Moodle based LMS implementation in higher education sector in Kerala. Perspectives and suggestions on implementation

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Abstract: In higher education, both in classroom education and in the evolving online education, a comprehensive and efficient system of infrastructure should be in place at the state level with precise planning and centralization. This paper discusses the relevance and potential of Moodle LMS implementation in the higher education sector .

Background

In the twenty-first century, significant changes are occurring in the field of education. If content knowledge and pedagogical knowledge were enough to become a teacher in the last century, then technological knowledge is also needed today. This century is called the age of digital technologies and this generation of students are called “Next”, generation Z (theory of generations developed by Neil Hove and William Strauss) the teachers are also designated as techno pedagogues.

Koehler and Mishra (2005) introduced a framework, called technological pedagogical content knowledge (TPCK or TPACK) by adding ‘T’ of the ‘technology’ to the Shulman's old concept - ‘pedagogical content knowledge PCK’(1986). According to them ‘Technological Pedagogical Content Knowledge (TPACK) refers to knowledge about the complex relations among technology, pedagogy, and content that enable teachers to develop appropriate and context-specific teaching strategies’. By integrating technology they extended the characterisation of teacher knowledge to knowledge and understanding of the interplay between CK, PK and TK when using technology for teaching and learning. It also includes an understanding of the complexity of relationships between students, teachers, content, transactional practices and technological elements. Technology also revolutionised the design of instruction and thus made teaching learning process as a collaborative and engaging activity. It is the art and skill of weaving the techniques of the craft of teaching into the learning environment itself.

As per Allen and Seaman (2010) our field of education has shifted from the old traditional courses pattern of the past to the level of conducting four types of courses. Those are:

1. Traditional courses , in which no online technology is used in the course
2. Web-facilitated courses , with 1%–29% of the content presented using web technology during a face-to-face course
3. Blended/Hybrid courses , in which 30%–79% of the course involves engagement with web technology; these courses combine face-to-face and online participation, typically with a limited number of face-to-face meetings
4. Online courses , in which 80% or more of the course content is delivered online

In addition to all this the introduction of choice-based credit semester system in Kerala in 2009-10 also restructured the scheme, course pattern, the assessment procedures and the grading strategies in higher education sector.

Even before the boom of technological integration in education and online apps, some colleges used online learning opportunities on their own, but the use of online mode was not widespread. Hence, It is not advisable for higher educational institutions in Kerala, especially colleges and their faculties to continue like this without any planning, resource or monitoring. Currently there is no planning for online education or blending technology in traditional classrooms at any level. The challenges and threats it raises for teachers and students should be analysed objectively. In higher education, both in classroom education and in the evolving online education, a comprehensive and efficient system of infrastructure should be in place at the state level with precise planning and centralization.

Online mode of education is not a something that has to be used only in the context of remote teaching. It is also not a substitute for real campus/class room education. As the classrooms become smarter and hybrid, offline education and online education needs to complement each other. An education system that combines these two modes of education, known as blended learning, is now being developed.

Campus focused real space education in the state has a great tradition. It is now essential to have a centralized foundation for online education that complements it. State level planning is an essential required in this regard.

For online education to be effective, a comprehensive action plan needs to be developed within a specific time frame.

General approach

Five things are essential for the implementation of a comprehensive and efficient online education system in all colleges in the state.

First, A proper platform: A two-tier system is needed that can cover all the programmess and courses in the colleges under the state universities. All colleges should have an independent are

Learning Management System based on Moodle platform. At the same time, it needs a two-tier system of centralized academic administration, system administration and content development at the state level.

Second, Accessibility: In addition to the website interface, the system must have a mobile app that is accessible to all the students even with the cheapest devices available in the market. More than 90% of students worldwide use Moodle through the mobile app. It has to be ensured that all students have a basic device and internet connectivity so that they can easily access the courses. The mobile app for Moodle also has the option of even running when offline. This app is freely available on Moodle itself. Even then it is advisable for each college to provide its own app Instead of using this app directly. Since the source code is available, each organization according to their requirement can change the name, logo or description and embed their site URL in the app and the students can install it directly from the App Store and use it with their user credentials.

Third, Academic planning: Each subject should have a plan of action on which contents of syllabus and in what form should they be made available online. It is not mere copying of the classroom syllabus for online courses. Syllabuses should be redefined for online classes specifically considering the potential of online learning. This should be considered at the university level. Along with this, lab activities that are not possible online should be continued in shifts maintaining social distance. College libraries should complete automation and come up with a system for searching, booking and renewing books online along with arrangements for limiting the number of students that visit the library and pick up books. Making the labs and library as accessible is important in higher education.

Fourth, Methodology: There are more than fifty different teaching -learning tools available on online platforms like Moodle. There should be pedagogical planning at the respective departmental level as to which of these can be used to effectively reach all students. It is important for the teaching community to have a vision on how to minimize the time spent for online live class- how to focus, what portions to be given, what activities have to be done or which tools to use and how to make the class more student centered.

