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Learning Management System – Review on the Adoption of Collaborative tools for Learning

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Abstract

Learning Management System (LMS) is a software platform that includes several integrated tools for delivering and managing online and virtual learning. Over time, the LMS has remained in the educational sector, providing learning opportunities to learners over dispersed locations. Hence, this paper presents a review of existing features, technologies built into LMS and its adaptation. It also highlights the effect of LMS on students' ability to learn and their

performance and factors that may influence the adoption of the LMS platforms. The paper concludes with recommendations on methodology for establishing a student-centred approach, collaborative learning.

Keywords: Collaborative, Higher institutions, Indigenous, LMS, Open

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Abstrait

Le système de Gestion de l'Apprentissage (LMS) est une plate-forme logicielle qui comprend plusieurs outils intégrés pour la prestation et la gestion de l'apprentissage en ligne et virtuel. Au fil du temps, le LMS est resté dans le secteur de l'éducation, offrant des opportunités d'apprentissage aux apprenants dans des lieux dispersés. Par conséquent, cet article présente une revue des fonctionnalités existantes, des technologies intégrées au LMS et de son adaptation. Il met également en évidence l'effet du LMS sur la capacité d'apprentissage des étudiants et leurs performances, ainsi que les facteurs pouvant influencer l'adoption des plateformes LMS. Le document se termine par des recommandations sur la méthodologie pour établir une approche centrée sur l'étudiant, l'apprentissage collaboratif.

Mots-clés: Collaboratif, Institutions supérieures, Indigène, LMS, Ouvert

Introduction

Online learning or e-learning refers to the transition from traditional teaching and learning methods to the utilization of technology-mediated resources '(Yakubu, Dasuki, Abubakar, and Kah 2020). In recent times, and as a result of the global epidemic induced by COVID-19, the majority of educational institutions have devoted resources to increasing knowledge delivery through the use of information and communication technology (ICT) """"(Teräs, Suoranta, Teräs, and Curcher2020). One critical element invested in most educational institutions and educational technology-based learning platforms is the Learning Management System (LMS).

A Learning Management System (LMS) is a broad term that refers to a variety of systems that provide online access to learning resources to

students, teachers, and administrators (Aldiab, Chowdhury, Kootsookos, Alam, and Allhibi2019). LMSs function as content management systems as well as technology for tracking students' progress. As a result, a broader range of users now have access to learning resources and can access them remotely from any location and at any time (Aldiab et al., 2019).

A learning management system (LMS) is a piece of software or web-based technology that aids in the planning, implementation, and assessment of the learning process. In most cases, educators can use a learning management system to create and distribute content, measure student involvement, and assess student progress. Through a learning management system, students will be able to use collaborative tools such as threaded chats, video conferencing, and discussion forums (Yakubu et al., 2020). LMSs are also defined as internet-based software that allows instructors to control course materials delivery, assignments, communications, and other aspects of instruction for their courses (Onwuka, Catherine, & Sunday2017).

In recent times, various features have been added to the LMS. E-commerce, communications tools, skills tracking, performance management and talent management are examples of these (Harper, D. G., Campus, B. C., Hirtz, S., & Commonwealth of Learning (Canada), 2008).

This paper focuses on a review of previous work on LMS. These include but not limited to LMS evolution, LMS features, LMS technology and LMS and LMS classification. The paper is divided into three sections that examine various aspects of the learning management system, with the conclusion serving as the final note.

The first section reviews web-based e-learning platforms (Moodle, WebCT). The second section studied work on collaborative LMS and how it increases engagement, assimilation and learning skills while the last section studied usability and adoption of learning management systems.

Literature Review

This section gives an overview and categorization of related literature

on LMS. In the first sub-section, a review of web-based e-learning is being provided. The second sub-section provides a review of collaborative LMS while the last sub-section provides a review of learning management usability and adoption.

Review of Web-Based E-learning Platforms:

Following the COVID19 epidemic, the world has seen a great increase in eLearning, with more colleges adopting web-based eLearning platforms. This section provides an overview of approaches in the eLearning space.

Existing Learning Management Systems (LMS) fail to fulfil the crucial quality control mechanism duties by providing merely a flat and passive platform for content development, leaving them vulnerable to weak instructional design (Isiaka, Omidiora, Olabiyisi, and Okediran, 2016). Isiaka et al., (2016) presented an improved industrial design learning technology system architecture by extending the Institute of Electrical and Electronics Engineers (IEEE) standard for learning technology - Learning Technology System Architecture (LSTA) with instructional design processes built on Moodle Open Source LMS.

