Analysis of Learning Management Systems by Extracting Effectiveness Factor wise

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Abstract:
Various Learning Management (LMS) applications are in use by educational institutions. With increased use of internet individually it has become possible to adopt technology to the needs of teaching and learning. LMSs are evolved as scaling of applications is seen very often successful. Most of the tools have been tried in universities as research initiatives and entered open source market for further improvement where some other tools have turned commercial too. Individual facilitators of courses choose tools for their students to access course structure, material, assessments and announcements. Some educational institutions have a practice of using a common tool for all the courses. If usage of various tools is limited, privilege of learners benefitting from some significant features of outstanding tools will be missed. Choosing proper LMS for the needs of instructor, learners and institution is essential in the context of competitive learning environment. Millennial learners have typical learning styles with diversified needs. Course owners design their courses such that the course outcomes are attained in compliance with the outcome based education. Social media plays vital role in promoting online tools for learning. Research on Facebook as LMS is carried out and found positive results. (Wang, 2011). This papers brings out the experiences of users of different LMSs and analysis factor wise.

Keywords: LMS, Millennial learners, course outcomes, outcome based education.

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1. Introduction

Number of factors can be considered for analyzing effectiveness of Learning Management Systems.

Following are few factors which are looked usually for a meaningful usage of the tool.

S.No	Factor
1	User types
2	Storage
3	Bandwidth consumption
4	User Interface
5	Process complexity
6	Mobile compatibility
7	Features
8	Reports
9	Ease of use
10	Support
11	Customizability
12	Data Redundancy Management
13	Scope for integrating with other applications
14	Security
15	Application intelligence
16	Curriculum design support

Table 1: List of Factors for LMS

There are general practices of reviewing the tools and giving an overall rating. But that doesn't help to choose appropriate tool for need. Tools can be chosen based on the specific need of learner, facilitator or institution. User types can be from student, faculty, head of the program, dean, lead, coordinator, principal and to admin which are to differentiate features required by each type of user. Features can be developed in object oriented style once they are classified as per their roles in the program. Similarly all the factors listed are critical for anybody to think about using the LMS tools. Proposed study is aimed at facilitating the confused minds to depend on knowledge represented from extracted data with respect to the meaningful parameters.

The tool chosen ideally should be able to provide role based privileges. It is possible by deciding types of users in the organization and program conditionally.

Essentially we see the tools with three major user types which are student, teacher and administrator. But in a typical educational institution there is a hierarchy which demands confidentiality at few levels and reassigning of work feature. Hence user type is considered as one of the major factor to select the tool.

With the increased number of digital content users, content has grown volumes and becomes unmanageable for store and maintain. Users look for storage facility in terms of cloud. Many tools offer significant size of storage space for the users to store their files and content. Yet limitations in some tools make it a point to use storage as one factor. Trade off between quality and quantity arises when it becomes unavoidable. Few tools have excellent features in the forms of graphics but consume more bandwidth to access. If the need of the user is not the look but the mere content, it becomes irrelevant to provide beautiful graphical environment.

Millennial learners adopt digital platform at ease. Yet interface plays major role in the decision of users to go for the same. It gives esteem to few users and comfort to few others. Though the tool does everything at backend, user should have transparency about the process carried out. For example, a teacher should be aware how a question does or content posted in the tool appears for student. And the same time, student should know how does the answer posted will be validated and evaluated. If the users are confused or unaware of the process or the complexity of the process, it leads to dropping the tool forever.

With the liberalization of internet data service across the globe, mobile phone is not anymore only for calling purpose. It does everything that a computer can. Social media and LMS are not exception for that. Users prefer quick checks on updates using mobile device rather than turning on the desktops and laptops by reaching to a specific physical location. It becomes mandatory for the LMS developers to design tools compatible to tablets and mobiles. Features on fingertips by being empathetic to users bring popularity to the applications.

