

Integration of Learning Management System (LMS) into Teaching and Learning: A Synergy for Improving Students Learning Outcome in Tertiary Institutions in Delta State Nigeria

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Abstract

The advents of Computer and Information Technology (ICT), development of the internet web have re-defined and extend nations' educational landscape. The advancement in ICT have led to the birth of innovative e-learning resource platforms such as Learning Management System (LMS), which enable teaching and learning to be furthered and continued at home after the conventional school hours. This study therefore investigated the integration of Learning Management System (LMS) into teaching and learning: a synergy for improving students learning outcome in tertiary institutions in Delta state, Nigeria. The study used the descriptive survey research design. Three objectives, research questions and hypotheses were formulated and tested at 0.05 alpha significant levels. The population of the study comprised of 45000 public university undergraduate regular, post graduate (M.Sc. and PhD) students. The sample size used was 396 public universities students drawn from Federal University of Petroleum Resources Effurun (FUPRE) and Delta state university, Abraka, Nigeria. The instrument used for data collection was LMSSQ (Learning Management System Structured Questionnaire) which had fifteen items. The data collected was analyzed using mean, standard deviation and Analysis Of Variance (ANOVA). The study found out there is little or no use of learning management system in delivery of learning contents in teaching and learning process that, universities do not make use of LMS in assessment of their student; and thus, leading to a steady decline in students' learning outcome among the public universities in Delta state. Therefore, the researchers recommend the integration of LMS into university pedagogical activities, in order for students have a holistic and an improved, learning outcome.

Keywords: Learning management system; Conventional classroom; Students; Synergy; Learning outcome

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Introduction

E-learning has evolved greatly in the past few decades. This evolution could be attributed to the Advent of Information Communication Technology (resources) and the internet web. The internet web which could also be described as World Wide Web has been the fulcrum of all form of internet-based learning. Internet based learning, being an encompassing term for the recent innovative pedagogies, consist of long range of learning such as virtual learning, mobile learning, blended learning among others, which function adequately with some E-Learning resources [1]. E-learning resources are Hardware's or Software's

that facilitate online course delivery from instructors to students via the internet. A notable e-learning resource is the education Learning Management System (LMS). An efficient LMS is hinged on these two basic functionalities which are; delivering of learning content to students and assessment of students in order to ascertain their academic learning outcome. Opined that, LMS is characterized with centralized and automotive administration, use self-service and self-guided services; assemble and deliver learning content rapidly, consolidate training initiatives on a scalable web-based platform; support portability, standards, personalize content and enable knowledge re-use [2].

Prior to this 21st century ICT-based academic practices, the

students are exposed to the conventional face-to-face teaching and learning experiences, which place much priority on instructors/teachers, by consequently limiting the role of the students to be a passive learner and a mere listener. Since, the conventional instructional delivery approach has shown a less impact on our university graduates, thereby, posing barriers toward graduates' employability into the present ICT-DRIVEN industries, has left a huge concern on the part of the educational stakeholders as well as curriculum developers [3,4]. Thus by extension, remains a major food for thought for the nation's economy, National Universities Commission (NUC).

Statement of problem

Dating back to last two decades, teaching and learning process has been monopolized by the conventional face-to-face method. This pedagogical method has little or no positive impact on students' learning outcome as well as the ICT-DRIVEN industries/establishments as suggested by literatures. Since the conventional face-to-face is solely teacher-centered, and limits students learning to memorization and passive learners. However, with advancement in ICT and E-learning resource such as LMS, teaching and learning can be furthered, extended beyond the classroom building. And most significantly, students can now personalized, construct his/her learning, whenever and wherever. In most developed countries, the use of LMS in delivery of learning contents, academic assessment, has recorded much success, thus leading to its full integration into tertiary educational systems.

In Nigeria, there is little glimpse of LMS usage in the big establishment and companies. Contrastively, beside the National Open Universities of Nigeria (NOUN), the presence of LMS is yet to find full expression into public tertiary institution in Delta state in particular and Nigeria by extension, compared to the developed countries. It is on this backdrop that this study calls on educational stakeholders, policy makers, for full integration of LMS into teaching and learning so as to replicate the improved learning outcome in the developed countries into our own educational system (Nigeria teaching and learning system). Since, the growth of every nation is measured by the strength of her educational system as well as her product. Therefore, this study calls for Integration of Learning Management System (LMS) into Teaching and Learning: A synergy for Improving Students Learning Outcome in Tertiary Institutions in Delta State Nigeria.

