The Future Directions of the Learning Management System: A Review

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Abstract: Education is the most powerful weapon for a person's life which will never be stolen throughout the journey of one's own life. Being educated will never be perishable as it is a lifetime validity given for one's persona career. As a consequence, it is obvious that education plays a vital role. In the process of being educated, higher education took a prominent place as it is one of the life indicators. A serious and a growing problem was identified in the higher education where geographical barriers, venue, time hinders the higher education with the passage of time. As a solution to all these problems, current educational trends have influenced the higher education to enhance learning process more technologically.

This review intended to carry out a detailed analysis on Learning Management Systems and find out the untouched areas or else the pointsthat won't talked about and still not yet developed up to a good level. The review is conducted with the objective of investigating the success of LMS, features of existing LMS, how the educational institutions make use of new technology and what are the areas that need further attention in future or in other words what are the features that should be developed further with the aim of looking more advancement. Identifying the available spaces for further enhancement or the development is the main aim of this review paper and this study investigates more about Learning Management System in advance

Key Words: Education, LMS, Future, Technology, Development, LXP

Introduction

Education plays a vital role by means of conditioning the individual in some special manner and also education can be recognized as a true sense in which it is useful in maturing an individual as well as to be free and to flower greatly. The highest function of education is to bring an individual who has the capacity to deal with life matters as a whole. From year to year, the evolution of technology becomes the steppingstone for our future career. In other words, the digital environment is capable of reshaping our world with a new mood and along with this development; education too touches with this evolving technologywhich has resulted into a range of benefits and opportunities. Among these, LMS does a huge role in the field of higher education. LMS stands for the abbreviation; Learning Management System. Oxford dictionary says that "LMS is a software system for managing training and educating using the internet." It is a concept that we experience now a days as a result in the advancement of information and technology. Since LMS is associated with higher education the role of lecturers, trainers and other resource persons are decentralized in the hands of LMS. It is important to note that lecturers as well as students faced many a problem before introducing the concept of LMS and therefore everyone felt much inconvenience as a result.

By eradicating all these barriers, with the implementation of LMS it acts as an online portal as it is the bridge of connecting students and lecturers. The lecturer's trainees and other resource persons do not have to put much effort on explaining the subject matters and they need not to spend more time on the same purpose as the LMS has made both these tasks convenient. Since this a not singleton process and being a two-way process; both lecturers and students can share what they feel and understand in which lecturers are responsible of distributing their knowledge, lecture notes and other materials and students being the receivers of this online teaching have the opportunity of giving their opinions. Additionally, the students who are accessing the LMS; irrespective of the venue and time they are, owing to the attractive, easy going modes of learning through the technological suits without wasting time on collecting written forms of lecturers. With this quick shift from current traditional environment to online educational environment has been identified as a great opportunity for making the space to think in multiple ways and also to receive immediate response throughout the daywithout any specific time and place. The surprise isthat, all coursework is conducted exclusively online. In a nutshell, LMS is rendering a remarkable service in the field of higher education and training purposes to get the work done in a jiffy.

No matter how advanced the technology is, there are many areas where LMSneedsto improve. We have seen this after a detailed analysis of about 30 research papers and in the end, we can conclude that in the near future, LMS will continue to develop and become even more advanced in the field of higher education. So, we have decided to do a review by identifying areas of improvement and looking more closely at them in a more analytical manner. As a conclusion, this review will discuss more about the shortcomings of LMS and alsoafter identifying, discussthe reforms that need to be developed and what can be improved with the aim of bringing LMS into the arena.

