Effects of Ilias Online Learning Platform on Academic Achievement in Educational Technology among University Students' in Nigeria

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Abstract

This study investigated the effects of ILIAS online learning platform on students' achievement in educational technology among universities in Nigeria. Quasi-experimental research design was adopted and 338 participants (157 males and 181 females) year two students constituted the sample for the study. The research was guided by two research questions and two null hypotheses. A researchers designed instrument named Educational Technology Achievement Test (ETAT) was used for data collection. Data collected was analysed using mean and standard deviation while ANOVA was used to test the two null hypotheses that were formulated. The findings of the study indicated that those taught with ILIAS learning platform had higher mean achievement scores in ETAT than those students in the control group and also there was no significant difference in the mean achievement scores of male and female students taught Educational Technology using ILIAS learning platform. Based on the findings of the study, it was recommended that Universities and other tertiary institutions should implement the use of ILIAS learning platform in teaching and learning process for the purpose of enhancing learning outcome.

Keywords: ILIAS; Achievement; Online learning.

1. Introduction

Educational Technology (ET) has become a vehicle through which instruction is being driven in the teaching and learning environment which has the potential to transform education by extending the learning space beyond the four walls of classroom. ET has also played a vital role in the education system that have promoted the introduction of Online Learning platforms. Similarly, Educational Technology have been considered as a crucial factor in improving the quality of education and enhancing the level of student's educational learning performance in Nigerian educational context, which in turn creates opportunities for learners to develop in cognitive, critical thinking, information reasoning and communication skills (Chigona and Chigona, 2010). It can also help learners to explore education beyond classrooms by providing access to a wide range of resources and information, promoting scientific inquiry and discovery.

Educational technology is a multifaceted and integrated process involving people, procedure, ideas, devices, and organization, where technology from different fields of science is borrowed as per the need and requirement of education for implementing, evaluating, and managing solutions to those problems involved in all aspects of human learning (Ajulo, 2010). The concept of educational technology in Nigeria includes software, hardware, together with online applications, like "Integriertes Lern-, Informations- und Arbeitskooperations-System" (ILIAS), wikis, blogs, gamification, massive online open courses, big data, mobile learning and so on. Therefore, the recent quest for technology development in Nigeria makes it imperative for educators to shift from the existing method of conventional teaching in schools to accommodate the use of technologies such as online learning platforms.

Online learning is an inclusive term that describes educational technology that electronically or technologically supports learning and teaching. It is a learner-controlled, self-paced education environment in which the learner has authority over the learning environment; thereby allowing learners to work at their pace and convenience (Eke, 2011). Online learning according to Pollock (2013), is the use of electronic technology to deliver education and training applications, monitor learner's performance and report learner's progress. It is becoming the conservative approach of teaching students in universities worldwide, changing the educational system which are now focusing on learning through new technological methods such as ILIAS, Moodle, gamification and so on. The use of online learning is not a new phenomenon in promoting education in some parts of the world. Presently, some institutions in Nigeria are using it to promote distance education (DE) and lifelong learning (Ahmed, 2012). However, the teaching

model in Nigerian universities is inconsistent with the use of online technologies such as ILIAS learning platform, which can be used to enhance teaching and learning.

2. Related Literature

ILIAS which means Integriertes Lern-, Informations- und Arbeitskooperations-System, is a German word for "Integrated Learning, Information and Work Cooperation System". It is an open source web-based learning management system (LMS). It supports learning content management and tools for collaboration, communication, evaluation and assessment. It was originally developed in 1998 at the University of Cologne, Germany and it is now being used by many large corporations, organizations and universities (ILIAS, 2015). ILIAS main objective is to provide a flexible environment for online learning. The integrated tools give opportunities that go far beyond the idea that education only consists of creation and completing of a particular course. It could easily be seen as a library, which houses various learning materials. They, in turn, can be made available for non-registered users, making the platform a free knowledge repository.

ILIAS goes far beyond the idea of learning being confined to courses online alone. It offers the possibility for teachers to teach course content as well as plugged in virtual classrooms and assess students' performance while students who missed a lecture are able to catch up using the recorded sessions. Alternatively, in situations when students live far apart or the number of students is low, an online lecture is a best for the regular lecture. Students on the other hand will be able to learn course content at any available location, check their assessment scores, create and design learning materials (Hanson and Asante, 2014). Currently, there has not been much research to explore the influence of ILIAS learning platform on students' academic achievement in Nigerian universities, given that it is still an emerging technology.

University education is regarded as an instrument of social, political and economic development, the products of university education in any nation will determine the development of such nation. Therefore, university education contributes to national development through high level relevant manpower training in order to acquire both physical and intellectual skills which enable individual to be self-reliant and useful members of the society (Federal Republic of Nigeria, 2004). However, present research has shown that Nigerian Universities are still lacking behind in the use of online learning platforms such as ILIAS learning platform as an educational technology tool (Baba, 2016). While there is a great deal of knowledge and information about how ILIAS learning platform is being used in developed countries, there is not much information on how it is being used in Nigerian universities. According to Usman (2016), in order to motivate and improve the academic achievement among university students, the Nigerian Government should be able to establish a functional educational system driven by online learning. This will go along way to impact positively the students' academic achievement.