Purpose of the study

The general purpose of this study is to call for integration of Learning Management System (LMS) into teaching and learning in order to improve students' in tertiary institutions in delta state, Nigeria. Specifically, the study equally seeks to determine:

- The mean response of university student on content delivery using LMS in their programs in universities in Delta state
- The mean response of university students on assessment using LMS in their program in universities in Delta state
- The mean response of university student on the use of LMS in

determining their academic performance base on programs

Research questions

1. What is the mean response of university students on content delivery using LMS in their programs in universities in Delta state?
2. What is the mean response of university students on assessment using LMS in their program in universities in Delta state?
3. What is the mean response of university student on the use of LMS in determining their academic performance base on programs

Research hypothesis

1. H01: There is no significant difference in the mean response of university students on content delivery using LMS in their programs in universities in Delta state.
2. H02: There is no significant difference in the mean response of university students on assessment using LMS in their program in universities in Delta state.
3. H03: There is no significant difference in the mean response of university students on the use of LMS in determining their academic performance base on programs.

Literature Review

The past two decade has witness multi-influx of Learning Management System (LMS) into nations' organization and educational system. In the developed countries, good percentage of these developed countries' educational systems is hinged on e-learning resource whose LMS form its integral part of operations. LMS is an Online Learning Platform (OLP) that encompasses academic learning content (text and audio-visual), ability of engaging students to access and create their own learning experiences and most significantly ensures holistic evaluation of students learning outcome, regardless of where and when. In relative to the view of the present researcher [5], described LMS as an online program with a variety of features that support teaching and learning. Several scholars have defined LMS in diverse way. However, all of their definitions are centered on three basic functionalities namely: Learning Content Delivery (LCD), student's active interactions between LMS content and fellow classmate (collaboration), lastly, the evaluation/assessment functions. The LMS could be trace to advancement in science and technology, Hence:

Kidney opined that Learning Management Systems (LMS) are considered to be largely applicable for natural sciences as they enable representation of phenomena [6], enhance experimental study and enable the creation of models and problem solving applications. However, asserted that LMS is software used for delivering, tracking and managing training/education. LMSs range from systems for managing training/educational records to software for distributing courses over the Internet and offering features for online collaboration. Similarly describes LMS as a high solution package that allows for the delivery and administration

of content and resources to all students and employees. This system contains software application and features which make learning content easily accessible and managed [7].

LMS interface is graphical-oriented and user-friendly window. Faculties, students and management can login in LMS using their login and password details. Login access is given to only to authenticate user, preferably persons belonging to same organization. After user enters login details, the window will be displayed, thus, enabling the students to access the overall course plan designed for a semester like number of lectures in a week, date schedule, list of enrolled students, study material available for that course [8].

Researchers opined that the relevance of LMS is attracting much recognition day-by-day. Hence, by implication, this e-learning resource is poised to reduce cost and improving the quality of education, which will help tertiary institutions to meet the growing innovative teaching and learning needs of students [9]. Based on the advantages of LMS, Farrell and Isaacs reported that, the acquisition of LMS by higher education institutions in Nigeria and other developing countries has continued to increase in recent years. Most institutions have also partnered other international organizations and spent thousands of dollars to implement various LMS solutions. Against this backdrop, predicted the growth rate of LMS acquisition in Africa sub-Sahara to increase at 5% per annum between 2011 and beyond [10]. Studies have confirmed that LMS have been implemented in countries such as Kenya, Tanzania, Uganda, Ghana, and Nigeria, South Africa, to mention but a few [11]. Despite the growing implementation of these e-learning solutions, authors have all indicated that some failures exist in using LMS [12,13]. A key factor observed by these authors has to do with the initial acceptance by potential stakeholders (students and instructors) who are to use it for pedagogical and other administrative purposes, LMS based e-learning, rejection rates are also high [14].

