ACCEPTING THE LEARNING MANAGEMENT SYSTEM IN HIGHER EDUCATIONAL INSTITUTIONS

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Abstract

Present educational trends, the development of the knowledge society, societal changes, and globalization have all to some extent, incited higher educational institutions and thus caused changes in terms of quality education and quality assurance. The change of educational system as well as changes in teaching and learning approaches lately have called for cybernetic learning and more technologically enhanced learning. Among a wide range of ICT tools, Learning Management System (LMS) has been introduced to academic institutions. This study presents the role LMS plays in teaching and learning pedagogy, access and flexibility in higher education and it is proposed for higher educational institutions to incorporate LMS into their teaching and learning processes in order to attain effective learning outcomes for students. It permits users to experience meaningful learning by different learning styles, matching individual needs, self-paced learning, and promoting lifelong learning. Most significantly, Learning Management System has provided easy access to and thus promoted flexibility in learning that one can learn from anywhere and at any time without place and time constraints. The study adopted a descriptive survey approach where students studying at various levels were randomly sampled to take part in the survey. Respondents pointed out that the use of LMS was popular among students and that it helped improve their learning and also fitted well with their learning styles. Again, respondents asserted that study reiterated that a web-based learning system provided them an attractive learning environment for their respective programmes of study and for that matter overall, they enjoyed using the web-based learning experience. They also acknowledged that they intended to use the LMS to teach after their studies and affirmed that using the LMS platform to do quizzes and submit assignments was an excellent choice and therefore it is recommended for consideration by higher educational institutions for its use.

***Keywords:** Higher Education, Virtual Learning, Learning Management System, Teaching and Learning Processes*

INTRODUCTION

Teaching online in tertiary institutions has become necessary in recent times for various reasons. Allen et.al (2017) and Bichsel (2013) also believed that it is not only convenient but effective when blended with the conventional manner in which instruction is delivered be it synchronous or asynchronous. Many universities have increased their intake of students in online courses to meet the high demands of students in order to fit into the rigorous environment of advanced education (Seaman et.al, 2018). This assertion is worth considering especially in this era where there is increased quest for university education in both developing and developed countries. Learning online seems to be the new craze and may have possibly come to stay. Currently, a number of schools have turn to digital learning situations and it is very important that the professional development of teachers will follow suit in order for them to be equipped with all the necessary skills they need for effective teaching and learning.

The past couple of years has seen a vast evolution in the use of learning management systems

(LMS) in higher educational institutions. Learning management systems have provided the potential for enhanced learning environments built on constructivist theories and available to all students, both on campus and those studying on distance education programmes (Firat, 2016). Much has been published about what constitutes good online teaching (Rienties & Toetenel, 2016), and this literature has increased with institutional interests in engaging online learning environments. The University of Cape Coast as part of its drive to change how instruction is delivered to students is going to implement a strategic change through an institutional strategy of integrating online components of both synchronous and asynchronous e-learning modes in its curricula. This study makes a strenuous effort to gain some insight into how students use if any, other LMS before the mandatory introduction of the University's own LMS. It is worth noting that students are required to use the new system once implemented, usually with little or no introduction. Induction of students to available LMS has been left to teaching staff and the expected disparity in the range of tools and instructional designs used by different lecturers is evident.

Lecturers may have experience in designing and teaching face-to-face courses but they may lack the experience with the technologies and the instructional strategies they may need for teaching online lessons (Baran et.al, 2011; Palloff et.al, 2012). Yowe (2016) pointed out that teachers are the main subject matter experts in online teaching but most at times lack the experience and skills to deliver online lessons successfully. Perez (2002), Trenholm (2009) and Zavarella et.al (2009) revealed that instructors who teach online are limited in technological skills for teaching. Recently in Ghana, the demand by the Ministry of Education to engage students in online teaching has risen that all teachers at all levels of education teach and interact with their students online but unfortunately, little is known about the challenges they face in using these diverse platforms of online teaching and learning. It is for this reason that this study investigated into the type of LMS used, how challenging or otherwise it is to use LMS, whether or not students would recommend the use of LMS to other colleagues and continue to use it to deliver instruction to their students even after the university education.

