

Evaluation of E-Learning Education System in Academic Achievement and Learning Outcomes in National Open University of Nigeria (Noun), Bauchi Study Centre, Bauchi State

Alkali Bappah Muhammad¹

Mathematics Department, Aminu Sale College of Education, Azare

Sale Ali²

Computer Science Education, Department, Aminu Sale College of Education, Azare

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ABSTRACT: *As technology advances, the use of Information and Communication (ICT) tools or gadgetries has proliferated in all areas of human endeavors which paved way for the use of electronic learning (e-learning) system in which teachers are no longer present in the physical classroom to teach their courses. This paper therefore evaluate the e-learning system as a mode of teaching and learning process, relevance of its usage and challenges that hinder majority of students in its usage in learning process particularly in our National Open University. This research will adopt survey research design where the researchers developed questionnaire known as Questionnaire on Usage of Electronic Learning System (QUELS) that served as an instrument for data collected. The study areas constituted Bauchi study centre of National Open University of Nigeria (NOUN) in the north east of Nigeria. And the population constituted all the students in the first year and second year of National Open University of Nigeria (NOUN) which was the sample of the study. Three (3) research questions were formulated the purpose of this research, The instrument used for data collected was validated by the experts in both fields of Computer Science and Education. Challenges such as non-availability of internet services, inability of indigent students to possess portable computer devices, irregular power supply as well as cost of accessing Internet facilities was assessed. And recommendations were given base on the findings of this research in order to see the possibilities of expanding the system in our schools at the advance level and some of the major problems facing studying electronically.*

KEYWORDS: e-learning system, teaching and learning, ICT challenges, methodologies,

INTRODUCTION

The term online education (e-learning) means something different to almost everyone who uses it. Some use the term to refer to pieces of content packaged using technical infrastructures. Some

think only of web-based self-study, while others realize online education can encompass real-time learning and collaboration. Almost all agree that eLearning is an effective method that should be blended into a corporation current learning style.

Online education refers to the use of internet / ICTs i.e. Information and Communication Technology to enhance and support teaching and learning process. It is a way of using wireless and internet technologies to deliver a broad array of training solutions. E-learners access the learning from computers via the internet or an intranet, or through a hand device like mobile phone, palm pilot. In 2001 Marc Rosenberg suggested the following definition of online education as “the use of Internet technologies to deliver a broad array of solutions that enhance knowledge and performance.” (p.28). in less than two shorts years this definition has expanded to include wireless as well as internet technologies with the two technologies often working together to delivery focused learning to the problem site. We are all familiar with classroom-based learning (c-learning) which is face-to-face group learning led by an instructor or subject matter experts. In online education environments leaners interact with learning materials, their instructors and other leaners from various locations and often at various times using network technologies. So by its nature, online education offers significant flexibility as to when and how learning occurs. Online education can include independent, facilitated, or collaborative approaches to learning.

Independent learning refers to each individual leaner’s completing learning activities or modules on their own, on their own schedule and in their own environment. The learner is independent of a facilitator and the other learners. This does not mean that the learner does not have access to other resources such as a facilitator or coach, but the learner is in control of whether they contact them, and on main reasons. Collaborative learning refers to working with other learners in an online environment. A typical example is an email discussion with other leaner’s on a particular topic or everyone posting to a course room or a forum educational group discussing on a particular subject matter, topic or issue. On the other hand, Facilitated learning is designed to be completed through interaction with instructors or coaches. There are several ways and methods to achieve this task, for example, a learner might complete a section of learning on-line then discuss key concepts via e-mail with the instructor or with classmates. Online education can be synchronous (meaning learners are experiencing the learning at the same time) or it can incorporate both drawing on the strengths of each. Independent learning is, by definition, asynchronous. Facilitated and collaborative can be either asynchronous or synchronous. Salleh, Oye and Lahad 2010 described online education as the use of Information and Communication Technology e.g. Internet, Computer, mobile phone, Learning Management System (LMS), Radios, Televisions and other to enhance teaching and learning activities. They see online education as a unifying term used to describe the fields on online learning, technology delivered instructions and web-based training. It can also be defined as “a generic term covering a wide set of ICT technology-based learning, virtual classrooms, digital collaboration and networking” (Hambrecht, 2000: Kaplan Leisero’s online glossary). The E-content Report (2004) described online education “as an umbrella term

describing any type of learning that depends on or is enhanced by electronic communication using the latest information and communication technologies (ICTs). In addition, the Commonwealth of learning in 1998 described online education in two ways:-

i. As the application of information and communication technologies (ICT) to core institutional functions such as administration, materials development and distribution, course delivery and tuition, and the provision of learner services such as advising, prior learning assessment and programmed planning.