Methodology

The study used descriptive survey research design. According to

this research design involves the collection of detailed description of public opinion on the existing phenomena with the intent to justify conditions and practices to make better current conditions and practice to make better plans for improving phenomena [15]. The study was conducted in the two public universities in Delta state (Federal university of petroleum resources Effurun and Delta state university Abraka. The population of the study is 45,000 students. And a sample of 396 students was drawn from the selected institutions. Cluster sampling technique was used in selecting the sample.

LMSSQ (Learning Management System Structured Questionnaire) which consist of fifteen items was used for data collection. Section 'A' sought the demographic data of the respondents, while section 'B' had three cluster with fifteen items. The respondents were requested to indicate their opinions on the first cluster; on a 4-point scale of strongly agreed=4 point, agreed=3, disagreed=2, strongly disagreed=1. More so, the respondents are requested to indicate their views on the three cluster; on same 4-point scale of; strongly agreed=4, agreed=3, disagreed=2, strongly disagreed=1. Furthermore, LMSSQ was validated by three experts; two from faculty of vocational technical education and one from faculty of education, all from university of Nigeria, Nsukka. The LMSSQ was personally administered by the researchers. Data was analyzed using mean, standard deviation one-way Analysis Of Variance (ANOVA). However, for the three clusters, any item with the mean score of 2.50 and above is was accepted and deduced high availability and high extent; while item with mean score below 2.50 is rejected, thus regarded as no usage of LMS respectively.

Presentation of Results

Research question 1

What is the mean response of university student on content delivery using LMS in their programs in universities in Delta state N=396 (Table 1).

Table 1: Mean and standard deviations of university students on content delivery using LMS in their programs in universities in delta state.

S.NO	Item statements	Undergraduate regular (N=83)		Master/M.Sc (N=218)		PHD (N=218)		Total (N=396)		Decision
		\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	
1	Teaching and learning can be done through the internet web and e-learning resource	36	0.1	1.9	0.1	1.9	0.1	1.92	0.99	D
2	Students can access learning content and have a personalized learning via educational learning management system (LMS)	2.31	0.95	2.13	0.98	2.01	0.98	2.14	0.98	D
3	Learning experiences can be continued at home after the conventional face-to-face school hour via the LMS	2.4	0.91	2.13	0.98	2.01	0.99	2.16	0.98	D
4	Student can watch and play audio-visual course materials/video clips in the LMS environment.	2.05	0.97	2.99	0.07	2.15	0.98	2.09	0.98	D
5	Social networking platform (What's App, Facebook), that are linked to LMS enable students to have a collaborative discussion on a given subject matter.	2.0	0.98	2.19	0.97	2.26	0.99	2.17	0.98	D
	Overall Cluster Mean	2.16	0.56	2.09	0.63	2.06	0.63	2.1	0.62	D

Result in Table 1 shows that undergraduate students had a grand mean response of 2.16 with a standard deviation of 0.56, then M.SC had a mean of 2.09 with standard deviation of 0.63 while PhD students had a mean of 2.06 with standard deviation of 0.63. Since the mean responses are below the criterion of 2.50, this shows that the students disagreed to the use of LMS in content delivery in their programs.

Hypothesis one

There is no significant in the mean response of university students on content delivery using LMS in their program in universities in Delta state (Table 2).

Table 2: ANOVA analysis of the university students on content delivery using LMS in their programs in universities in delta state.

Cluster1		Sum of squares	DF	Mean square	F	Sig.
	Between groups	0.463	2	0.231	0.61	0.544
	Within groups	149.091	393	0.031		
	Total	149.556	395			

Research question 2

What is the mean response of university students on assessment using LMS in their program in universities in Delta state N=396 (Table 3).

Result in Table 3 shows that undergraduate students had a grand mean response of 2.27 with a standard deviation of 0.55, and then M.SC had a mean of 2.19 with standard deviation of 0.57 while Ph.D students had a mean of 2.19 with standard deviation of 0.65. Since the mean responses are below the criterion of 2.50, this shows that the students disagreed to the use of LMS in assessment in their programs.

Hypothesis two

There is no significant difference in the mean response of university students on the use of LMS in assessment in their programs in universities in Delta state (Table 4).