Literature Review

This study would help researchers involved in development of e-learning based LMS. develop a cloud based learning management system (CLMS) which can incorporate all the features discussed in previous section and new features like automatic assignment evaluation with the integration of plagiarism detector and keyword matching, web based virtual workshop management and single sign on. And also it is quite evident that the cloudbased system would help the educational institutes or Universities to share and disseminate knowledge among students, teachers and researchers.(Patel et al.,2013) Some researchers attempts to discover the essential usability factors, implementation and adoption issues and the barriers and enablers within the LMS domain, primarily in workplace settings. To achieve these aims, a review of the literature has been carried out by considering 23 research articles published in between 2014 to 2018. The discussion highlighted current issues in the field, as well as gaps and possibilities for further research. Usability is a measure of the degree to which users can use a product or system to effectively, efficiently, and satisfactorily achieve their objectives; this means that users will be trained quickly and efficiently if the degree of usability of LMS is high. (Sabharwal et al., 2019)

Learning Management Systems used in Sri Lankan universities, and evaluates its usability using some predefined usability standards. In addition it measures the effectiveness of LMS by testing the Learning Management Systems. The findings and result of this study as well as the testing are discussed and presented. (Kommerell & Klein, 1986) Implementing learning

management system is large decision for a higher education institution. A large consideration of this decision is the financial cost. Most vendors offer a robust Learning Management System (LMS) product but require upfront costs and yearly site licenses. These costs may be especially cost prohibitive if it is a single department or even a small university which is considering purchasing the learning management system. To overcome these issues, some schools have developed their own learning management open source system, such as Open USS. Institution should consider exactly what objectives they wish to achieve through the LMS before acquiring a system. In this research paper researcher suggest the following factors as the most important consideration when selecting a LMS: organizational goals and objectives, technical specification and support, design specifications, clear and user friendly graphical interface, well designed course repository, course administration capability, capability of interaction among users, evaluation and feedback, student's profile, and pedagogy.(Grob et al., 2004) Almost all government universities in Sri Lanka have implemented LMS for students to make their learning process interactive and engaging. These higher educational institutions have made considerable amount of investments in terms of finance and other resources, but the benefits enjoyed by these institutions and student are far below expectations unless the usage of such systems are made compulsory. Therefore, although many studies have been conducted overseas, it is of high recognition that a study is very much needed to understand the reason for low usage by students in Sri Lankan free education context. (Fathima Rashida et al., 2018) Perceived ease of use (PEU) has a significant impact on perceived usefulness (PU), as suggested by Technology Acceptance model (TAM) theory. Theyhave identified that both (PEU) & (PU) also have positive effect on

behavioral intention to use. They have said that, LMS is an essential tool for university students as not they can keep updated with their course work, but get instant notifications pertaining to their daily assignment. (Adzharuddin, 2013) benefits of online learning have categorized into three aspects (Pedagogical improvement, increase access & flexibility & cost effectiveness) and they have told that functions of LMS have divided into four major parts. They are Stakeholders functionality, management of information, Assessment. Course management purely depend on the instructor but information exchange gives opportunity to both learner & instructor. (Chen & Almunawar, 2019) Researchers have used quantitative approach in order to test hypothesis, self-administered questionnaire is disseminated to the LMS adopters. They have distributed a total of 50 questionnaires & summarized by demographic profile & descriptive statistics of the respondents. They have used responses like strongly agree, agree, neutral, disagree & strongly disagree. They have examined student's perspective by conducting a correlation matrix between student's perspectives & student's adoption of LMS. (Murshitha & Wickramarachchi, 2016) instructors struggled with many tasks before the advent of LMS. Teachers were required to undertake many additional responsibilities besides teaching, such as tracking student's projects, grading, responding to queries etc. even universities suffered before the invention of the LMS. Universities had lot of admission & registration issues. Institute had to respond to all these needs. So, they choosed LMS as the best solution. LMS provide a great number of tools that help students to learn more effectively, & school to manage more powerfully (Alshalawi, 2013) . LUCT (Limkokwing University of creative technology in Malaysia.) have studied all the undergraduate students, who were in

