Math (core areas in education), where Information and Communication Technology plays a crucial role; the efforts have also trickled down to courses related to Humanities and Social-Science. The distance-learning courses also need to reorient themselves with technology-based teaching for better retention among learners. Along the same lines, Maharashtra State has included Information and Communication Technology as a compulsory subject from grade nine onwards, where hands-on training of various educational and transformative learning software like GeoGebra and Open Source Software is included in the syllabi (Maharashtra State Board of Secondary & Higher Secondary Education Pune, n.d.).

Chari and Haughey (2005) highlight the framework of (Mishra, 2002) who created a design framework for online learning environments. Which was then used in developing a Post-Graduate Certificate in Participatory Management of Displacement, Resettlement, and Rehabilitation (PGCMRR); where the most frequently accessed segment was the discussion forum with peers, thereby highlighting the importance of discussions and interaction among online learners.

In a comparative study involving the Indira Gandhi National Open University and the Yashwantrao Chavan Maharashtra Open University by (Dikshit, Gaba, Bhushan, Garg, & Panda, 2003), examined the attitude, motivation and preferences of online learners in the programmes that were entirely online. The study reported that 47% of the Indira Gandhi National Open University students preferred Web-based learning with some face-to-face support while Yashwantrao Chavan Maharashtra Open University students were almost equally divided between Web-based, face-to-face and other media.

Also, the two-language formula is adopted by the state of Maharashtra; wherein all-digital government communications are in Marathi and English. Hence, using Information and Communication Technology in Master of Arts in Education at Institute of Distance and Open Learning was based on "Social Constructionism as a referent", that is discussed in this paper. The rationale behind this is to assist learners in long-term retention and develop skills and expertise through interactivity in the online course.

In order to study the feasibility of disseminating education through technology using Moodle, Information and Communication Technology course in education (optional subject) was selected. The purpose of this paper is to demonstrate the use of options available to introduce the course through Moodle. This paper highlights the barriers faced by the faculties and learners in implementing and understanding of the online programme.

DEVELOPMENT IN PHASES

Phase 1: Design and Development

The first phase involved the Design and Development of the Information and Communication Technology course for Moodle. The course writers were then identified based on their expertise. They were allotted units to be developed for online learning, which were uploaded on Moodle learning management system.

The design and development for this course ensured that coordinators participated with much enthusiasm in their units. In the first year, it was decided to engage learners in online-learning through

Moodle without any restrictions or framework to adhere. The learners were encouraged to share their experiences in contextualizing what to learn. (For e.g. No definitions of blogs/discussions/forums were explained).

In the subsequent years, based on the previous experiences, the programme guidelines for learners and teachers were created, adequate orientation and training in the use of Information and Communication Technology was conducted; with a thrust towards a pedagogy that made the course more Meaningful, Effective and Tangible.

It was understood that learning of digital technologies and pedagogy of the Open Distance Learning requires not only a good design for distance learners but should help provide the learners with autonomy in the use technology. Master of Arts in Education-II Information and Communication Technology course was integrated with the proper use of technology like screen-casting, spoken tutorial, YouTube and others. The learners were asked to submit online assignments using multimedia. It was found that most learners and teachers were well versed in basic information and Information and Communication Technology skills, that is, usage of the elementary functions of technology but they could not design and integrate online units for their classroom teaching-learning process.

Phase 2: Induction and Orientation

After the design and development phase, the learners were asked to attend an Induction and Orientation programme. Initially, learners were briefed on the Dos and Don'ts of the Moodle programme based on the university rules and ethics. These learners were provided with a username and password for the course. After which at each stage they were guided individually and also in groups.

Phase 3: Implementation

In the third phase the course was brought to action. The learners were concerned with the delay in the starting of the course. The students were also anxious about the kind of participation that was expected and how to upload the assignments. Notes were made on the learners' apprehensions and expectations; this feedback helped in streamlining the online learning programme further.

Implementation of Information and Communication Technology in the current course transformed the traditional distance learning course into an e-learning environment. The present study was aimed to ascertain the quality of the course, based on the Design and Development of the course modules and to assess the students' performance in the final evaluation.

Respondents

The data for this study was collected from the 10-course coordinators, two peer tutors and 327 student respondents who responded by way of semi-structured questionnaire and interviews. Additionally, an evaluation form comprising of 25 items were given to the learners online. The learner's discussion board threads were recorded and analysed for qualitative interpretation.

Table 1 shows the enrolment of learners' gender-wise and Table 2 displays region-wise percentages of learners.