Fifth, Technical training: There is a tendency to use all softwares to shift classes to online mode. This is a big challenge to both the student and teaching community. No technical training has been officially provided for the academic community. An online survey on online training programs reveals that a large percentage of teachers are unfamiliar with LMS platforms.

The Digital Divide Issue

Digital Divide is a major “civil rights issue of the new millennium”(Carvin :2000) Only 39.3% of the total population has access to the Internet (21.3% in Africa, 31.7% in Asia, 68.6% in Europe, 84.9% in North America). But the positive side is that these numbers shows a 676.3% increase in accessibility between 2000 and 2014. As per Internet World Stats 2016 Africa demonstrated a 5,219% in Internet service, the Middle East demonstrated a 3060.9% increase in Internet service, and Asia demonstrated a 1006.8% increase in Internet service during thae period of 15 years .

We also need to understand that digital divide is not just a matter of connectivity or issue connected to the lack of device. Accessibility issues between different segments also need to be brought into the realm of the digital divide. Mainly accessibility issues can be categorized into six categories related to the problems faced by different categories. They are Gender, Chronological Age, Race/ Ethnicity/, Income, Education, People with Disabilities. We also need to consider the digital divide that these categories face when designing an inclusive model.

There is another important factor that determines the interest of the users in the use and popularity of any technology. This applies to both hardware and software. The Technology Acceptance Model (TAM) put forwarded by Davis (1989) focused on two key variables that affect the levels at which individuals involve with technology. Perceived usefulness is defined as “the degree to which a person believes that using a particular system would enhance his or her job [or daily activity] performance” Perceived ease-of-use is defined as “the degree to which a person believes that using a particular system would be free of effort” If the technology is simple to use, then the obstacles conquered. If it is no longer easy or clean to use and the interface is complicated, no person has a fantastic mind-set in the direction of it.

The lack of interest of the teaching community in adopting technology, especially in Moodle, is mainly on this particular aspect. They think that the moodle is very difficult to use and that its architecture is very complex and therefore not user friendly. This is the problem of lack of proper understanding and adequate training in Moodle.

For the effective use of Moodle platform, live hands-on training is found appropriate. It can be easily provided to almost all the teachers in a time period of six months.

The practice of taking classes with video conferencing programmes is unscientific. It is a fact that if 50 students turn on their camera, then the 50 inputs will have to be streamed to 50 persons and the multiple of 50x50 output would be required which will cause a large server load for the site. The existing internet connections used by students cannot handle it. So it is not possible for the students to attend these classes or teachers to take classes without interruptions.

A proper learning policy will help us utilize valuable internet data most efficiently, making it accessible to all. A policy made so will make the learning atmosphere student-centered rather than teacher-centered.

Pedagogic philosophy of Moodle

What is moodle? How can we define it? Is it an online learning environment, an e-learning application, ,Course Management System, a Learning Management System or Virtual Learning environment? According to the offcial definition *"Moodle is a learning platform designed to provide educators, administrators and learners with a* ***single robust, secure and integrated system*** *to create personalised learning environments."*

Moodle (Modular Object-Oriented Dynamic Learning Environment) is a open source community based online learning management system (LMS), developed and designed by Martin Dougiamas.The first Moodle based site was Peter Taylor's http://smec2001.moodle.com/ at Curtin University , and Moodle 1.0 was released in August 2002. The design and development of Moodle is guided by a social constructionist pedagogy.

Constructionist learning involves the learner drawing his/her own conclusions through creative experimentation and collaborative activity and the making of social objects. In constructionist pedagogy the role of the teacher changes from an instructor to a guide. According to Martin Dougiamas, founder of moodle four basic concepts of social constructionism are at work behind Moodle. In his own words, they are as follows 1. All of us are potential teachers as well as learners - in a true collaborative environment we are both. 2. We learn particularly well from the act of creating or expressing something for others to see. 3. We learn a lot by just observing the activity of our peers. 4. By understanding the contexts of others, we can teach in a more transformational way (constructivism)
" One thing I found out quickly in a community like ours is that people have a wide range of expectations of online learning. At the authoritarian extreme there are those who want students to be highly controlled: reading resources that are revealed at set times and later sitting quizzes to prove they read those resources. I call this the rat-in-the-maze approach, or dump-and-pump.

At the techno-hippy end of that spectrum there are those who want to devolve management completely, with every user running their own portfolio site, streaming blogs and files to each other using RSS and trackbacks. It's an interesting dream that really opens up thinking about education but I think the problems to be solved are many (such as security, accountability, the structure of institutions etc).

The vast majority of people that I meet fall somewhere between these two extremes. Many of them are new to online learning, and are looking for the next step beyond what they were being paid to do offline, while being accepting of gentle guidance to improving their online techniques."(Dougiamas)

Moodle is not a teaching tool or course management app or even an LMS. It is an even more advanced virtual learning platform. In Moodle personal and adaptive Learning is more

important than management.In other words the emphasis in Moodle is on the Learning more than the Management. It focuses on Tutors/Teachers/Students and not the Management of the organization. Dougiamas says he prefers to call Moodle an operating system rather than an LMS.