The platform was examined using criteria such as usability, acceptance, and impacts, and the model's overall effects on students' academic performance were assessed, with favorable findings. As a result, instructional design plays an important role in the eLearning platform, demonstrating the significance and feasibility of incorporating instructional design into LMS (Isiaka et al., 2016).

Udofia and Inyang-Etoh (2016) presented an encompassing and entrepreneur model for distance learning in Nigeria. A web 2.0 platform was used to design an e-learning model that incorporates entrepreneurship into online learning. The model was an integrated, creative and entrepreneurial system that focused on vocational skills as a gateway for entrepreneurship. The model was majorly centred on education, research and entrepreneurship. The adoption of the Integrated Creative Entrepreneurship Model (ICEM) as it applies to education, research, and entrepreneurship, with a focus on Web 2.0, will greatly improve graduates' ability to become self-employed after graduation (Udofia and Inyang-Etoh, 2016). The work fails to discuss

the implementation strategy of ICEM or pedagogical adjustments at higher-learning institutions and the model was not implemented in the rural and less privileged areas of Nigeria.

Kaya (2012) discussed the distance learning systems used in Turkish and Northern Cyprus universities. The study investigated all distance education programs and systems at Turkish and Northern Cyprus universities. The most commonly used tools, according to the study, are Moodle, WebCT (Blackboard), and Adobe Connect, and distance learning is becoming popular in Turkish and Northern Cyprus universities with the goal of supporting both formal and distance education. Kaya (2012) predicted that as technology advances, more people will use eLearning systems.

A survey on the three main web-based systems namely Moodle, Web CT, and Adobe Connect used by universities in Turkey and Northern Cyprus were evaluated. Further comparison of the features of Moodle and Web CT was also presented to evaluate the effectiveness and the results showed that the most well-known and widely used web-based distance education systems are Moodle and WebCT (Blackboard) (Udofia and Inyang-Etoh, 2016). The studies further revealed that WebCT (Blackboard) is a better system in terms of quality of service. It also noted that Moodle is a better learning system for versatility.

It is observed from this section that the most used and versatile web-based eLearning platform is the open-sourced Moodle platform. Also, it was observed that web-based eLearning platforms are observed to provide in-depth analysis of performance, and other activities on the platform.

Review of Collaborative Learning Management System

Collaborative LMS is a tool/platform that allows students to participate in collaborative learning, which is a teaching and learning strategy in which students work in groups to solve a problem, complete a task, or develop a product within the LMS. This section looks into collaborative LMS approaches in the literature.

Mora, Signes-Pont, Fuster-Guilló, and Pertegal-Felices (2020) recommended using a collaborative working model to improve the

learning process of scientific and engineering students. The teaching faculty at the University of Alicante in Spain oversaw the development of a collaborative working model based on a peer-review evaluation technique carried out via an online learning platform. The platform made use of comments, ideas, and a final evaluation, as well as research into the influence of the proposed system on student performance. The results reveal improved information assimilation and learning in a number of science abilities. The peer review procedure also raised student involvement in the subject, encouraged regular study, widened their breadth of learning, increased participation because students found the process entertaining, and reduced teachers' burden. Peer review collaboration boosts student engagement and encourages constructive learning. Furthermore, in the management of big classrooms, this strategy has proven to be extremely effective and time-saving for teachers (Mora et al., 2020).

Similarly, (Chan, Wan, and Ko, 2019) explored the relationship that exists between interactivity, active collaborative learning, and student learning performance, as well as the roles that this relationship plays in the level of pleasure that students have when utilizing a personal response system. Convenience sampling was used to collect data from undergraduate students in a business school in Hong Kong using questionnaires and the questions were reviewed based on the different items that were considered on the scale ranging from 1(strongly disagree) to 5 (strongly disagree) under interactivity, active collaborative learning, level of fun experienced from the use of PRS and learning performance.

Tan and Vicente (2019) proposed the development of an undergraduate marketing management course using an approach that combines innovative experiential and collaborative learning. The approach combines two disciplines, namely, computer science and product design, with a focus on collaborative and experiential learning. The methodology used a collaborative LMS in conjunction with the industrial environment as a new approach to learning in a business environment. The results obtained show that the approach of a collaborative environment that incorporated real experience was successful because there was a noticeable increase in students' performance and also solutions products to problems were produced.

Tan (2019) presented a structured, collaborative learning approach to a case-based management accounting course. This study focused on the use of an organized collaborative learning (OCL) approach for teaching case studies in an advanced accounting course in management. Students showed satisfaction as it helped them acquire more knowledge, critical thinking and teamwork skills. The study provided support for the idea of the importance of discussions in collaborative learning for knowledge development.

