

## EFFECTS OF WIZIQ AND MOODLE LEARNING PLATFORMS ON STUDENTS' ACADEMIC ACHIEVEMENT IN UNDERGRADUATES EDUCATIONAL TECHNOLOGY CONCEPTS

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### Abstract

*This study investigated the effectiveness of WizIQ and MOODLE learning platforms on students' academic achievement in undergraduate educational technology concepts in Nigeria. The research design employed for this study was a pretest, posttest, intact class quasi-experimental design. Three research questions were raised to guide the study and three null hypotheses were tested. A total of 333 educational technology students selected from three universities out of six universities having the department of educational technology in Nigeria were randomly assigned to Experimental Group I (WizIQ learning platform), Experimental Group II (MOODLE learning platform) and control group (lecture method). Educational Technology Achievement Test which was subjected to validation and reliability checks were used for data collection. Data gathered were analyzed using Analysis of Covariance and significance level was ascertained at 0.05 alpha level. Findings of the study revealed that the platforms improved students' academic achievement. Also there was no significant difference in the mean achievement scores of students in the three groups ( $F_{(2, 329)} = 1.625, p > 0.05$ ) and gender has no influence on students' achievement when exposed to WizIQ and MOODLE learning platforms. It was therefore recommended that WizIQ and MOODLE learning platforms should be adopted as one of the teaching strategies for educational technology courses in Nigerian Universities.*

**Keywords:** Achievement, Educational technology, WizIQ learning platform, MOODLE learning platform

### Introduction

Education which is regarded as a teaching-learning process between the teacher and the learner in a conducive environment such that the knowledge gained brings about change in learners' behavior. All over the world, education is regarded as an important tool for achieving national objectives. It is a venture that every individual and every society needs because it is an indispensable instrument for both human and national development. To achieve functional education in Nigeria, integration of Information and Communication Technology (ICT) becomes imperative.

Onuma, (2007) stated that ICTs are wide range of technologies that is enabled by electronic means in the acquisition, storage, process, transmission and dissemination of information in form of text, voice, graphics and video. The use of ICT enhances an interactive learning environment which translates teaching and learning process to such that learners can interact with knowledge medium in an active and constructive way (Yusuf, 2005). National Policy on Educations' mission statement recognized the need to use ICT for education by: empowering students with information and technology skills needed for global competitiveness, integrating ICT into the mainstream of education and training, establishing new technology institutions (FRN, 2009).

The evolution of ICT and the Internet has been the (enabler) driving force behind new mode of teaching and learning which has transforms the entire educational landscape and altered the

educational equation in a fundamental way (Aduwa-Ogiegbaen, 2013). With the effective utilization ICT in Nigerian classrooms, there is no doubt that the teaching-learning process and its environment will be more effective and learning will be facilitated. There are several environments or platforms that meet a set of features for creating and structuring of courses in the virtual learning environment. These environments are known as Learning Management System. These environments differ in many ways such as the language with which they were developed, features each offers, level of interactivity, ease of use among other.

The Learning Management System or popularly known as LMS is a web based technology which assists in the planning, distribution and evaluation of a specific learning process (Mahnegar, 2012). It is a software environment designed to manage user learning interventions as well as deliver learning content and resources to students (Sherimon, 2013). LMS is also one of the major tools which are useful for both students and instructor in online learning environment. A typical LMS provides an instructor or moderator the opportunity to prepare and deliver content, monitor participation by students, as well as assess students' performance online. A type of learning management system is WizIQ.

WizIQ is a learning platform that includes online teaching, from a virtual classroom, to creating and delivering courses with assessment tools and content sharing feature. It also provides exclusive features that save time and enhance collaboration between students and teachers (WizIQ, 2017). WizIQ cloud based learning platform was founded in 2007 in united states enables its' user to provide live real-time or self-paced training by helping to build, deliver and manage courses from the users' self-branded domain (WizIQ, 2017). Its affordable, easy to use and mobile ready features make it a perfect LMS for extended enterprise training also. Users can start teaching and learning activities within minutes, add and manage multiple teacher accounts, create online courses, and schedule live classes.

WizIQ is an online teaching platform that offers virtual classroom software for teachers, trainers, colleges and universities, high schools, and training and tutoring centers. To use WizIQ, there is no need to download any other software. After installation, using a web browser will successfully run an online class (Sherimon, 2013). With the WizIQ learning platform's features and range of useful tools, users can:

- (i) Increase student engagement with real-time audio-video communication, text chats, and advanced, interactive whiteboards
- (ii) Integrate smoothly with your existing website or LMS (e.g., Moodle, Blackboard, Sakai) using the APIs & plugins.
- (iii) Deliver live classes on-the-go from any mobile device using WizIQ Android and iOS apps.
- (iv) Manage your classes and students easily with handy features like Attendance Reporting, Recording, and Notifications.
- (v) Reuse lectures recorded by using WizIQ's recording and secure content facility
- (vi) Access WizIQ from any internet browser, without downloading any software.