Advantages of Moodle as LMS

The question of why Moodle can be answered by numbering the advanced features and possibilities of Moodle as given below.

1. Collaborative
2. Learner Centric not System Centric
3. Activity Oriented
4. Adaptive
5. Social Constructionist Pedagogy
6. Tracking
7. Overall Grading & Assessment Rubrics (Separate connected constructed)
8. Gamification
9. Modular/ Customisable
10. Plug ins Integration
11. Free & Open Source
12. For online/ Blended and Web-facilitated courses
13. Works Offline /Mobile
14. Community Support
15. Integrated with Outcome Based & Bloom's Taxonomy Framework

So the key question now is where does our teaching community stand in terms of techno pedagogy? Using a Teaching app/tool? Using a Course Management System? Under a Learning Management System? Or living in a Virtual Learning environment?

Responses from the aforementioned survey shed light on the matter.

Question	Responses				
Have you ever attended any LMS sessions?	Yes	No			
	56	111			
	0.335329341	0.664670659			
In which roles you had used LMS? (Can mark more than one options)	Not used	Admin	Teacher	Student	Guest
	99	8	50	27	13

These responses confirm the need to bring teachers from the higher education sector in Kerala to this learning platform through comprehensive training.

Suggestions for Comprehensive LMS Implementation

1. A single centralised platform for every academic activity as well as administration may be executed. But, at the same time, it should be structured in such a way as to provide each college with/ autonomous LMS system/autonomy in operating the LMS system. What we are suggesting is the moodle platform.
2. In each college the moodle platform is to be installed with adequate server system at the state level. The installation can be entrusted with the agencies such as Data Centre, IT Mission, and Digital University. They will be in charge of the safe keeping of the LMS besides providing technical support. If this is not possible the Education department needs to constitute a technical team to develop these platforms with requisite server space and the same is to be given to each college.
3. For each college the specification of the server space is 8 GB memory, 100 GB storage and bandwidth of 4TB for colleges having student strength b/w 1000 to 3000 more/added memory and band width is a prerequisite. A more efficacious way is to provide colleges with site hosting space by installing a series of servers with the support of IT department as mentioned above.
4. System administration should be done by the LMS monitoring cell of the corresponding/respective colleges. There must be an LMS coordinator in every college in addition to the LMS technical monitoring team at the district level. A team comprising of a state coordinator and district level coordinators looks after the entire system.
5. It is better to give this LMS network a universal name with its own domain name. The LMS of each and every college is to be operated under its own sub domain. There is no need to register with separate domain names.
6. Common online resources are to be prepared at the university level and the same is to be distributed through the central LMS system of teachers. Colleges can copy these resources to their LMS platforms. What is to be established is the new age teaching culture of connective educators. The sharing of knowledge and resources should be augmented while appreciating the process of common course designing and content developing. The duty of carrying out the online teaching and evaluation falls on the teachers of respective colleges.
7. Encourage the learning activities with various interactive, text oriented and voice based tools which utilize optimum data.
8. Teacher oriented method of taking classes is not advisable. Importance must be given to the activities of the students. In online courses more emphasis should be given to the group/ collective activities of the students.

9. Teachers should make use of some other useful digital tools for conducting virtual classrooms outside/other than moodle such as OBS and Open Board. Open source softwares are best suited for this purpose.
10. All teachers should be given moodle training, live hands-on-training to be specific, within a month. A team of veterans/masters is to be constituted for this purpose. Coordination of the training should be entrusted to expert colleges capable of imparting moodle training by making/turning those nodal centres.
11. Technical facility should be enhanced to ensure accessibility to all the students of the college.
12. The course of study and the time prescribed for it should be flexible for the students to cope with the nature of the online courses offered and the attendance also should be flexible in accordance with this. It should be conditioned in such a way as to complete the specific course of study within the specific time limit.
13. If the system installation is done by the department the installation of the moodle platform and the customization of the site can be entrusted either with a team of voluntary teachers or with competent agencies. IT professionals can be appointed on daily wage basis
14. It will take only few week's time to establish LMS system in all the colleges of Kerala. A seven day training programme for teachers can also be completed within six month in multiple batches.
15. What we need is a sustainable and exhaustive online system of education which will be operational for all mode of courses both in online and offline. This system must act as a supplementary/complementary space for the ongoing classroom teaching process. Internal evaluation activities should be done using this system.It's high time we envisaged a complete and full-fledged learning management and academic administration system.
16. What teachers need is more than the mere technical know-how to use the online tools. They actually need the expertise in pedagogy in order to make dexterous use of technical innovation in their respective subjects to teach effectively. A teacher must gain the skill to design online courses on her own.
17. At the university level curriculum and course design should be done in such a way as to give online learning its due place. Syllabuses need to be reformed/redesigned by incorporating the online-cum-offline learning possibilities in accordance with the outcome based education system already instituted in the state
18. At the state level, the continuous monitoring of the system should be ensured with timely evaluation of progress.

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