Academic achievement, according to Anyagh and Okwu (2010) is hinged on several factors such as: teaching method, intelligence, background, organization, opportunity, motivation, instructional procedures, teaching aids, interest of the learner and other environmental variable. So, in societies like Nigeria where standardized test of different kinds exists, the academic achievement of students is represented by the individual's response to standardized achievement test, and the level of response given to such tests can help in determining success. For a student to achieve well in an examination, the ability to recall what was learnt is a necessary condition. Furthermore, one can only recall what is retained and retention which is the ability to remember things learned by individuals at later time is necessary for better achievement.

3. Statement of the Problem

Despite the importance of educational technology to individual and national development, studies have shown that students' performance has been below expectation (McGee, 2013; Ryan, 2016). Ellis (2016), reported that one of the factors hindering the effective teaching and learning of educational technology is the use of conventional lecture method which is a classroom-based method characterized by lectures and instructions by teachers which make it to be a teacher-centered method of instruction. This method makes students to become passive rather than active learners. However, various efforts have been made by researchers and educators to come up with instructional strategies that will promote effective teaching and learning of educational technology concept as well as improve students' achievement but much has not been done in the area of supplementing conventional lecture method with ILIAS learning platform in Nigerian universities, specifically on the effect of ILIAS on the academic achievement of students. Therefore, it is necessary to look into the current method of teaching educational technology in order to get a suitable strategy that will lead to effective teaching and learning.

4. Purpose of Study

The purpose of this study is to determine the effects of ILIAS Online Learning Platform achievement in educational technology among university students in Nigeria. Specifically, the study attempts to achieve the following objectives:
1. Determine the effects of ILIAS learning platforms on academic achievement of students' in Educational Technology.
2. Determine the influence of gender on students' academic achievement in Educational Technology when taught with ILIAS learning platform.

5. Research Questions

1. What is the effect of ILIAS learning platform on mean achievement scores of students taught Educational Technology?
2. What is the effect of ILIAS learning platform on mean achievement scores of Male and Female students taught Educational Technology using ILIAS learning platform?

6. Research Hypotheses

HO$_1$: There is no significant difference in the mean achievement scores of students taught Educational Technology using ILIAS learning platform and lecture method.

HO$_2$: There is no significant difference in the mean achievement scores of male and female students taught Educational Technology using ILIAS learning platform.

7. Methodology

The research design for this study was quasi-experimental design of the pre-test-post-test non-equivalent control group. The population for the study consisted of 338 second year Educational Technology students, comprising of 157 Males and 181 Females from two public universities purposively selected for the study and the students were drawn from 2019/2020 academic session. The two universities were randomly assigned to form the groups of the study (Treatment group and Control group). University of Lagos was used as the treatment group where students were taught using ILIAS learning platform while University of Port-Harcourt was used as the control group where the students were taught using lecture method. An intact class was used from the sampled schools for the study.

The study had one research instrument called Educational Technology Achievement Test (ETAT). The research instrument was developed by the researchers comprising of fifty (50) multiple choice objective test drawn from the concept taught. The Educational Technology Achievement Test (ETAT) was validated by three experts in educational technology for both face and content validation.

To determine the reliability of the test instrument, a pilot study was carried out using 40 students from Federal University of Technology, Minna. ETAT was administered to the students using test-retest method. Pearson Product Moment Correlation Coefficient was used in calculating ETAT reliability coefficient index which yielded an index of 0.90, which indicated a strong reliability coefficient. Analysis of Variance (ANOVA) was used to test the hypotheses formulated for the study at 0.05 level of significance. The data was analyzed using statistical package for social sciences (SPSS) 23.00 version.

8. Results

1. What is the effect of ILIAS learning platform on mean achievement scores of students taught Educational Technology?

Table-1. Mean Achievement and Standard Deviation of Students' Scores in ILIAS Learning platforms and Lecture Method (LM)

Groups	N	Pre-test		Post-test		Mean Difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Experimental	175	34.59	4.18	80.53	4.18	45.94
Control	163	32.75	3.76	60.75	3.76	28.00

The data presented in Table 1 shows that the experimental group had a mean score of 34.59 and standard deviation of 4.18 in the pre-test and a mean score of 80.53 and standard deviation of 4.18 in the post-test making a pre-test post-test difference in the experimental group to be 45.94. The control group had a mean score of 32.75 and a standard deviation of 3.76 in the pre-test and a post-test mean of 60.75 and a standard deviation of 3.76 with a pre-test post-test difference of 28.00. With this result, the students in the experimental group performed better in the achievement test than the students in the control group.