Much of the early research about e-learning consisted of descriptions of LMS implementations. These descriptions were sometimes enhanced by evaluations of the outcomes of the use of the e-learning environments, sometimes in conjunction with a comparison to the outcomes of traditional face to face teaching. This study has considered a range of outcomes in a variety of e-learning contexts. For example, Piccoli, Ahmad, and Ives (2001) compared learning in an LMS environment to learning from face to face teaching in the context of basic technology skills training. They found that, while there were no significant differences in performance between students enrolled in the two environments, the e-learning students reported higher computer self-efficacy and were less satisfied with the learning process. By contrast, in similar kinds of studies, Zhang, Zhao, Zhou, and Nunamaker (2004) reported improved academic outcomes for e-learning students, and Chou and Liu (2005) reported that students using their e-learning environment showed improved learning performance and satisfaction. The diversity of results in these studies suggests that, not just the LMS, but also the wider context in which e-learning takes place is an important factor in e-learning success.

The other major focus of LMS research has been the adoption and continuous use of LMS by students. This study has been largely based around the technology acceptance model (TAM) (Davis, Bagozzi, & Warshaw, 1989) and related models such as TAM2 (Venkatesh & Davis, 2000) and the unified theory of acceptance and use of technology (UTAUT) (Venkatesh, Morris, Davis,

& Davis, 2003). In typical research based on these models, van Raaij and Schepers (2008) explored the differences between individual students in the level of acceptance and use of LMS using a conceptual model that draws from TAM, TAM2, and UTAUT; and Pituch and Lee (2006) observed that, although factors such as perceived usefulness influenced LMS use, the strongest influence on student use was system characteristics. Following a review of the acceptance literature, Selim (2007) identified eight critical success factors for acceptance of e-learning, as perceived by students: instructor's attitude, instructor's teaching style, student motivation, student technical competency, student–student interaction, ease of access to the technology, infrastructure reliability, and university support. Expectation confirmation theory (Oliver, 1980) has also been employed to explain LMS use. For example Hayashi, Chen, Ryan, and Wu (2004) showed that perceived usefulness and satisfaction directly influenced continuance of use in a LMS context, that satisfaction was influenced by perceived usefulness, and that both perceived usefulness and satisfaction were positively associated with confirmation of expectations of the system. Roca, Chiu, and Martínez (2006) combined technology acceptance (TAM) and expectation confirmation theory.

Like Hayashi et al. (2004) they observed that students' continuous intention is determined by satisfaction, which in turn is influenced by perceived usefulness and confirmation. They also found that service quality, system quality, perceived ease of use and cognitive absorption influenced satisfaction.

The use studies suggest a range of factors that might influence use of LMS and e-learning systems, but they do not consider how these factors, or use itself, are associated with learning. Indeed, few studies of LMS or e-learning have gone beyond use to explore factors associated with learning. Almost all of these studies have been conducted in the context of online collaborative learning. Swan (2001) investigated factors affecting perceived learning and found that clarity of design, interaction with instructors, and active discussion significantly influenced student perceptions. Arbaugh and Benbunan-Fich (2007) focused on the role of interaction in e-learning and found that, while collaborative environments were associated with higher levels of learner–learner and learner–system interaction, only learner–instructor and learner–system interaction were significantly associated with increased perceived learning. Klobas and Haddow (2000) showed that students not only perceived that they learned more, their teachers observed that they learned more, the more they participated in collaborative (learner–learner) activities. The focus on collaborative learning in these studies cannot necessarily be generalized to other forms of e-learning. Although LMS offer functions that might be used to support collaborative learning, very few courses actually use these, and collaborative learning theorists claim that learning outcomes from online collaborative learning cannot be generalized to situations where e-learning is used for material distribution or even to support unguided student interaction (Lipponen, Hakkarainen, & Paavola, 2004; Rudestam & Schoenholtz-Read, 2002). In any case, not all students appear to respond positively to collaborative learning. Hornik, Johnson, and Wu (2007) observed that, where there was a gap between a student's preferred approach to learning and the approach implemented in a LMS the learner participated less in online discussion, was less satisfied with the course, and performance was reduced. Thus, LMS research is characterized by a diversity of studies conducted in a wide range of contexts on a variety of outcome variables using a variety of different explanatory variables and models. As Coates et al. (2005) pointed out; it is difficult if not impossible to generalize from this research.