Table 1: Number of Enrolment & Gender wise distribution

Gender Wise Distribution	Total number of learners	327
	Male	11%
	Female	89%

Table 2: Geographical Demographics

Geographical Demographics	Mumbai City	66%
	Around Mumbai	32%
	Rest of the country	2%

Data Collection

Data collection was ongoing and concurrent with data analysis. Development of trust between the researcher and participants was paramount, and therefore, all participants were ensured of anonymity. Multiple interviews were held with interviewees over a period of time, with the focus moving from general topics to specific issues and back again. This recurrence facilitated the thematic analysis of data and provided for a test of reliability, as the multiple narratives could be examined through comparisons over time.

Hands-on Moodle

Moodle is an open-source web-based learning management system and a low-cost alternative for educators to create personalized online learning environments. The orientation to Moodle was followed by a series of hands-on training programmes for learners in different phases. The demonstration of the Information and Communication Technology course was later discussed with an eLearning perspective. The learners were tutored on how to share their assignments using spoken-tutorial software like 'Cam Studio' to teach different units of Information and Communication Technology course. Subsequently, the students were asked to submit at least one presentation as an assignment, which had varied multimedia features, appropriate to the content. The submission of assignments was followed by showcasing their work to others in the online class through the discussion board.

Social Constructionism as a Referent using Moodle

Throughout the Information and Communication Technology programme, Moodle was used as a platform where Social Constructionism was a referent for learning (Moodle, n.d.). This programme adopted a modified version of 'Martins five laws' that is considered as a useful referent taken from research that applies to education in general and is based on "Social Constructionism".

Figure 1 shows the five most critical sequential aspects related to Social Constructionism using Moodle coined as (CLAFS)



Figure 1: Chari's five attributes of Social Constructionism as a referent using Moodle (2015)

The above acronym CLAFS, enhances the facilitator's knowledge in the five attributes of social constructionism and provides the learners with tailored opportunities to share ideas, ask questions and express their knowledge (peer learning).

1. **Collaborative Environment:** There is a need to provide a collaborative environment for both learners and teachers. This collaboration creates a rapport between them for an efficient online learning session, which can be maintained throughout the course.
2. **Language Contextualization:** As the online learning programme comprised of students from the English, Marathi and Hindi medium of instruction. There was a need to translate the content in various languages; videos were customised in Marathi (regional language); besides, the students had the flexibility of using multiple languages in the discussion forums. It was done to provide a rich and engaging learning experience to the students.
3. **Activities (guided):** Once the learner's language issues were sorted, based on the level of understanding of the learners, a series of guided activities were provided to them with the help of the peer-tutors.
4. **Flexible Environment:** As both the students and the teachers were attempting to use technology-based teaching-learning approach for the first time, there was a need for a flexible learning environment. Flexibility with regards to medium, time, place, content options, interaction, learning support and assessment was deemed essential. This would help the learners and teachers to learn and teach at their own pace.
5. **Sharing and Motivation:** Sharing and Motivation are the two keywords for any Online Learning programme; it is essential to motivate both teachers and learners in any new environment constantly. It was mutually carried out with inputs from the administrator at the centre.

BARRIERS IN USING TECHNOLOGY IN EDUCATION

Although, Moodle brought many advantages to the online distance learning course; implementing it was faced with hurdles which were overcome in time. Some of the barriers in the context of the present study are listed below.

Resources: Not all students owned computers, and thus, they had to rely on other means for using the computer, like borrowing from people who owned one, computers in labs, offices and cafés. Another prerequisite of an online course is to have a stable internet connection. Unlike today, there were not many options of Internet Service Providers available, and the subscription packages were expensive; therefore, not many students could afford it.

Technical Issues: At times, the technical infrastructure problems like the server failures and the low bandwidth created hurdles in the online learning course; as the learners could not access Moodle in their own time and place. Additionally, the students and teachers, on multiple occasions faced problems like the webpage could not be loaded and sometimes losing their work when they lost the connectivity with the page.

Teacher's Proficiency: Though, the teachers who were assigned to coordinate in the online course were well experienced in conducting conventional distance education courses, it was the first time that they were developing multimedia content for the online course in Institute of Distance and Open Learning. This inexperience of some teachers to develop content for online distance-learning also posed difficulties.

Multiple Medium of Instruction: The teaching of the course Information and Communication Technology was a challenge, and the greater challenge was to deliver it in regional language. The main concern of the teachers was; providing hands-on experience through technology and developing their skills in languages other than English, that is, Marathi and Hindi. Most of the learners from the Marathi medium resided in the outskirts of Mumbai, (geographically away from their contact centres) and thus, faced obstacles.

FINDINGS

Different themes emerged from the students' responses, teachers' interviews and feedbacks. The major theme being that the Design, Development and Delivery of an online course should be based on the environment in which the pedagogical activity will be carried out; in this case, it is the learning management system 'Moodle'.