Table 3: Mean and standard deviations of university students on assessment using LMS in their program in universities in delta state.

S.NO	Item statements	Undergraduate regular (N=83)		Master/M.Sc (N=218)		PHD (N=218)		Total (N=396)		Decision
		\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	
6	LMS provides students with learning content in module and formulated question to ensure students are evaluated to ascertain the extent of learning.	2.28	0.95	2.24	0.96	2.25	0.96	2.25	0.96	D
7	The online assessment could enables students to be motivated; as the students score will spur them to improve on their subsequent learning.	2.35	0.93	2.24	0.95	2.15	0.99	2.24	0.96	D
8	Instant online grading/scoring of multiple choice objective questions via LMS could improve students' learning outcome	2.23	0.97	2.20	0.95	2.22	0.95	2.21	0.95	D
9	Assessment of students will enable the class instructors to implore more effective teaching techniques	2.29	0.96	2.12	0.99	1.19	0.97	2.17	0.98	D
10	Several groups of Students could be assessed on a subject matter collaboratively when the LMS is linked with social networking platform.	2.19	0.97	2.17	0.97	2.17	0.96	2.17	0.97	D
	Overall Cluster Mean	2.27	0.55	2.19	0.57	2.19	0.65	2.21	0.58	D

Result in Table 2 show that an F-ratio of 0.610 with an associated exact probability value of 0.544 was obtained with respect to the university students on content delivery using LMS in their programs in universities in Delta state. Since the associated exact probability value of 0.544 when compared with 0.05 (a priori value) set as the level of significance was found not significant because it is greater, the null hypothesis one (H01) was upheld. Hence, it was concluded that there is no significant in the mean response of university students on content delivery using LMS in their program in universities in Delta state.

Result in Table 4 indicates that an F-ratio of .526 with an associated exact probability value of 0.592 was obtained with regard to the university student on assessment using LMS in their programs in universities in Delta state. Given that the associated exact probability value of 0.592 when compared with 0.05 (a priori value) set as the level of significance was found not significant because it is greater, thus the null hypothesis two (H02) was upheld. Consequently, it was concluded that there was no significant difference in the mean response of university students on the use of LMS in assessment in their programs in universities in Delta state.

Research question 3

What is the mean response of university student on the use of LMS in determining their academic performance base on programs N=396 (Table 5).

Table 4: ANOVA analysis of university students on the use of LMS in assessment in their programs in universities in delta state.

Cluster 2		Sum of squares	DF	Mean square	F	Sig.
	Between groups	0.359	2	0.179	0.526	0.592
	Within groups	134.009	393	0.341		
	Total	134.347	395			

Table 5: Mean and standard deviations of university student on the use of LMS in determining their academic performance base on programs in universities in delta state.

S.NO	Item statements	Undergraduate regular (N=83)		Master/M.Sc (N=218)		PHD (N=95)		Total (N=396)		Decision
		\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	\bar{X}	SD	
1	Teaching and learning can be done through the internet web and e-learning resource	2.04	0.1	1.9	0.1	1.9	0.1	1.92	0.99	D
2	Students can access learning content and have a personalized learning via educational learning management system (LMS)	2.31	0.95	2.13	0.98	2.01	0.98	2.14	0.98	D
3	Learning experiences can be continued at home after the conventional face-to-face school hour via the LMS	2.4	0.91	2.13	0.98	2.01	0.99	2.16	0.98	D
4	Student can watch and play audio-visual course materials/video clips in the LMS environment.	2.05	0.97	2.99	0.07	2.15	0.98	2.09	0.98	D
5	Social networking platform (What's App, Facebook), that are linked to LMS enable students to have a collaborative discussion on a given subject matter.	2.19	0.97	2.17	0.97	2.17	0.96	2.17	0.97	D
	Overall Cluster Mean	2.16	0.56	2.09	0.63	2.06	0.63	2.1	0.62	D

Result in Table 5 shows that undergraduate students had a grand mean response of 2.16 with a standard deviation of 0.59, and then M.SC had a mean of 2.07 with standard deviation of 0.64 while Ph.D students had a mean of 2.02 with standard deviation of 0.71. Since the mean responses are below the criterion of 2.50, this shows that the students disagreed that LMS could not be used to determine their academic performance base on programs in universities in Delta state.