ii. As an organization that has been created through alliances and partnerships to facilitate teaching and learning to occur without itself being involved as a direct provider of instruction. Reminiscing these elaborate definitions that have been given online education over the years, one must point out that, the scope of such learning is unpleasantly broad. The globally available definitions may however create confusion as a result of the fact that, not only that the subject is equally new to course producers, to technology providers and to the end-users (i.e. the learners), but it has not actually found its common ground and market position yet (E-content Report, 2004). Recognizably, the huge emphasis that has been given online education, especially by leading technology providers might have resulted in the term rather being abused. However, as technology and business evolve, so does terminology, while other equally valid terms are likely to persist, online education seems to have finally captured the field.

iii.

Today, the world has revolutionized into an information-driven society which characterized with the use of Information and Communication Technology (ICT) tools as a result of advancement in technology. This new development paved way for the use of electronic learning system (ELS) in our educational realm. ELS are a mode of learning that involves the use of electronic gadgetries, which can be online or offline. It is offline when students are learning on their own without connecting to internet facilities with ICT devices, while the online involves connection to internet and use of learning facilities. In the e-learning system, teacher may adopt any pedagogy while in the classroom, where interactions between teachers and students take place and location of teacher and students do not matter. Nedeva (2007) sees e-learning system as a way to use a variety of computer and networking technologies to access (often geographically remote) training materials, interact with learners, etc, with the learning management system for education

However, e-learning Education is not left behind in the National Open University of Nigerian educational system. The National Open University of Nigeria (NOUN) is a federal open and distance learning (ODL) institution, the first of its kind in the West African Sub-region. It is Nigeria's largest institution in terms of student number and is popularly referred to as 'NOUN'. In 2011, NOUN had about 57,759 students. It has over 75 study centers throughout the country and offers over 50 programmes with 750 courses. Also, NOUN operates an e-library at the headquarters situated at Victoria Island Lagos which all students have access to after providing a

valid student's identity card. Students have access to internet facilities, books, journals, projects, theses of past students and other educational materials. By its nature as an ODL institution, NOUN does not provide lectures to students in normal classrooms except some certain study centers. The study centre in Lagos for instance provides lectures to all the law undergraduates and supplies course materials to all students after the payment of tuition fees. All courses offered by the university are accredited by the National University Commission (NUC). Moreover, The University uses Computer-Based Testing (CBT) in conducting examination for first and second year students, except for law undergraduates who sit conventional pen-on-paper (POP) from their first year of admission.

Statement of the problem

The problem of this study is therefore, to what extent does students in the first and second year of admission of National Open University of Nigeria (NOUN) in Bauchi study centre, Nigeria uses e-learning education system in their academic achievement and learning outcomes associated with some challenges they encountered.

Objectives of the Study

- i. To ascertain whether students' of National Open University of Nigeria (NOUN) Bauchi study centre have access to e-learning system (ELS)
- ii. To affirm whether students' of NOUN Bauchi study centre enjoy the perceived ease of using e-learning system, and
- iii. To identify the challenges associated with the use of ELS among the members of NOUN in Bauchi study centre.

Research Questions

- i. Do the students' of National Open University of Nigeria (NOUN) Bauchi study centre have access to e-learning system?
- ii. Do the students' of NOUN Bauchi study centre enjoy the perceived ease of the use of ELS?
- iii. Are there any challenges associated with the use of ELS among the students?

Hypotheses

These hypotheses were formulated to guide this research,

HO₁: Gender has no influence in the use of e-learning system among the students of National Open University of Nigeria (NOUN).

HO₂: Students age groups do not have any influence in the use of e-learning system among Students of National Open University of Nigeria.