semester three or above, that using LMS their education. They have distributed 520 questionnaires, the researchers managed to get a return of 465 useable questionnaires. Their data collection method was drop-and-collect survey method. They personally delivering the survey instrument & later collecting questionnaire either directly from the target respondent or indirectly via a gatekeeper.(Jafari et al., 2016) In a research paper, they have done a survey by using two main areas of inquiry, faculty usage & faculty perceptions of the LMS. Here, focused on what faculty use in LMS to aid their students in not only gaining knowledge, but also in engaging them in the course & area of focus. A survey was developed using zoomerang survey software which contained 39 questions. Share opinions about what they liked most & least about the learning management system, how their experience using the LMS in instruction could be improved, & finally, in what ways they would like to use the LMS more effectively.(Little-Wiles et al., 2012) This paper reviews on what impact LMS has made on students and how effectively LMS has influenced students on their academic activities. Key features may include student self-service, self-registration, instructor-led training, skill group management, user notifications and deadlines, manager hierarchies, wait-list management. The functionalities of LMS are electronic distribution of course syllabus, grades and teachersfeedback to students, ability to post hyperlinks to websites and forum for the exchange of ideas.(C & Patil, 2012) Learning management systems are designed to gather both the faculty and their institutions with the organization. The purpose of this study was to better understand how the faculty at one urban institution viewed and made use of their mandated learning management system. The results can be beneficial in improving training, support, and usage of LMSs at multiple institutions. Online courses area

was considered in this survey. This research try to highlight the issues and concerns facultyhave toward the use of their LMS. (Little-Wiles et al., 2012) Cloud- based LMSs are usually proprietary systems where the vendor packages the system functionality with the online hosting of the client's data and then charges a fee for the service based on the number of users accessing the LMS site. Research paper mentioned on Future versions of LMSs. They are Cloud-Like Functionality, Adaptive Learning, Micro learning with LMSs Connected Devices, Analytical Tools, Social Capabilities and Gamification. (Turnbull et al., 2020) Learning Management Systems (LMS) is the main component for distance education to be carried out effectively and distantly. The aim of this study is to identify trends in studies published in popular journals on learning management systems between 2010 and 2014 for academicians who aim to conduct a study related with learning management systems. For this research datawere retrieved from the electronic database and data were entered into SPSS program. It was also revealed that Moodle LMS's as open source and Blackboard (WebCT) as commercial are the mostly used LMS's in the studies. Results on usage aims of LMS's indicate that studies are mostly conducted to test the developed LMS's and measure the perceptions and attitudes of learners. (Soykan & Şimşek, 2017)

Methodology

The objective of this research paper is to analyze the future directions of the Learning Management System. We gathered information through published research studies on the Learning Management Systems.

Regarding the first step, the subject of this review involves "Future directions of learning management system" and the question that guides the development of this integrative review is what will be the state of

the LMS of future in e- learning management? In the second step, establish the identification of contents of the research papers which we read on the studies. As the third step, we categorized the study analysis and then we tried to capture new innovation features of Learning Management System. In the fourth step interpret the results of analysis. In the final stage, present of the review and Synthesis of information which we analyzed in research.

In this context, it helped to recognize the development of LMS studies on e-learning managing over time and it thus allowed to envision new possibilities for research.
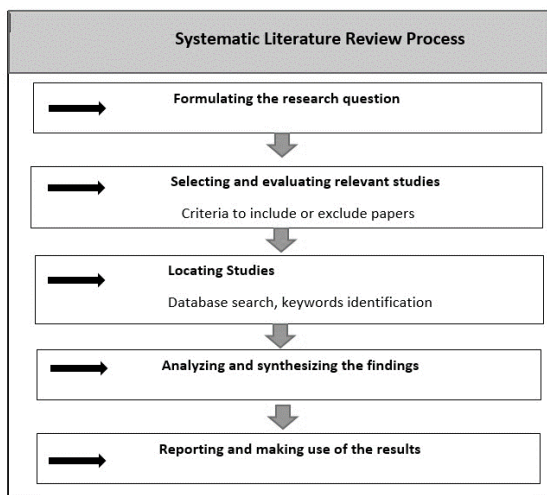

Figure 1. Review Process

Future Enhancements

In this review; the main aim is to provide some future recommendations in which we can develop the Learning Management Systems more and more. Learning Management System is a useful tool in the field of higher education and by developing its features and facilities further; we will be able to obtain many advantages. Therefore, paying attention to the section of 'future enhancement' took a prominent place. One of the important points to ponder on are as follows.