The problem seems particularly acute when we try to understand the relationship between the context in which learning occurs, LMS use, and learning outcomes. Thus, in this study, the type of learning management system used by students, compatibility and ease of use of the LMS, demonstrability and visibility; attitude and intention as well as benefits of LMS use were explored.

RESEARCH METHODS

This study employed a descriptive survey approach. This approach was used because the focus of the study was that none of the research study variables should be influenced in any capacity. It attempted to collect quantifiable information for statistical analysis of the population sample. Additionally, this method was preferred because it included the collection of quantitative data so as to answer questions regarding the current status of the subject under study. The accessible population for this study comprised undergraduate and postgraduate students going through various study programmes at the University of Cape Coast.

A simple random sampling was used to select 114 undergraduate respondents and 25 master students for the study. The intent of the study was made known to the respondents in detail before data was collected. Data collected from respondents were treated as confidential and the respondents were assured of anonymity with regards to the information given. Structured questionnaires were personally administered by the researcher. This ensured maximum return rate of questionnaires. Questionnaires can be an effective means of measuring behaviour, attitudes, preferences, opinions and intentions of relatively large number of subjects more cheaply and quickly than other methods. The scale comprised of five main parts namely; the type of learning management system used, compatibility and ease of use of LMS, demonstrability and visibility, attitude and intention and benefits of LMS use. Reliability was calculated with the Cronbach's alpha value being 0.76 for the whole scale. Respondents rated their level of agreement on a 5-point Likert scale. Descriptive statistics (frequencies and percentages) were employed to analyse the data that was collected.

Respondents were given ample time to respond to the items on the questionnaire. Descriptive statistics was used to give a general overview of the data.

RESULTS

One hundred and forty questionnaires (140) were distributed to students pursuing various degrees at a university. All the 140 questionnaires were returned, giving a response rate of 100%.

Table 1: Academic Level of Respondents

Response	Frequency	Percentage (%)
Undergraduate	115	82.1
Masters	25	17.9
Total	**140**	**100.0**

Table 1 shows the academic level of respondents. The table indicates that 115(82.1%) of the respondents were Undergraduate students. Twenty-five (25) of them representing 17.9% were Master students.

Table 2: Time spent on Internet on an average day

Response	Frequency	Percentage (%)
Never / Almost Never	4	2.8
Less than 1/2 hour	23	16.1

From 1/2 hour to 1 hour	47	32.9
1-2 hours	24	16.8
2-3 hours	15	10.5
More than 3 hours	24	16.8
Total	**137**	**95.8**

Table 2 shows the time spent on the internet on an average working day. The distribution of respondents indicates that 4(2.8%) never or almost never spent time on the internet whiles 23(16.1%) spent less than half (1/2) of an hour on the internet. Also, 47(32.9%) of the respondents spent half ($^1/_2$) of an hour to 1 hour on the internet whilst 24(16.8%) spent 1-2 hours on the internet. There were 15(10.5%) respondents who spent 1-2 hours on the internet whiles 24(16.8%) also spent more than 3 hours on the internet, all on an average working day. Some respondents failed to respond to this item (95.8% responded).

Table 3: The type of Learning Management System used

Response	Frequency	Percentage (%)
Spring	2	1.4
Edmodo	129	92.2
Google Classroom	4	2.9
Schoology	0	0
Others	5	3.5
Total	**140**	**100.0**

Table 3 shows the type of learning management system used. The distribution of respondents indicates that 2(1.4%) used Ispring platform whiles 129(92.2%) used Edmodo learning management system. Also, 4(2.9) used Google Classroom whiles none of them used Schoology learning management system. Additionally, 5(3.5%) used other learning management systems for their studies.