Population/ Sample of the study

The population of this study comprised all students (i.e 286 total and 214 males and 72 females) in the first and second year of admission of National Open University of Nigeria (NOUN) Bauchi study centre in Nigeria. Specifically the sample of the study constituted those students in the first and second year of admission in National Open University of Nigeria (NOUN) in Bauchi study centers

Design of the Study (Theoretical Framework)

The study will adopt Technology Acceptance Method (TAM) which was proposed by Davis in 1989 and it is shown in figure 1. In the TAM, there are four construct namely; perceived usefulness, perceived ease of use, attitude toward usage which is also known as behavioral intention to use and actual system use (Davis 1989). This model is related to this work as follows:

1. **First Construct- Perceived usefulness:** This implies that for any technology that is being produced, there is an associated perceived usefulness. It is this construct that will entice the user of such technology to acquire and start making use of it.
2. **Second Construct- Perceived East of use:** In this construct, it is expected that produced technology devices should be easier in usage. This aim of any produced technology is not achieved if it is complex to use.
3. **Third Construct- Attitude Toward Using:** This means that a user may use produced technology or device in either positive or negative way. This construct depends on individual difference.
4. **Fourth Construct- Actual System Use:** This is the real usage of the produced technology or device. That is to say putting the exact technology into usage. The X1, X2, and X3 indicates interactions of the users it within the system which can lead to user motivation if it is used appropriately. All these four constructs are also applied to E-learning system.

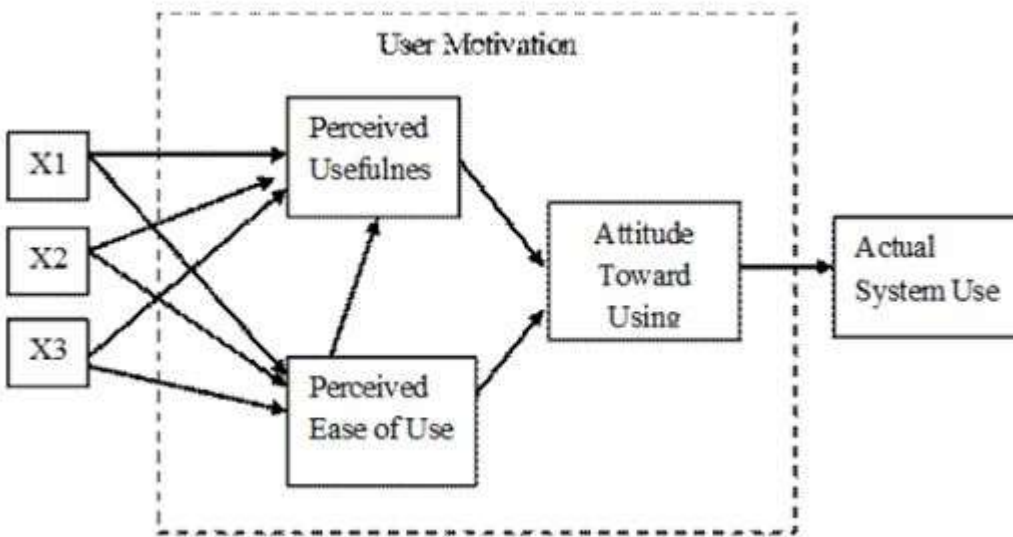


Figure 1: Technology Acceptance model (TAM). Source: Davis,(1989)

Conceptual Framework

This work is built on the conceptual framework shown in figure 2 below . Electronic Learning System (ELS) as a product of technology adapts to the construct proposed by Davis (1989). In an ELS, a user needs to gain access to both tools and reliable Internet. Having gained access to Internet connectivity via connected tools and devices, users can then easily make use of perceived usefulness associated with E-learning system, which is actual system use.