Adapting to multi-channel learning styles. (In 2019/2020 rather than Traditional Instructor led training, In the Job Training is

important. When it comes to applicability of learning and training, multi-channel learning allows not only access to anytime-anywhere learning but also faster application of skills learned or upgraded. Instructors can deliver a vivid service by using the available facilities such as video conferencing, audio scripts. LXP is another developed tool than the famous LMS and shifting to LXP from LMS, will provide more advantages. For example, LMS is a platform which is controlled by the administrators and they decide the course sequence, learning path. But when it comes to the topic of LXP, it is an open-ended discovery platform where we can create our own goals and can determine own learning path as well. LXPs provide is the operational value to the organization with micro-level reporting and the opportunity for deep analytics, creating meaningful impact for both the learner and the organization. Additionally, LXPs provide learners with a collaborative, self-driven journey that is engaging and well-circulated among peers and fellow learners. Skip also rightly mentions that, "Today's learners want learning that is available on the go, modality agnostic and quick to consume." One of the biggest benefits of LXPs is their platform fluidity and this ties in with the trend of multi- channel content. Moreover, with improved technology and connectivity, experts who were once unreachable are now available on-demand and can create value for employees/learners.

The capacity of students grabbing the knowledge is different to one another. Some may understand the matters at once, but some may fail to understand it. LMS doesn't consider this area and it will be better a necessary method is developed to match the level of understanding of the students along with the learning path.

According to a survey reported in The Daily, differences by income, education and age exist in the use of internet. Therefore, though

LMS is common to all university students; there may be some problems for the undergraduates in accessing the LMS. So, if there is a new way to make the undergraduates inform about new lessons uploaded and new assignments given at the moment when it is uploaded, the difference which exists in the use of the internet may not be a major issue.

The internet is mainly chosen by university students as a source of information because of its swiftness in delivering information, and also the potential it gives them toconnect with other peers from around the globe for the purpose of sharing information. When accessing the LMS using the internet the students may not doing what they wanted to do and instead of that they may involve in certain other activities like use social media and all. This can be avoided if there is a certain method to use internet only for the access of LMS during Lecture hours. So, then studentswill have no any other option other than engage in their studies.

Threaded discussions, forums, video conferencing are the main features of LMS. But many instructors restrict themselves to uploading course materials to the course web site. If there is a systematic method to upload the lecture notes at the moment when it is teaches by the particular lecturer; the students won't feel any inconvenience at all. And also, until the instructor uploads the lecture not a message will be sent for the particular lecture and also an email will be sent.

LMS is seen to be compatible with traditional education as both of them are based on a lecturer centered approach.

Most content within a LMS is not available to the outside world, and also it is often unavailable to learners just after they have completed their course. This clearly tells us that LMS doesn't support lifetime learning and this is another area which has not been touched still.

Artificial Intelligence is also set to start having an impact in the LMS space. By automatically evaluating a learner's understanding of a concept and adjusting their learning pathway.It is a common truth that Learning Management Systems are subjected to changes rapidly where it is hyper connected and trend sensitive. Changes in format and processes mean that lecturers need to pay full attention to the needs of the students in the context of educational needs. Having flexible platform managed by the Learning and Development; it will be convenient to add resources etc.

Result and Discussion

In this section the fourth step of the integrative review is shown, interpret the results for analysis. We read 30 research papers on future directions Learning Management Systems. After reading the articles, some future developments were highlighted in researches. Among them, we selected four features which majority of researchers analyzed. 20% researchers have discussed the LXP tool, 15% discussed on Artificial Intelligence, 15% of researches have highlighted on Vivid Service (video conferencing, audio scripts) and 10% have discussed on adopting to multi-channel learning style. The results which we analyzed are presented in graph.