Higher authorities in any educational set up look for crystal clear reports on usage of tool, performance of the learners and analysis. Provision of meaningful reports motivates heads of the institutions to choose LMS tool. If accessing of tool is too complicated by demanding too many levels of proving membership then users tend to avoid usage. Not knowing simple ways of resolving issues faced while using the tool, users drop to take advantage of feature. If there is timely support for instant concerns, it would be good to further use. Many prefer to have their own logos, photographs, formats, download & upload feature, offline work option and change calculation formulae. Customizability comes as next factor to be considered for selection.

Data entered once should be interlinked. Integrity ensures incorrect operations on data. Validations as per the original defined process by the organizations should be allowed to incorporate. List of students entered once may be made available with a label and can be reused by other teachers without repeating it.

It may not possible for few organizations to have a common and single application for every purpose. There may be a huge data in one application which is needed in another. Tools which are friendly by allowing integrating with other tools naturally gain more users.

Security is the biggest threat in the current digital world. Any data posted in any tool which is based on cloud is vulnerable to security threats. No one wants to leave the hard earned intellectual property to get stolen. Education sector, in particular requires security in terms of keeping examination content highly confidential. Security is an important issue in the actual educational context where e-learning increases in popularity and more and more people are taking online courses (CostinelaLuminita, 2011)

As most of the products turning to automation, LMSs have started to use artificial intelligence to capture few datasets and provide exciting experience to the users. It helps the teachers to assess learning habits of the students and plan the curriculum delivery around the learners, needs.

Numerous frameworks are available for meaningful conduct of academic delivery for educational institutions these days. Gradually process of planning, delivery and assessment of curriculum is automated and specialization in this domain is getting visibility and demand. Hence it becomes a point to consider curriculum design support before developing an LMS.

2. Method

Features of Edmodo, Canvas, Google Classroom and Moodle are analysed based on the factors listed in the introduction. User rates the effectiveness of the tool on a scale of 1 to 5, 1 being least and 5 being the highest effective among the available tools. Out of all the factors, weights can be given based on the individual requirements of the organizations. Columns can be added to arrive a conclusion on the highest scored tool may used.

3. Results

Factor	Edmodo	Canvas	Moodle	Google Classroom
User types	5	5	5	5
Storage	5	5	5	4
Bandwidth consumption	5	3	4	3
User Interface	4	4	5	3
Process complexity	5	4	3	4
Mobile compatibility	5	4	4	4
Features	3	4	5	3
Reports	2	4	4	3
Ease of use	5	4	4	3
Support	4	4	3	3
Customizability	2	3	4	2
Data Redundancy Management	3	3	3	3
Scope for integrating with other applications	1	2	4	1
Security	2	4	3	3
Application intelligence	3	1	1	1
Curriculum design support	1	3	4	2

Table 2: User ratings of four tools factor wise

4. Discussion

Edmodo, Canvas, Google Classroom and Moodle are the LMSs used by the user and rated on a scale of 1 to 5. In general total value of the sixteen factors totals to 80 if rated full. It can be considered to choose the tool which scores the highest total.

But all the sixteen features may not be equally important for many users. Hence users can add weights to all the factors and proceed with calculations. This is not a survey conducted on a sample of certain size. It is purely personal opinion of single user and there is no logical or scientific proof.

Conclusion

Only little reserch has been done on the evaluation of LMSs by 2010(SevgiOzkan, 2009). The process attempted to arrive at a conclusion on selecting a suitable LMS for the situation may be useful for readers. But certainly the values or opinions may not be considered as standard to a basis for anybody to make decisions on LMS. Further research can be carried out by extending the survey to multiple users and on multiple tools of usage. Cost of the tool if it is not open source and maintenance overhead are two more factors which can be significant in influencing the decision when selecting. These two factors may be incorporated when further studied. A hybrid application may be initiated by collaborating with all the open source developers. Entire story revolves around learners and millennial learners in the context. Survey should be carried out separately for different types of users broadly students, teachers and administrators or higher authorities in education set up.

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