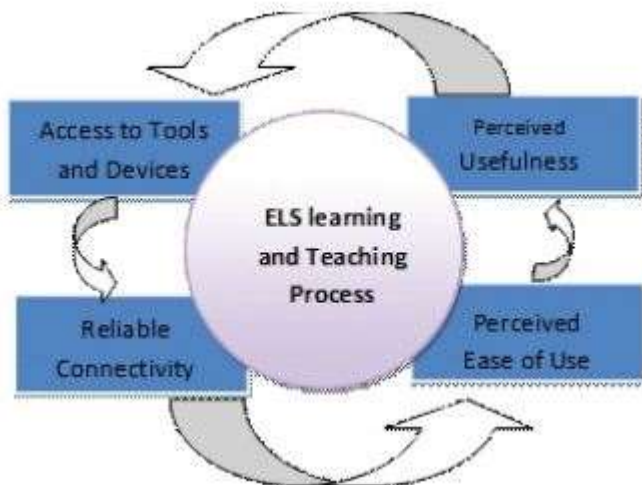


Figure 2: Conceptual Framework of the Research

RESEARCH METHODOLOGY

The research is a descriptive research, which the research team designed a questionnaire, known as Questionnaire on Usage of Electronic Learning System (QUELS) that served as the instrument of data collection. The population of this study comprised all students (i.e 286 total and 214 males and 72 females) in the first and second year of admission of National Open University of Nigeria (NOUN) Bauchi study centre in Nigeria. Specifically the sample of the study constituted those students in the first and second year of admission in National Open University of Nigeria (NOUN) in Bauchi study centers The questionnaire drafted for this research was taken to an experts in field of Measurement and Evaluation and Computer Science Education for items validation. Data were analyzed using two statistical instruments; Data collected was analyzed using mean, standard deviation and chi-square statistics. The three research questions was answered using mean and standard deviation while the two hypotheses in the study was tested using chi-square statistics. Questionnaire item statements was set out using five-point scale with Strongly Agree (SA), Agree (A), Strongly Disagree(SD), Disagree (D) and Undecided (U). Their corresponding scales are 4, 3, 2, 1 and 0 respectively . The criteria for agreeing or disagreeing to an item statement was based on calculated the mean responses. If the computed mean is equal to or greater than 2, then an item statement is agreed by the respondents , otherwise it is disagreed upon.

RESULTS

Answering of Research Questions

Research Question One: Do the students' of National Open University of Nigeria (NOUN) Bauchi study centre have access to e-learning system?

Table 1: Means and Standard Deviations of Learners' responses on the access to an Electronic Learning System (ELS)

S/N	Item Statement	N= 286	X	SD	Remark
1	I find ELS readily available at any point in time		3.74	0.61	Agreed
2	I easily access the content of my lesson anytime		3.31	0.66	Agreed
3	Using ELS simplifies education as I learn while on transit		3.62	0.69	Agreed
4	From experience, I found using ELS easy in my studies		3.37	0.58	Agreed

Key: X=Means S.D = Standard Deviation N= Number of Students Source: Fieldwork 2023

Table 1 presented means and standard deviations of learners' responses on the access to an electronic leaning system. As it is indicated in the Table 1, all four item statements that sought for such information were unanimously agreed upon by the students. This is because each of the item statements has computed mean value (3.00 and above) which is greater than the cut-point of 2.00 used in this study . The SD value obtained for each item is

low, an indication that respondents' responses were very close to each other. Therefore, it can be inferred that learners access electronic learning system.

Research Question Two: Do the students of NOUN Bauchi Study centre enjoy the perceived ease of use of ELS?

Table 2: Means and Standard Deviations of Learners' responses on the ease of use of an Electronic Learning System (ELS)

S/N	Item Statement	N = 286	X	SD	Remark
1.	After online interactions with my lecturers, I enjoy studying my lesson privately		3.13	0.68	Agreed
2.	I download my study materials from the university LMS websites at ease.		3.26	0.51	Agreed
3.	I can ask questions while in the interactive class without feeling being looked down upon by my course-mates.		3.58	0.73	Agreed
4.	I do all my assignments and Teacher Made Tests (TMA) with no stress.		3.31	0.81	Agreed
5.	I enjoy ELS because it supports collaborative studies.		3.41	1.12	Agreed
6.	Using ELS is student-centered rather than teacher-centered.		3.20	0.94	Agreed

Key: X=Means S.D = Standard Deviation N= Number of Students; Source: Fieldwork 2023
Table 2 depicted means and standard deviations of learners' responses on the usage of electronic learning system. It is indicated that all six item statements that sought for information on usage of ELS were unanimously agreed upon by the students. This is clear from Table 2 that each of the item statements has computed mean value (3.00 and above) which is greater than the cut-point of 2.00 used in this study. The SD value obtained for each item is low, an indication that there were closeness in the respondents' responses. Therefore, it can be deduced that learners make use of electronic learning system easily.