Hypothesis three

There is no significant difference in the mean response of university students on the use of LMS in determining the academic performance base on program in universities in Delta state (Table 6).

Table 6: ANOVA analysis of university students on the use of LMS in determining the academic performance base on program in universities in delta state.

Cluster 3		Sum of squares	DF	Mean square	F	Sig.
	Between Groups	0.942	2	.471	1.114	0.329
	Within Groups	166.253	393	.423		
	Total	167.195	395			

Discussion of Findings

Based on the analysis of data, some findings were made which is now discussed. The findings shows that LMS is not used in the delivery of learning contents among the public universities in Delta State, this is in agreement with the view.

The finding provide support to the claim of who share in the agreement that university students are not be exposed to the use of LMS in carrying out assessment in any given subject matter [16].

Result in Table 6 indicate that an F-ratio of 1.114 with an associated exact probability value of 0.329 was obtained with respect to university students on the use of LMS in determining their academic performance base on program in universities in Delta state. Since the associated exact probability value of 0.329 when compared with 0.05 (a priori value) set as the level of significance was found not significant because it is greater, hence the null hypothesis three (H03) was upheld. Thus, the conclusion drawn was that there was no significant difference in the mean response of university students on the use of LMS in determining the academic performance base on program in universities in Delta state.

Finding was who opined that there is an increase in students poor performance due to LMS integration towards supporting the conventional teaching and learning process [17].

Nevertheless, the finding in the null hypothesis analyzed showed that, since the associated exact probability value of 0.544 when compared with 0.05 (a priori value) set as the level of significance was found not significant because it is greater, the null hypothesis one was upheld [18]. Hence, it was concluded that there is no significant in the mean response of university students on content delivery using LMS in their program in universities in Delta state.

Finding in null hypothesis 2; shows that the associated exact probability value of 0.592 when compared with 0.05 (a priori value) set as the level of significance was found not significant because it is greater, thus the null hypothesis two was upheld. Consequently, it was concluded that there was no significant difference in the mean response of university students on the use of LMS in assessment in their programs in universities in Delta state. Lastly, findings in null hypothesis 3: shows that since the associated exact probability value of 0.329 when compared with 0.05 (a priori value) set as the level of significance was found not significant because it is greater, hence the null hypothesis three was upheld. Thus, the conclusion drawn was that there was no significant difference in the mean response of university students on the use of LMS in determining the academic performance base on program in universities in Delta state. The findings from the above hypothesis is in agreement with to the study conducted which stressed that, despite the advantages brought about by LMS based e-learning, rejection rates are also high [19].

Conclusion

With regards to the result of the findings of the integration of Learning Management System (LMS) into teaching and learning: a synergy for improving students learning outcome in tertiary institutions in delta state Nigeria, it is obvious LMS that ought to improve students' learning outcome, has not been accrued the needed attention. Tertiary institution has failed to integrate LMS fully into teaching and learning; as universities and other tertiary institutions in Delta state is still engrossed with the conventional face-to-face pedagogical method of in delivering instructions,. This has limited students learning experience. It is on this backdrop that this present study calls for LMS integration into teaching and learning, and to harmonize so as to produce holistic learning experience between instructors and students.

Since, it offer much flexibility between students and the instructors and privilege of ensuring the inclusiveness of the physically challenged and learning beyond geographical barriers anytime and anywhere.

Recommendations

Base on the result of the study, the following recommendations are made:

1. Web-based Learning Management Systems (LMS) should be introduced into teaching and learning so as to attain holistic learning experience.
2. State commissioner of education in collaboration with the federal ministry of education should invest in the build of internet connections and infrastructure; for smooth operation of online learning management system.
3. Educational parastatals like National Universities Commission (NUC), National Commission for Colleges of Education (NCCE) with support of NGOs, should organize seminar, symposium, and awareness campaigns on the need to use LMS to democratized instructional delivery approach.
4. National Curriculum Planners should integrate the use of LMS to complement conventional teaching and learning process

within and outside the classroom.

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