WizIQ Classroom have a complete feature for designing and delivering a complete online course content such as real-time communication, interactive whiteboards, polling tools, breakout rooms, secure recording capabilities, text chatting, varied courseware file types, integrated media player, attendance reporting and notifications, teacher-managed control options. Another type of LMS that have similar features with WizIQ is MOODLE.

MOODLE which stands for Modular Object-Oriented Dynamic Learning Environment is an open source course management system, initially founded by Martin Dougiamas. It represents one of the most widely used open-source e-learning platforms that enables the creation of a course

website, ensuring their access only to enrolled students. MOODLE enables educators to design online courses in which the students can access anytime like a virtual classroom. This platform allows the exchange of information among users geographically dispersed, through mechanisms of synchronous (chats) and asynchronous communication (discussion forums). MOODLE platform is characterized by a set of functionalities grouped in two different classes which are: Resources and Modules. Resources represent instructional materials that are usually created in digital formats and then uploaded to the platform. Web pages, PowerPoint files, word documents, flash animations, video and audio files are some examples of these resources. Modules on the other hand are components/features created via MOODLE platform in order to provide interaction among students and teachers towards manipulation content transformation. The use of these various types of LMS is currently been integrated in teaching and learning in tertiary institutions of higher learning.

Tertiary education can be referred to as post-secondary education in Nigeria. It is the education obtained upon the successful completion of secondary education. Tertiary education which is form of formal education obtained in higher institutions of learning teaches specific disciplines in the capacity of higher learning (Otonko, 2012). The Nigeria goal of tertiary education is to develop high level manpower training, self-reliance, national unity and international understanding among its citizens (FRN, 2009). These tertiary institutions offer various courses which include Educational Technology.

Educational Technology is a systematic and organized process of applying modern technology to improve the quality of education. It is a systematic way of executing and evaluating the educational process, learning and teaching, and the application of modern teaching techniques. Abimbade (2006) defined Educational technology as "a field involved in the facilitation of human learning through the systematic identification, development, organization and utilization of learning resources and through the management of these processes". To Aniah and Tukura (2011), Educational Technology is "essentially concerned with finding solutions to problems of teaching and learning in education through the application of appropriate media or modern technologies especially electronic media (hardware and software devices)". Educational Technology is concerned with the systematic application of science and technology in the field of education and thus may be defined as the application of technology to education in order to further the course of the latter. Just as science and technology help in carrying out the practical task in general, Educational Technology helps in providing efficiency to the task of teaching and learning. According to the Association for Educational Communications and Technology (2018), educational technology is the facilitation of learning with technology. This programme, Educational Technology trains not only for the salaried jobs but more so for self-employment based on skills acquisition and minimal capital requirement. The pressing need for Universities to package programmes that are capable of meeting the employment generating opportunities for the teeming number of graduates is therefore partially served by this programme. According to NUC Benchmark NUC, (2017) for educational technology, on completion of the programme, the students are expected to:

- (a) Exhibit high level skill in the design, production, selection, improvisation and evaluation of instructional and educational media, including those associated with the print and broadcasting (electronic) media;
- (b) Design and package educational programmes for a wide category target audience; in-school and non-face-to-face, and for different purposes;
- (c) Adopt the acquired skills in the research, improvisation and management associated with instructional and educational media, methods and modes;
- (d) Demonstrate competency in the manipulation of instructional and educational hardware to achieve maximum result for a wide variety of target audience;

- (e) Enjoy the combined use of the hand, head and heart in creativity as a mark of self reliance and dignity of labour; and
- (f) Investigate through research, observations and experimentation, the various areas associated with instructional media design, production, utilization and their effects on performance and goal attainment.

Therefore, because of the importance of this course, students' achievement was integrated in this study. Achievement is defined as a measurable change in students' behavior in academics as a result of exposure to a given concept. Learning achievement can also be seen in two folds; first, learning which is as a result of skill mastery done willfully in a period of time on a given concept or topic secondly, learning resulting from the difference between someones' skill at the beginning and end of learning process (Dania, 2014). Amin and Li (2010) observed that online students' performance in a virtual learning environment does not differ significantly compared to the performance of students who enrolled traditionally. Also, Daymont and Blau (2011) demonstrated that teaching and learning in a virtual environment can be as effective as teaching and learning in the traditional environment. Therefore, this study seeks to ascertain the effectiveness of WizIQ and MOODLE which is used in a virtual learning environment.