Research Question Three: Are there any challenges associated with the use of ELS among the students of NOUN Bauchi Study centre?

Table 3: Means and Standard Deviations of Learners' responses on the Challenges of the Electronic Learning System (ELS) Usage

S/N	Item Statement	N= 286	X	SD	Agreed
1.	From experience, sometimes , poor internet access causes frustration in my study	3.69	0.58	Agreed	
2.	Lack of portable computer devices makes electronic learning difficult.	3.53	0.57	Agreed	
3.	Incessant of electricity supply makes study on electronic device a problem.	3.74	0.51	Agreed	
4.	Cost of purchase of data bundles and internet subscriptions is a challenge for me in studying on ELS.	3.67	0.84	Agreed	

Key: X=Means S.D = Standard Deviation N= Number of Students; Source: Fieldwork 2023

Table 3 presented means and standard deviations of learners' responses on the challenges of using electronic learning system. It is evident that the four item statements that sought for such information on the challenges of using ELS were unanimously agreed upon by the students. This is clear from Table 3 that each of the item statements has computed mean value (3.00 and above) which is greater than the cut-point of 2.00 used in this study. The SD value obtained for each item is lower, an indication that respondents' responses were very close to each other. Therefore, it can be concluded that learners face problems such as poor internet access, lack of portable computer devices, incessant of electricity supply and cost of purchasing internet data bundle. All these affect students' learning styles as they limit what students can learn online.

Testing of Hypotheses

H₀₁ : Gender has no influence in the use of e-learning system among the students of National Open University of Nigeria (NOUN), Bauchi Study Centre.

Table 4: Chi-square Analysis of Learners' Responses on the Usage of an Electronic Learning System (ELS) in relation to Gender

Gender	Learners' Responses on usage of Electronic Learning System (ELS)			Total	p-value	α	χ^2 Cal.	χ^2 Cri.	Remark
	Agreed	Disagreed	Undecided						
Male	127(73.8%)	6(3.5%)	0(0%)	133(77.3%)	0.001	0.05	77.35	5.99	S.
Female	31(18.0%)	8(4.7%)	0(0%)	39(22.7%)					
Total	158(91.8%)	14(9.9%)	0(0%)	172(100%)					

Key: α = Significance level at 2 degree of freedom (df), χ^2 Cal = calculated chi-square value,

²Cri. = chi-square value from table, S = significant

Table 4 above showed the calculated chi-square = 77.35, p-value = 0.001, critical chi-square value = 5.99, at 2 degree of freedom with level of significance (α) = 0.05. Since calculated chisquare = 77.35 is greater than the critical chi-square value = 5.99 and the P value = 0.001 is less than level of significance (α) = 0.05, the null hypothesis which states that gender has no significant influence in the use of e-learning system among students of National Open University of Nigeria (NOUN), Bauchi Study Centre was rejected. This shows that gender has significant influence in the mode of e-learning system among students of National Open University of Nigeria (NOUN), Bauchi Study Centre.

H₀: Students' age groups do not have influence in the use of e-learning system among the students of National Open University of Nigeria (NOUN), Bauchi Study Centre.

Table 5: Chi-square Analysis of Learners' Responses on the Usage of an Electronic Learning System (ELS) in relation to Age Groups

Age Group (Years)	Learners' Responses on usage of Electronic Learning System (ELS)			Total	p-value	α	χ^2 Cal.	χ^2 Cri.	Remark
	Agreed	Disagreed	Unde cided						
15-24	22(12.8%)	592.9%)	0(0%)	27(15.7%)					
25-34	12(70.4%)	9(5.2%)	0(0%)	130(75.6%)	0.005	0.05	48.13	9.49	S.
35& Above	15(8.7%)	0(0%)	0(0%)	15(18.7%)					
Total	158(91.7%)	14(8.1%)	0(0%)	172(100%)					