Among all the codes, one that truly stood out is the continuous 'Pedagogical Support' that was built into the course design of the online programme. Along with coordinators, the course also had 'Peer Tutors' to communicate and guide the students throughout the sessions. The students thought that the course as it was designed, influenced productivity.

Another important aspect of this online learning environment was the 'Interaction' between the learners, and the learners and the coordinators. The aspect of 'interaction' was taken into consideration at the time of course development. Furthermore, students' interaction with coordinators being an integral part of the course, the coordinators concentrated on providing regular feedback to the students. As per the students, they used the forums or instant private messaging applet available in Moodle to send messages to the coordinators. Thereby making Moodle a perfect two-way communicating platform in a virtual environment.

Some of the student-participants also stated that rural learners and some elderly participants were not so familiar with the tools of Information and Communication Technology, and thus, some practical sessions besides induction and orientation would have been helpful.

Most of the student-participants and the coordinators were satisfied with the skills that they had gained through this course. They were confident in integrating and using the learnt skills in their classroom for their students. The students who were reluctant initially also stated that the course was beneficial to them. Table 3 indicates the students' reaction to the course.

Table 3: Experiences before and after online course

Before the Online Course	Learners Reluctant to take the course	94%
After the Online Course	Learners found the course well designed and well delivered	97%

To ensure overall educational quality in Information and Communication Technology and eLearning, it is essential that educators and educational policymakers drive and direct technological transformation of higher education. Engaging academics to appreciate Information and Communication Technology is a significant management issue in higher education reform and such reform has to be based on the development of 'learning communities'. (Sekiwu & Frances, 2014). Information and Communication Technology training should be made compulsory to every academic institution. It requires serious thought reform and adoption of bottom-up approaches, because top-down attempts to achieve educational reforms in technological outlook have failed and will be doomed to failure until they confront the cultural and pedagogical traditions and beliefs that underlie current practices and organizational arrangements (Goodman, 1995) as cited in (Sekiwu & Frances, 2014)

(Deshmukh & Chari, 2014) Observed that dialogizing with learners, peers and peer tutors made learning transformative and empowering. The generative dialogue approach used in the online distance education programme was able to get the learners' attention, which otherwise is not under the control of the coordinators. Thus, the teaching and learning process was enriched by adopting the generative dialogue approach. It gave the learners a space for dialogizing, preparing a presentation in their chosen topics and the web-conferencing which provided the students with an opportunity to hold discussions on multiple topics.

An example of A student testimonial is given below

*Respected All,
I am really grateful to have such course. As a teacher, I wanted to be more perfect in my teaching with new techniques so that weakest learner can also understand the subject in a better manner.
This entire course helped me understand concept of education with its history as well as learners' psychology. Thus, this course helped me become a better teacher.
The ICT part is really wonderful. It helped me utilize the real use of Information and Communication Technology. This taught me how to make difficult topic easy to understand with small presentations. This ICT course makes teacher cover large descriptive topic in small time and with ease. ICT motivates learners to learn any subject in detail. It helps to control the classroom since audio-visual presentation is more effective than traditional teaching methods.
Instructional Design helps anybody to access topic (learn the topic) in the absence of teacher. Thus, ICT makes me an individual, independent and self-confident person. Research work cannot be completed without ICT. To summarize I would like to voice my opinion that; ICT plays an important role in the 21st century so that an individual can change the learning and/or teaching methods with time.*

CONCLUSION

Thus, it can be concluded that creating an enduring vision and a strategic framework for the effective implementation of technological innovations, in distance learning, seems critical. However, it requires the willingness of institutional leadership in order to promote technology-use in higher education. It was noticed that the whole process of teaching the course online was a challenging and complex undertaking, which required understanding the skills and requirements of the learner. The present study highlighted two important aspects that paved the way for a successful online course, which were 'motivation' and 'interaction'. These two attributes engaged the students in the pedagogical process of learning and contributing, rather than the mere formality of completing the course.

In addition, lessons learnt by the students-participants' interaction with Moodle; coordinators experience through online content development, and the barriers in implementing technology in distance-learning helped in understanding the benefits of technology in education. However, it raised some critical questions in the context of distance-learning in Institute of Distance and Open Learning.

How can one resolve the issues for the first time Information and Communication Technology learners of Institute of Distance and Open Learning?

How much can be taught in a short span of three months?

How could one incorporate the syllabus (exam-oriented) with hands-on training (career-oriented)?

How do we engage the coordinators to effectively and efficiently implement an online programme, especially for a large class?

As the online distance learning evolves in Institute of Distance and Open Learning, some of these questions may be answered in time.

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