### **Statement of the Research Problem**

Conventional lecture method of instruction being used in Nigerian tertiary institutions has been criticized and labelled to be teacher-centered. This is because students are passive during teaching and learning processes. The negative implication of continuous usage of this method of instruction in teaching and learning process has been adduced to be the major reason causing unsatisfactory academic achievement of students and their inability to remember what they learnt in the classroom after a short period of time.

To overcome this menace and make students actively engaged in teaching and learning process, and also, for meaningful and long lasting learning to take place, the search for an interactive strategy becomes imperative. Therefore, the strategy considered by this study is the use of cloud-based learning platforms. WizIQ and MOODLE are cloud-based platforms that exist freely, learner-centred in nature, possess interactive futures that, if harnessed, and used in the dissemination of instructional contents, students' achievement will be greatly improved. Hence, this study will be carried out to adapt existing WizIQ and MOODLE learning platforms and determine their effects on educational technology undergraduate students' achievement using the platforms in North Central, Nigeria.

### **Aim and Objectives of the Study**

The aim of this study was to:

- (i) determine the effects of WizIQ and MOODLE learning platforms on academic achievement of students in educational technology concepts;
- (ii) examine the influence of gender on students' academic achievement in educational technology concepts when exposed to WizIQ learning platform;
- (iii) find out the influence of gender on students' academic achievement in educational technology concepts when exposed to MOODLE learning platform;

### **Research Questions**

The following research questions will be answered in this study:

- (i) What are mean achievement scores of students taught educational technology concepts using WizIQ, MOODLE learning platforms and lecture method?
- (ii) What are the mean achievement scores of male and female students taught educational technology concepts using WizIQ, learning platform?

- (iii) Is there any difference in the mean achievement scores of male and female students taught educational technology concepts using MOODLE, learning platform?

### **Research Hypotheses**

- Ho<sub>1</sub>:** There is no significant difference in the mean achievement scores of students taught educational technology concepts using WizIQ, Moodle learning platforms and conventional lecture method.
- Ho<sub>2</sub>:** There is no significant difference in the mean achievement scores of male and female students taught educational technology concepts using WizIQ learning platform.
- Ho<sub>3</sub>:** There is no significant difference in the mean achievement scores of male and female students taught educational technology concepts using MOODLE learning platform.

### **Methodology**

This study employed a quasi-experimental design using a pre-test, post-test, control group. Experimental groups were taught educational technology using WizIQ and MOODLE learning platforms while the control group was taught the same concept using the conventional lecture method. The three groups were given pre-test in order to ascertain students' entry knowledge and also determine their level of equivalence. This was followed by the administration of treatment instruments using WizIQ and MOODLE learning platforms and lecture method before administering posttest using Educational Technology Achievement Test.

All 300 level students from the department of educational technology in three purposively selected universities in Nigeria will constitute the sample for this study. This is because the concepts to be taught are being offered at this level and this makes a total sample of 333. The instruments used for this study includes treatment instruments (WizIQ and MOODLE learning platform), test instrument (Educational Technology Achievement Test) and attitudinal questionnaire (Questionnaire on Students' Achievement in Educational Technology). Students' assigned to experimental group one was be exposed to their selected educational technology topics through WizIQ learning platform. The online version of the platform was adapted for this study. The platform was modified to suit teaching and learning of educational technology course where the teacher created a class that allows the students to register and participate in class activities. The researcher generates links containing log in details and send it to the student's e-mail address so as to be able to log in and take their classes.

Students' assigned to experimental group two was exposed to educational technology contents through this platform. The platform was modified from MOODLE website to suit teaching and learning of educational technology contents where the teacher created a class that allows students to register and participate in the class activities. The researcher generated links containing log in details and was sent to the student's e-mail address so as to be able to log in and take their classes.

Educational Technology Achievement Test (ETAT) was developed by the researcher and it is in two sections namely; Section A and Section B. Section A was designed to obtain students' demography such as name of school, gender among others. Section B was used to collect information on students' achievement based on the learned concepts and it comprised of 50 items. The reliability coefficient of Education Technology Achievement Test (ETAT) was obtained using split-half method in SPSS version 20 upon a single administration of the instrument. The items were divided into even and odd numbers and a reliability coefficient of 0.86 was obtained. This shows that Educational Technology Achievement Test (ETAT) is reliable.