Table 4: Descriptive Statistics for Compatibility and Ease of Use of LMS

Item	Mean	Std. Deviation
Using LMS is compatible with all aspects of my learning	3.9	1.02
Using LMS fits well with the way I like to learn	3.8	1.07
Using LMS fits into my learning style	3.8	1.09
LMS is appropriate for my profession in all aspects	3.9	1.04
My interaction with LMS is clear and understandable	4.0	1.04
It is easy to get LMS to do what I want it to do	3.8	.93
Overall, LMS is easy to use	3.9	.85
Learning to operate LMS was easy for me	3.9	1.02

Table 4 presents the compatibility and Ease of use of learning management system (LMS). As contained in that table, the mean for LMS usage is compatible with all aspects of learning was 3.9 with standard deviation of 1.02 measured on a 5-point scale. This suggest that the respondents agreed indeed that using LMS is compatible with all aspects of their learning. From the table, it is seen that the mean for how LMS usage fits well with the way students like to learn was 3.8 with standard deviation of 1.07 indicating that respondents agreed to the fact that using LMS fits well with the way they like to learn. Furthermore, the mean for LMS usage fits into students learning style was 3.8 with standard deviation of 1.09. Moreover, the Table 4 shows that, the mean and standard deviation for LMS being appropriate for students' profession in all aspects is 3.9 and 1.04 respectively indicating an agreement that LMS is appropriate for students' profession in all aspects is a factor affecting the compatibility and the use of LMS.

The mean for students' interaction with LMS is clear and understandable was 4.0 with standard deviation of 1.04. This suggests that most respondents strongly agreed that students' interaction with LMS is clear and understandable is a factor to the ease of use of LMS. The mean and standard deviation for how easy to get LMS to do what I want it to do were 3.8 and 0.93 respectively, indicating that most respondents agreed that it is easy to get LMS to do what they want it to do. Then again, the mean for how easy it is use LMS in overall is 3.9 with standard deviation of 0.85 depicting that indeed LMS is not difficult to use by respondents. Lastly, the mean for learning to operate LMS was easy for individual students was 3.9 with standard deviation of 1.02. This means that learning to operate LMS was easy for individual students is confirmed by respondents.

Table 5: Descriptive Statistics of Demonstrability and Visibility

Item	Mean	Std. Deviation
I would have no difficulty telling others about the results of using LMS	4.2	.79
I could communicate to others the consequences of using LMS	4.0	1.07
The results of using LMS are apparent to me	3.7	1.07
My friends on other programmes talk to me about LMS	3.0	1.31
I have seen what others do using LMS	3.5	1.10
It is easy for me to observe others using LMS in my university	3.5	1.27

After examining respondents' views on compatibility and ease of use of LMS, the study further examined the views of respondents' assessments on demonstrability and visibility of LMS. As captured in Table 5, respondents concurred (Mean = 4.2) that students would have no difficulty telling others about the results of using LMS. Also, respondents agreed that students could communicate to others the consequences of using LMS (Mean=4.0). Table 5 shows the mean for the results of using LMS being apparent to students is 3.7 with standard deviation of 1.07 indicating that, most respondents agreed to that assertion. Moreover, respondents confirmed that friends on other programmes talk to them about LMS (Mean=3.0, SD=1.31). Respondents admitted that they have seen what others do using LMS with a Mean value of 3.5. Lastly, respondents again admitted that, it is easy for them to observe others using LMS in university with mean of 3.5 and standard deviation of 1.27.

