

Utilization of e-Learning Technologies Amongst Selected Undergraduate Students in a Nigerian University of Agriculture: The Umudike Study

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Abstract

Purpose: This study examined the utilization of e-learning technologies by undergraduate students in the College of Education (COED), Michael Okpara University of Agriculture, Umudike (MOUUAU).

Design/Methodology/Approach: The design of the study involved a combination of descriptive survey research and linear correlation. Six objectives and two hypotheses were formulated to guide the study. A blend of accidental and stratified sampling technique was used to select a sample of 420 undergraduate students. Four hundred and eleven (411) copies of the self-designed questionnaire was returned which gave a 97.9% response rate. Descriptive and inferential statistics were used for data analysis while hypotheses were tested with PPMC and t-test analytical techniques. The results were presented in frequency tables.

Findings: The findings revealed that awareness of e-learning technologies amongst undergraduate students is quite high (mean=2.89); several types of e-technologies are used (mean=2.70); there is a high preference for audio conferencing (mean=2.98), applications sharing (2.96) and forum (2.94) as media of learning. The result also revealed that undergraduate students use e-learning technologies for different educational purposes (mean=2.96). Furthermore, the test of H_0 produced a strong correlation between awareness and utilization of e-learning technologies amongst undergraduate students in COED, MOUUAU.

Implication: The study suggests that there is a high level of awareness and extensive use of e-learning technologies amongst undergraduate students in colleges/faculties of education. This has implication for the way students are taught by lecturers and assisted by librarians. As a result, libraries and other bibliographic agencies should tailor their services in line with the observed predilection of undergraduate students for e-learning technologies.

Originality/Value: The review of available published literature suggests that this study is pioneering the investigation of e-learning technologies utilization amongst undergraduate students in faculties/colleges of education in specialized universities. The study recommends, amongst others, subsidization of the procurement and installation of e-learning technologies.

Keywords: e-Learning; e-Learning Technologies; Information Seeking Behaviour; Information Utilization; Undergraduate Students, Nigeria.

Paper Type: Empirical Research

Introduction

The three concepts of technology adaptation, globalization and modernization have considerably altered peoples' way of life in the 21st Century. Among the major areas this change is mostly felt are in the teaching and learning processes. As a result, there is now a shift away from the traditional approach in which the teacher directs the learning process in a conventional classroom. In its place is a more modern and flexible method assisted by

computers and allied information and communication technologies (ICTs). With the aid of these technologies, many students now teach themselves and study independently using certain technologies. Consequently, learners/students can connect to the classrooms from anywhere and receive lectures without seeing their classmates and teachers/lecturers. This innovation comes under the ambit of electronic learning (e-learning) and e-learning technologies

e-Learning has been gaining acceptance in education since the 1990s. Opinions vary as to the exact meaning of e-learning. For instance, Engelbrecht (2005) sees e-learning as the delivery of teaching materials via electronic media such as Internet, intranet, extranet, satellite broadcast, audio/video tapes, interactive TV and CD-ROM. Another writer describes e-learning as "the delivery of course content via electronic media, such as Internet, intranet, extranet, satellite broadcast, audio/video tape, interactive TV and CD-ROM" (Selim, 2007, p. 397). From the similarity of these definitions, it is evident that e-learning refers to the learning that is facilitated by application of certain electronic technologies. This leads to the related issue of e-learning technologies which generally captures the various electronic devices and equipment like ICTs, Internet technologies and web-based applications used to facilitate teaching and learning.

The invention of e-learning technologies is changing the pattern of teaching and learning in tertiary educational institutions. All over the world, learning by undergraduate students has gone through tremendous modifications, especially, since the introduction and adaptation of different technologies. There is now a shift of emphasis from traditional system to a machine-assisted method as lecturers and students strive to improve efficiency, as well as vary and enrich students' learning experience. As such, by adept use of assorted e-technologies, students can teach themselves, learn from people far away from them and receive instruction/guidance from anywhere without seeing the lecturer. This electronically-mediated learning is of different types - the most popular of which are web supplemented courses, web-dependent courses, mixed-mode courses and fully-online courses (OECD, 2005).