Data gathered from the administration of the research instruments were analyzed using Mean, Standard Deviation and Analysis of Covariance (ANCOVA) and the significance of hypothesis was ascertained at 0.05 alpha level.

## Results

**Research Question 1:** What are mean achievement scores of students taught educational technology concepts using WizIQ, MOODLE learning platforms and lecture method?

**Table 1: Mean and Standard Deviation of Pretest and Posttest Scores of Experimental and Control Groups**

Groups	N	Pretest		Posttest		Mean Gain
		Mean	SD	Mean	SD	
Experimental Group 1	110	41.08	2.311	66.35	3.471	25.27
Experimental Group 2	105	41.31	2.242	65.81	3.175	24.50
Control Group	118	40.31	3.408	66.81	3.885	26.50

Table 1 shows the mean and standard deviation of achievement scores of experimental groups one, experimental group two and control groups in pretest and posttest. The result revealed that mean and standard deviation scores of pretest and posttest of experimental group one as  $\bar{X}=41.08$ ,  $SD=2.311$  and  $\bar{X}= 66.35$ ,  $SD = 3.471$  respectively. This gives a mean gain of 25.27 in favour of the posttest. Similarly, the mean and standard deviation of pretest and posttest score of experimental group two are  $\bar{X}=41.31$ ,  $SD=2.242$  and  $\bar{X}= 65.81$ ,  $SD = 3.175$  respectively. This gives a mean gain 24.50 in favour of the posttest. On the other hand, the mean and standard deviation of pretest and posttest of the control group are  $\bar{X}=40.31$ ,  $SD = 3.408$  and  $\bar{X}= 66.81$ ,  $SD = 3.885$  respectively. This gives a mean gain of 26.50 in favour of the posttest. The result also revealed that experimental group one, two and control group had a mean gain of 25.27, 24.50 and 26.50 respectively and with the control group having the highest mean gain of 26.50.

## Hypotheses One

There is no significant difference in the mean achievement scores of students taught educational technology concepts using WizIQ, Moodle learning platforms and conventional lecture method.

**Table 2: Summary of Analysis of Variance (ANOVA) of Posttest Scores of Experimental Group I, II and the Control Group**

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	107.806 <sup>a</sup>	3	35.935	2.901	.035
Intercept	7655.736	1	7655.736	618.022	.000
Covariate (Pretest)	51.782	1	51.782	4.180	.042
Main Effect (Treatment)	40.252	2	20.126	1.625*	.199
Error	4075.479	329	12.387		
Total	1469951.000	333			
Corrected Total	4183.285	332			

\*: Significant at 0.05 levels

Table 2 shows the ANCOVA result of the comparison of mean achievement scores of students in experimental group I, II and the control group. An examination of the table shows ( $F(2, 329) = 1.625, p > 0.05$ ). On the basis of this, hypothesis one was retained. Therefore, there was no significant difference in the mean achievement scores of students taught educational technology concepts using WizIQ, MOODLE learning platforms and conventional lecture method.

**Research Question 2:** What are the mean achievement scores of male and female students taught educational technology concepts using WizIQ, learning platform?

**Table 3: The Mean and Standard Deviation of Pretest and Achievement Scores of Male and Female Experimental Group One**

Group	N	Pretest		Posttest		Mean Gain
		Mean	SD	Mean	SD	
Male	63	40.78	2.317	66.44	3.605	25.66
Female	47	41.49	2.264	66.23	3.318	24.74

Table 3 shows the mean and standard deviation of pretest and posttest scores of male and female experimental group one. From the result, it can be seen that the mean and standard deviation of pretest and posttest scores of male are  $\bar{X} = 40.78, SD = 2.317$  and  $\bar{X} = 66.44, SD = 3.605$  respectively. This gives a mean gain of 25.66 in favour of male posttest achievement score. Similarly, the mean and standard deviation of pretest and posttest score of female are  $\bar{X} = 42.49, SD = 2.264$  and  $\bar{X} = 66.23, SD = 3.318$  respectively. This gives a mean gain of 24.74 in favour of female posttest score. Also, the result reveals the difference of 0.92 between the posttest mean gains score of male and female in favour of the male.

### Hypothesis Two

There is no significant difference in the mean achievement scores of male and female students taught educational technology concepts using WizIQ learning platform.