Table 6: Descriptive Statistics of Attitude and Intention

Item	Mean	Std. Deviation
Studying through e-learning is a wise idea	4.1	1.05
I am positive towards e-learning and will recommend it to others	4.1	1.07
A web-based learning system provides an attractive learning environment	4.2	.72
Overall, I like using web-based learning	4.0	1.09
I intend to use the LMS to study	4.0	.82
I intend to use the LMS to teach after my studies	4.0	1.05
I intend to increase my use of the LMS in the future	4.3	.83
I will recommend the use of LMS to my colleagues to use it for study purposes	4.4	.76

The study further examined the views of respondents on the factors affecting attitude and intention of using LMS. As contained in Table 6, the mean for studying through e-learning is a wise idea was 4.1 with standard deviation of 1.05. This means that the respondents agreed that studying through e-learning is a wise idea. From the table, the mean for how positive students were towards e-learning and how willingly they were to recommend it to others was 4.1 with standard deviation of 1.07 indicating that respondents strongly agreed about the positivity toward LMS and willing to recommend it to others. Furthermore, the mean for a web-based

learning system provides an attractive learning environment is 4.2 with standard deviation of 0.72. This shows most respondents strongly agreed that a web-based learning system provides an attractive learning environment. Table 9 shows again that the mean and standard deviation for students liking web-based learning was 4.0 and 1.09 respectively. Respondents agreed that indeed they intend to use LMS to study (Mean=4.0, SD= .82). Also, respondents strongly concurred that they intend to use the LMS to teach after their studies with a Mean of 4.0. Then again respondents confirmed that they intend to increase the use of the LMS in the future (Mean=4.3, SD= .83). Respondents agreed that they will recommend the use of LMS to their colleagues to use it for study purpose (Mean=4.4, SD=.76).

Respondents were asked to rate these measures on a four-point scale of strongly Disagree (SD), Disagree (D), Neutral (N), Agree (A) and Strongly Agree (SA). Their responses are presented in Table 7

Table 7: Other benefits of LMS use

Statements	SD (%)	D (%)	N (%)	A (%)	SA (%)	TOTAL (%)
The use of videos on the LMS platform enhanced my understanding of concepts	1 (0.7)	3 (2.1)	6 (4.2)	47 (32.9)	83 (59.4)	140 (99.3)
Notes/PowerPoint presentations posted on the LMS platform supported discussions that took place during lectures.	1 (0.7)	1 (0.7)	9 (6.3)	56 (40.8)	73 (51.4)	140 (99.3)
I am confident of using the LMS to ask questions and possibly get answers from the platform.	5 (3.5)	4 (2.8)	7 (4.9)	59 (41.3)	65 (46.9)	140 (99.3)
Using the LMS platform to do my quizzes was an excellent choice by my course lecturer.	6 (4.2)	8 (5.6)	19 (13.3)	43 (31.5)	64 (44.8)	140 (99.3)
LMS is a good platform to disseminate information including reminders and announcements.	4 (2.8)	1 (0.7)	9 (6.3)	50 (35.7)	76 (53.8)	140 (99.3)
I am confident I can use the LMS and use my experience to teach others to use it.	3 (2.1)	3 (2.1)	10 (7.0)	60 (42.7)	64 (45.5)	140 (99.3)

When asked whether the use of videos on the LMS platform enhanced understanding of concepts, 130 (92.3%) respondents agreed. On the issue of notes and PowerPoint presentations posted on the LMS platform supporting discussions that took place during lectures, 129 (92.2%) agreed that materials posted on the LMS platform supported discussions that took place during lectures.

Again, majority of the respondents 126 (88.2%) did have confidence in using the LMS to ask questions and possibly get answers from the platform. Table 7 also shows that 45 (31.5.0%) and 64(44.8%) agreed and strongly agreed respectively to the assertion that using the LMS platform to do quizzes was an excellent choice by my course lecturer, only 19 (13.3%) were neutral whiles the remaining 6(4.2%) and 8(5.6%) strongly disagreed and disagreed respectively to the assertion.

However, on the issue of LMS being a good platform to disseminate information including reminders and announcements, 77 (53.8%) strongly agreed, 51 (35.7%) agreed, whiles 9(6.3%) respondents were neutral to the assertion. Only 5 (3.5%) disagreed and strongly disagreed to the fact that LMS is a good platform to disseminate information including reminders and announcements.

In a similar instance, majority of the respondents 126 (88.2%) strongly agreed and agreed that they can confidently use the LMS and use their experience to teach others to use it. Six (6) respondents representing 4.2% strongly disagreed and disagreed   to the assertion whiles

10(7.0) were neutral.