2. What is the effect of ILIAS learning platform on mean achievement scores of Male and Female students taught Educational Technology using ILIAS learning platform?

Table-2. Mean Achievement and Standard Deviation of Male and Female Students' scores Exposed to ILIAS Learning platform

Groups	N	Pre-test		Post-test		Mean Difference
		$\bar{x}$	SD	$\bar{x}$	SD	
Male	80	34.30	3.55	80.30	3.55	46.00
Female	95	34.72	4.66	80.72	4.66	46.00

Results in Table 2 shows that male group had a mean score of 34.30 and standard deviation of 3.55 in the pre-test and a mean score of 80.30 and standard deviation of 3.55 in the post-test making a pre-test post-test score difference in male group to be 46.00. On the other hand, the female group had a mean score of 34.72 and standard deviation of 4.66 in the pre-test and a mean score of 80.72 and standard deviation of 4.66 in the post-test making a pre-test post-test difference of 46.00 The results show that there is no difference between the mean achievement scores of male and female students when exposed to the experimental condition.

8.1. Research Hypotheses

HO$_1$: There is no significant difference in the mean achievement scores of students taught Educational Technology using ILIAS learning platform and lecture method.

Table-3. Summary of Analysis of Variance (ANOVA) for Posttest between Experimental and Control Groups

Source	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	32989.155	1	32989.155	2078.128	0.000*
Within Groups	5333.818	336	15.874		
Total	38322.973	337			

* = significant at 0.05 level

Table 3 reveals that there was a significant difference in the mean scores of Experimental and Control Groups with F (1, 337) = 2078.128, p < 0.05. Hence, the null hypothesis stated was rejected.

HO$_2$: There is no significant difference in the mean achievement scores of male and female students taught Educational Technology using ILIAS learning platform.

Table-4. Summary of Analysis of Variance (ANOVA) for Posttest between Male and Female Students

Group	Sum of Square	df	Mean Square	F	p-value
Between Group	7.508	1	7.508	0.428	0.514*
Within Group	3032.126	173	17.527		
Total	3039.634	174			

* = significant at 0.05 level

Table 4 reveals that there was no significant difference in the mean achievement scores of male and female students taught Educational Technology using ILIAS learning platform. F (1, 174) = 0.428, p > 0.05. Hence, the null hypotheses stated above was retained.

9. Discussion of Findings

The result presented in Table 1 showed the post-test mean achievement scores of the experimental group with a mean score of 80.53 and standard deviation of 4.18 and the control group had a mean score of 60.75 and a standard deviation of 3.76. With this result, the students in the experimental group performed better in the achievement test than the students in the control group. This result was confirmed on null hypotheses one presented in table 3, that there was a significant difference in the mean scores of Experimental and Control Groups with F (1, 337) = 2078.128, p < 0.05. Hence, the null hypothesis stated was rejected. This could be ascribed to the active involvement and participation of the students in the homework activities and the continuous learning and watching of lecture video clips posted on the LMS platform. Which makes the findings in line with the work of Hanson and Asante (2014); Goyel and Tambe (2015) that indicated a higher gain in the achievement scores of an experimental group to that of the control group.

The data presented in Table 2 shows that there was no significant difference between the mean pre-test scores of both male and female groups. Their post test result indicated that the male students had a mean score of 80.30 and standard deviation of 3.55 and the female students had a mean score of 80.72 and a standard deviation of 4.66. This result implies that both male and female students performed better in the achievement test. Similarly, Table 4 result reveals that there was no significant difference in the mean achievement scores of male and female students taught Educational Technology using ILIAS learning platform. F (1, 174) = 0.428, p > 0.05. Hence, the null hypothesis stated above was retained the outcome might be as a result of both genders having abilities to learning more when taught with instructional materials or that instructional materials meets their learning need. This finding is in consonant with the study of Smith and Stephens (2010), which recommended that ILIAS learning platform should be adopted as the most effective instructional in teaching because of its influence on achievement of male and female students that were taught Educational Technology. The ILIAS learning platform had similar influence on the achievement scores of both genders.

10. Conclusion

Based on the results of this study, the following conclusion was drawn: the application of ILIAS learning platform showed a significant effect on academic achievement for educational technology students. Furthermore, the achievement was not different because of gender. This indicates that the use of ILIAS learning platform can transform any contents that is boring or difficult to be interesting and easier to understand. Based on this finding, it can be concluded that the use ILIAS can bring about positive outcome to students' learning and it should be widely implemented by teachers or lecturers in teaching and learning process.

Recommendations

Educational technology lecturers should employ the use of ILIAS learning platform in order to enhance understanding, achievement and retention of learners.

1. Workshops, seminars and conferences should be organized by government and institutional authorities to equip lecturers with the needed skills for online learning.

2. Lecturers teaching educational technology courses should expose the students to ILIAS learning platform in order to promote student-centered instructional approach, students' autonomy to knowledge acquisition, and student-self-discovery learning.

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