**Table 4: Summary of Analysis of Covariance (ANCOVA) of Mean Achievement Scores of Male and Female Students Taught Educational Technology Concepts using WizIQ Learning Platform**

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	1.690 <sup>a</sup>	2	.845	.069	.933
Intercept	1420.791	1	1420.791	115.918	.000
PRETEST	.499	1	.499	.041	.841
GENDER	1.409	1	1.409	.115 *	.735
Error	1311.482	107	12.257		
Total	485635.000	110			
Corrected Total	1313.173	109			

\*: Significant at 0.05 levels

Table 4 shows the ANCOVA result of mean achievement scores of male and female students taught educational technology concepts using WizIQ learning platform. An examination of the table shows ( $F(1, 110) = 0.115, p > 0.05$ ). On the basis of this, hypothesis one was retained. Therefore, there was no significant difference in the mean achievement scores of male and female students taught educational technology concepts using WizIQ learning platform and conventional lecture method.

### Research Question Three

Is there any difference in the mean achievement scores of male and female students taught educational technology concepts using MOODLE, learning platform?

**Table 5: The and Standard Deviation of Pretest and Posttest Achievement Scores of Male and Female Experimental group two**

Groups	N	Pretest		Posttest		Mean Gain
		Mean	SD	Mean	SD	
Male	62	40.69	1.955	65.98	3.231	25.29
Female	43	42.21	2.346	65.56	3.111	23.35

Table 5 shows the mean and standard deviation of pretest and posttest scores of male and female experimental group two. From the result, it can be seen that the mean and standard deviation of pretest and posttest scores of male are  $\bar{X} = 40.69, SD = 1.955$  and  $\bar{X} = 65.98, SD = 3.231$  respectively. This gives a mean gain of 25.29 in favour of male posttest achievement score. Similarly, the mean and standard deviation of pretest and posttest score of female are  $\bar{X} = 42.21, SD = 2.346$  and  $\bar{X} = 65.56, SD = 3.111$  respectively. This gives a mean gain of 23.35 in favour of female posttest score. Also, the result reveals the difference of 1.94 between the posttest mean gains score of male and female in favour of the male.

### Hypothesis Three

There is no significant difference in the mean achievement scores of male and female students taught educational technology concepts using MOODLE learning platform.



**Table 6: Summary of Analysis of Covariance (ANCOVA) of Mean Achievement Scores of Male and Female Students Taught Educational Technology Concepts using MOODLE Learning Platform**

Source	Sum of Squares	df	Mean Square	F	Sig.
Corrected Model	10.500 <sup>a</sup>	2	5.250	.516	.598
Intercept	1337.318	1	1337.318	131.452	.000
PRETEST	5.898	1	5.898	.580	.448
GENDER	1.466	1	1.466	.144 *	.705
Error	1037.691	102	10.173		
Total	455792.000	105			
Corrected Total	1048.190	104			

\*: Significant at 0.05 levels

Table 6 shows the ANCOVA result of mean achievement scores of male and female students taught educational technology concepts using MOODLE learning platform. An examination of the table shows ( $F(1, 105) = 0.144, p > 0.05$ ). On the basis of this, hypothesis one was retained. Therefore, there was no significant difference in the mean achievement scores of male and female students taught educational technology concepts using MOODLE learning platform and conventional lecture method.

### Discussion

Findings of the result indicated that there is no significant difference in the mean achievement scores of students taught educational technology concepts using WizIQ, MOODLE learning platforms and conventional lecture method. This result is in agreement with the findings of Bhandigadi and Abeywardena (2014), who carried out a study on Virtual Tutorials in Adult ODL: A WizIQ Case Study of Wawasan Open University. It found out that WizIQ system is very useful in conducting virtual tutorials. The study find out that the platform provides a better learning support to students through multichannel learning without additional technology inputs and will be a good alternative to replace face-to-face learning. The result from this finding is also in consonance with that of Machado and Tao (2007) who carried out a research on the effectiveness of Blackboard vs MOODLE: Comparing User Experience of Learning Management Systems and found out that 80% of the students preferred to using MOODLE as a learning Platform compared to using Blackboard and conventional lecture method.

In addition, based on the findings of this study, there was no significant difference in the mean achievement scores of male and female students taught educational technology concepts using WizIQ learning platform and conventional lecture method and finally, there was no significant difference in the mean achievement scores of male and female students taught educational technology concepts using MOODLE learning platform and conventional lecture method.

### Recommendations

It was therefore recommended based on the above findings that both WizIQ and MOODLE learning platforms should be made as one of the major teaching strategies for educational technology course in the universities since findings of this study ascertained that they are very effective. Also, gender friendly features should be integrated into MOODLE and WizIQ learning platforms.

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