DISCUSSION

Education is evolving and so is the manner in which instruction is delivered to students. Both undergraduate and graduate students are accepting the electronic delivery of instruction through online means. Students spend a lot of time online doing research and looking for information in order to do assignments and prepare for examinations. According to Li and Tsai (2017) although nonacademic internet use was common among students who brought laptops to class, students still spend on average, two to three hours daily on the internet for academic purposes. This study confirmed that students spend between two to three hours daily on the internet looking for relevant information for their studies. The use of LMS by students is popular as affirmed by this study. In this study, the most popular LMS used by respondents was Edmodo. Edmodo is a popular LMS which provides free access for both students and teachers alike go get interactive online. In a study conducted by Ismail et al. (2017), Kouis (2020) and Alghamdi and Bayaga (2018), they asserted that students resorted to using the LMS mostly when they find that it is compatible with aspects of what they are learning. This assertion was concurred by respondents in this study that they use LMS to profit their studies and improve their learning and also fitted well with their style of learning content from courses they studied in their institution. At the 42nd International Convention on Information and Communication Technology, Ivanjko and Grubješić (2019) reiterated that LMS use could be appropriate for a number of professions of which teaching is no exception. In this study, results concurred with that assertion as majority of respondents affirmed that the use of LMS suited their profession now and even beyond. Perhaps, it is because of the fact that interacting with LMS was clear and understandable enough leading to an easy use and enabling respondents to do whatever they wanted to do with it.

On the issue pertaining to demonstrability and visibility, respondents asserted that they had no difficulty in telling others about the results they obtained interacting with LMS to encourage its use. Allen et.al (2017) and Bichsel (2013) believed that it is not only convenient to use LMS but also effective when blended with the conventional manner in which instruction is delivered. This study tried verifying how apparent the results of using LMS is to respondents was and the majority of them agreed that the results were good enough to recommend using LMS especially when they had confirmed seeing others use it for their own benefit.

Respondents from this study asserted that studying through e-learning was a wise idea. This concurs with Kim-Soon et al. (2016) in which they studied the behavioral factors affecting intention to use e-learning. In their study, the found out that respondents felt it was a wise and useful idea to use e-learning modes to deliver instruction both for the benefit of both students and teachers alike. The satisfaction gained by students in this study compelled them to state that they will recommend it to others to use because their use of the LMS had a positive impact on their studies. Respondents in this study reiterated that a web-based learning system provided them an attractive learning environment for their respective programmes of study and for that matter overall, they enjoyed using the web-based learning experience. Ding and Zhang (2018) in a study where they looked at the practice and effectiveness of web-based problem-based learning approach in a large class-size system, assessment was performed following comparison of teaching activity outcomes pertaining to exams and self-learning capacity between two groups. When compared with the control group, the examination scores and self-

learning capabilities were significantly higher in the experimental group (P < 0.01) compared to the control group. In addition, 92.6% of students in the experimental group expressed satisfaction with the new web-based teaching approach. In this present study, students acknowledged that they intended to use the LMS to teach after their studies which confirmed the gains students stated in Ding and Zhang (2018) study. That notwithstanding, students in this study intended to increase their use of the LMS in future and recommend its use too to colleagues for study purposes.

Higher education institutions at the international level have seen the need to adopt and integrate information and communication technologies to meet the opportunities and challenges of innovation in teaching and learning processes. This logic has led to the implementation of virtual learning environments called Learning Management Systems. In a study by Cabero-Almenara, Arancibia and Del Prete (2019), their results concurred with this study confirming an instrumental and functional use of the LMS which is mainly being used as a repository for materials and information because of its asynchronous nature. In this study, it came out that notes/PowerPoint presentations posted on the LMS platform supported discussions that took place during lectures; discussions that led students to ask questions and possibly get answers from the platform instantly or later. It was affirmed that using the LMS platform to do quizzes and submit assignments was an excellent choice. Thus, there is no gainsaying that university students, who are assumed to be digital natives, should be exposed to LMS environments to improve their academic performance at the beginning of their academic careers so as to whip up their interest in its usage even after their studies.

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