This section shows that collaborative and interactive learning improves knowledge assimilation and learning skills. Peer review is another aspect that influences student involvement and participation. Similarly, OCL helps students acquire more knowledge, critical thinking and teamwork.

Review of Learning Management System Usability and Adoption:
The adoption of a learning management system (LMS) is crucial for offering a more efficient, engaging, and dynamic virtual learning experience. Usable systems, on the other hand, encourage learners and teachers to interact with the system more frequently, resulting in increased retention and eagerness to learn. This section examines the recent adoption and usage of LMS.

Aldiab et al., (2019) reported the different characteristics of modern LMS that are mostly used or commercially available and performing a comparative analysis and a case study that focused on the use of LMS in Saudi Arabia Universities was also carried out. For the comparative analysis, Blackboard, Moodle, Canvas and Desire to Learn (D2L) were examined under various attributes. The percentage representing the usage of each of the LMS considered were obtained and the blackboard has the highest percentage of usage.

Similarly, Nicholas-Omoregbe et al., (2017) discussed the implementation of e-learning management system prediction in a few Nigerian private universities. This study investigated the factors that may influence eLMS adoption in higher education, with a focus on private universities in Nigeria. An empirical model based on the social learning theory (SLT) and the Unified theory of acceptance and use of

technology (UTAUT), as well as two other variables, was developed to identify predictors of eLMS (technology acculturation and power in terms of electricity), to examine the pattern of relationship that exists between the two major constructs, Smart Partial LeastSquare-Structural Equation Modeling (PLS-SEM). Using the random sampling technique, 472 students from three private universities were sampled. For the survey, a three-section questionnaire was distributed, and the data collected was analyzed. The weakness perceived in this study is the fact that out of 11 private universities in Ogun State, only 3 of them were considered in the study thus the study did not cover up to 50 per cent of the universities and this would affect the generalization of the result obtained from the study. The findings also revealed that performance expectancy and behavioural intention have a positive influence on student performance in terms of grades. The study found that attitude, social influence, and technology acculturation all had a major influence on the desire to embrace eLMS. Similarly, this study gives theoretical information on eLMS adoption intent, which will be incredibly beneficial to researchers and educational administrators in strategic planning and decision making.

Yakubu, Dasuki, Abubakar, and Kah (2020) used a hybrid Structural Equation Modeling (SEM) and artificial neural network approach to determine LMS adoption in Nigeria. To investigate the factors that contribute to students' adoption of LMS, two public universities and two private universities were considered, and survey data from 1116 registered students was obtained. The responses were analyzed using artificial neural networks and structural equation modelling (SEM). A convenience sampling method was used to save time. The public universities students were given paper-based questionnaires while the private universities were given an online form. The questionnaires consisted of three sections; the consent form, the section for demographic data and the last section captured constructs used in the conceptual model. It was discovered that social influence, facilitating conditions, system quality, perceived ease of use, and perceived usefulness are significant factors influencing students' behavioural intention to use LMS. The behavioural intention of students to use LMS serves as a predictor of LMS usage.

Mgendi (2001) described the launch of a web-based e-learning program

for an African institution. The difficulties encountered in implementing an e-learning platform in Africa were also examined. The study revealed both students' and instructors' lax attitudes toward subscribing to the learning platform. The research also found that the sheer presence of an e-learning platform in an institution does not ensure its adoption by both learners and professors. It further stated that, in addition to technological concerns for e-learning adoption, institutional arrangements must be designed and implemented as part of the e-learning strategy. When analyzing what is required to set up a learning system in Africa, the research took the African component into account. Mgendi, (2001) observed the lackadaisical attitude of both students and tutors in subscribing to the learning platform. In addition to technological considerations, institutional arrangements must be designed and implemented as part of an e-learning strategy.

Similarly Tan, (2019) focuses on the factors that may influence eLMS adoption in higher education, with a particular emphasis on private universities in Nigeria. According to the study, attitude, social influence, and technology acculturation are all factors that strongly influence the intention to adopt eLMS.

Conclusion

With the advent of COVID-19, many institutions are embracing the new system to give distance learning to students who are unable to attend school due to the epidemic and its implications. This paper gives a review of prior works on LMS, exhibiting substantial developments in many areas through the incorporation of various strategies to increase efficiency, while it plays a vital role in the higher education system for both professors and students. Collaborative elements and other technologies that have been implemented into an LMS are examples of these strategies.

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