This graph clearly proves the fact that; LMS can be developed further by using LXP, AI, vivid service and multi-channel. LXP which is known as learning experience platforms provide intuitive learning experience .LXP can be used to make a flexible and scalable learning track for users. When we are using LXP with LMS; the learners will be motivated and encouraged to memorize about their past activities or what they have come across and also administrators have the chance of shaping the learner's learning experience

with an LXP. LXP is a software which is highly customized, user controlled and therefore by integrating LXP with LMS; AI helps in eLearning development by classifying the elements of the content. An AI-powered LMS tool can sift through all the massive content and efficiently identifies suitable content. It will be convenient if there is a flexible online LMS for multi-channel learning. Think of a flexible learning management system allows a learner to participate in learning activities from any device, in a variety of formats. So by using multi-channel LMS; it will provide more advantages and it will be more technological and of highest flexibility.
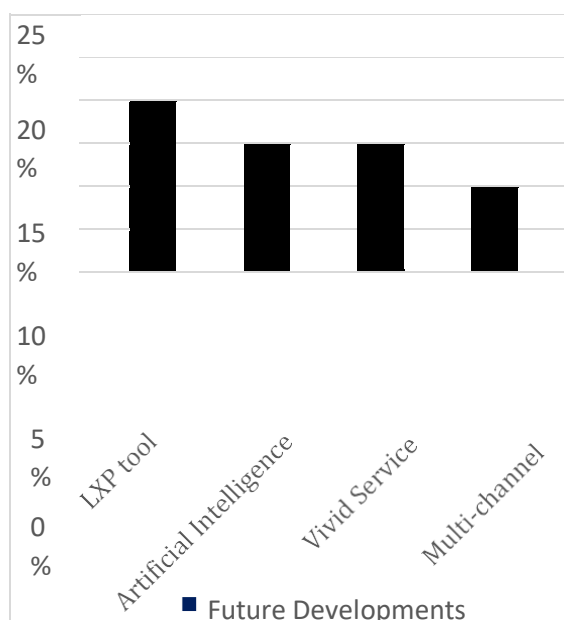

Figure 02 summary of analysis Source: (Author)

Conclusion

After thoroughly analyzing the factsthat contain in many a research papers, we come up with the idea that Learning Management Systems are very important, and it plays a huge role for the success in the field of higher education. Though it looks like a perfect tool at glance, when analyzing or when going through these papers broadly, it is crystal clear that still there are some areas that need further development. In other words, still the space is available in some of the areas where

we have the ability to develop the tool for a better service than today itself.

Learning Management System is directly emerged from elearning. This has mainly focused on online learning delivery. Thishintstheidea that Internetis amain necessity for this tool. By way of conclusion, Sri Lanka has so many limitations in the service of providing internet facility throughout the country. Therefore, couldn't achieve that much of improvement in the field of higher education in government sector. Moreover, the lack of literacy or else the lack of basic Informational Technological knowledge in rural areasis also another hindrance in the path tohigher education's success. As a solution for this Ministry of Education has conducting so many projects to enhance the level of ICT knowledge of the students during their school time bydeveloping ICT labs with necessary toolsto access the evolving technology. Conducting training programs, workshops and awareness programs will be so much valuable in the process of enhancing the knowledge ofICT in each and every student in the country. Sometimes without the usage, students may reluctant to use digital equipment like PC's, laptops and tablets etc. This may happen without the necessary required training for the use of these digital equipment. As a result, proper guidance must be needed from the early childhood in order to move along with rapidly changing technological changes.

And another fact to ponder is that many higher educational institutions have failed to the high cost oftechnology, poor decisions, competition andtheabsence of a proper business strategy. Thismeansthat educationalinstitution needstobe developed up to a maximum level in order to harvest the reap from other factors maximumly.

In the above this paper discusses the fact that student may lack their knowledge of using these technologies andbeing a two

wayprocess thisissue mayalso affect the other party also. In other words, this means that lecturers are the ones who are responsible for delivering the knowledge for the students and if they failed to go along with the evolving technology; there will be a great loss in delivering their service. Sometime the lecturers may be experts in the particular area that they are specialized but if they don't know the basic such as uploading a necessary word file to the LMS etc.They will try to go backward automatically and thiswill be amajor obstacle for doing their jobproperly and this will affect their professional image also.

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