Key: α = Significance level at 2 degree of freedom (df), χ^2 Cal = calculated chi-square value, χ^2 Cri. = chi-square value from table, S = significant

Table 5 above depicted calculated chi-square = 48.13, p-value = 0.005, critical chi-square Value = 9.49, at 4 degree of freedom with level of significance (α) = 0.05. Since calculated chisquare = 48.13 is greater than the critical chi-square value = 9.49 and the p- value = 0.005 is less than level of significance (α) = 0.05, the null hypothesis which states that students' age groups do not have significant influence in the use of e-learning system among the students of National Open University of Nigeria (NOUN), Bauchi Study Centre was rejected. This implies that the age groups of students have significant influence in the mode of e-learning system usage among students of National Open University of Nigeria (NOUN).

Summary of Research Findings

This paper established the following:

- (i) Learners have access to ELS;
- (ii) Learners make use of ELS;
- (iii) However, learners encounter some challenges in the process of using ELS, such as:

electricity problem, lack of portable computer devices, poor internet access and cost of purchasing data bundles;

(iv) Students gender has significant influence on the use of electronic learning system; and

(v) Students' age groups also have significant influence on the use of electronic learning system.

DISCUSSION OF FINDINGS

This study found out that learners of National Open University of Nigeria, Bauchi study centre have access to the e-learning system. The finding is line with Ardito, Costabile, DeMarsico, Lanzilotti, Levialdi, Roselli & Rossano (2006) who emphasized in a paper that ensuring usability and accessibility to the largest number of users should be one of the main goals of e-learning application developers, as well as a prerequisite that should allow users to profitably exploit such applications.

Besides, this study found out that learners make use of E-Learning System effectively (learn at own pace and convenient time) which is in consonance with the findings of Irina, Irina & Elvina (2016) which gave comprehensive survey that showed the attitude of the students to practical use of distance learning which came out as neutrally-positive. Most students evaluate distance learning at Kazan Federal University as effective. The finding is also in support of findings of Shute & Towle (2003) which concluded that the potential payoffs of designing, developing, and employing good e-learning solutions are great, and include improved efficiency, effectiveness, and enjoyment of the learning experience.

The result of this study also showed that some of the challenges in the process of using ELS are electricity problem, lack of portable computer devices, poor internet access and cost of purchasing data bundles. This finding is also in agreement with the findings of Adesanya (2014), Cole & Dipeolu (2014), Ohwofasa & Elesho (2014), Jimoh & Olabode (2014) and Jimoh & Salawu (2011) which stated that ICT phobia among students and teachers, poor ICT infrastructure facilities, finance and inadequate power supply were major problems that confronted the use of ICT in teaching and learning process.

In this study, it was also discovered that students' gender has significant influence on the use of electronic learning system and this is in disagreement with the finding of Irina, Irina and Elvina (2016) which states that both gender and school system have nothing to do with students' satisfaction while using electronic education.

Finally, this study found out that students' age group have influence significantly on the use of e-learning system which in line with the research finding of Bakkabulindi, Sekabembe, Shopi & Kiyingi (n.d) that age affects the use of computers, that is to say there was a significant inverse relationship between age and the use of computers. Also, Adil, A., Masood,

M. & Ahmed, M. (2013) revealed that there was moderate negative association between level of age and quantity of daily time spent on computer which in support of this finding.

CONCLUSION

The study investigated the assessment of e-learning system for effective teaching and learning process in National Open University of Nigeria (NOUN), Bauchi study centre. Issues as regards accessibility to the services provided by e-learning, its ease of use as well as challenges that served as barrier or obstacle in its usage were explored. Based on the findings, some recommendations were given so as to improve the use of e-learning system among students and teachers.

Recommendations

Based on the findings in this study, the following recommendations were proffered:

- (i) There is need to provide alternative power supply means such as solar power system / provision of generating set for the National Open University of Nigeria (NOUN), Bauchi study centre;
- (ii) Procurement of portable laptops or PD As to ease mobile studying by students. This can be acquired by the government and sell to the students at subsidized amount.
- (iii) Procurement and installation of globally-approved internet infrastructure in the NOUN Bauchi study centre to enable students and teachers have access to internet facility at their will.

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