Though the developed societies have made giant strides in the use of e-learning technologies and other resources in their institutions of higher education, Nigeria and other developing countries are striving hard to close whatever gaps that exist. There are several policies aimed at improving access to e-learning technologies in the country (Nnadozie, Chukwueke & Iroegbu, 2017). This has led to an upsurge in the availability and use of technological devices by undergraduate students in various institutions of higher education. Consequently, many undergraduates in Nigeria now have access to,

and are proficient in the manipulation of various e-technologies. However, the reasons for using these e-resources vary amongst people. Hence, it cannot be assumed that these gadgets are applied to purely educational purposes by these students. This is more so as a recent study in Nigeria indicates that most students mainly use technology for entertainment and other non-academic purposes (Nwosu, Odenigbo & Ndubuisi-Okoh, 2016). It is for this reason that this study aims to ascertain the extent to which undergraduate students utilize e-learning technologies in their academic quests.

Delimitation of the Study

This study is limited to the Michael Okpara University of Agriculture, Umudike (MOUAAU) in South-East geo-political zone of Nigeria. The study population comprises undergraduate students in the seven (7) academic departments of the College of Education (COED) in MOUAAU. In drawing the sample size, students pursuing various postgraduate programmes (diploma, masters and doctorate), as well as those on Teaching Practice (TP) and Students' Industrial Work Experience Scheme (SIWES), were excluded. The respondents were further restricted to students on regular study mode. Hence, those on sandwich and part-time students were not included. Instruments for data collection used were made up of documentary sources and rating scale. The report reflects the interpretation of data collected as at June, 2017.

Research Questions and Hypotheses

Answers to the following research questions were provided in this study:

1. What is the level of undergraduate students' awareness of e-learning technologies in COED, MOUAAU?
2. What are the types of e-learning technologies used by undergraduate students in COED, MOUAAU?
3. What are the major media of e-learning used by undergraduate students in COED, MOUAAU?
4. What is the frequency of use of e-learning technologies by undergraduate students in COED, MOUAAU?
5. What are the reasons for the use of e-learning technologies by undergraduate students in COED, MOUAAU?
6. What are the challenges to the use of e-learning technologies by undergraduate students in COED, MOUAAU?

The null hypotheses stated below were tested at 0.05 level of significance:

1. Awareness of e-learning technologies has no significant influence on their use by undergraduate students in COED, MOUAU.
2. There is no significant difference between the mean scores of LIS students and core education students of COED, MOUAU in the use of e-learning technologies.

Literature Review

Definition

The literature shows that earlier definitions of e-learning narrowed it to the use of information technologies for instructional purposes. This is evident in the views of e-learning as 'learning facilitated and supported through the utilization of information and communication technologies' (Jenkins & Hanson, 2003) and 'instruction delivered via a computer that is intended to promote learning' (Clark & Mayer, 2003). The introduction of electronic technologies that could be deployed for learning purposes, especially, the use of Internet, has widened the understanding of the phenomenon of e-learning. Many other descriptions of e-learning, therefore, stress the centrality of electronic technologies as instructional tools. For instance, Kelly and Bauer (2004) see it as Internet-based learning which utilizes web-based communication, collaboration, knowledge transfer and training to add value to individuals and to organizations they work within. According to Kurt and Stephen (2005), e-learning is broadly understood as the use of ICTs to enhance or support teaching and learning. The heightened emphasis on the Internet as a facilitator of teaching and learning has been reinforced by Tagoe (2012) who defined e-learning as a type of learning supported by information and communication technology (ICT) via the Internet, intranets, extranets or many others to improve the quality of teaching and learning. This has been further amplified in another submission that e-learning is a computer-based educational tool or system mostly delivered through the Internet, although in the past it was delivered using a blend of computer-based methods like CD-ROM (Epignosis, 2014). Other words also began to spring up in search of an accurate description such as "online learning" and "virtual learning".

Also worthy of note is the various definitions and descriptions of e-learning technologies which other synonyms include electronic

resources, online resources and electronic information resources. These devices are integral components of the broader ICTs. Available literature highlight this relationship. For instance, Andreou (2001) describes these technologies as the sources that provide information in an electronic and/or digital format. Another definition by Ifukor (cited in Idhalama, 2014) views e-learning resources (technologies) as ICTs used for collecting, processing, storing, transmission and dissemination of information through various electronic formats.

Types of e-Learning Technologies Used

Some of the technologies that can be used for e-learning include: computers, the Internet, telecommunications, www, CD-ROM, electronic databases and e-mail. Other e-learning resources are magnetic tapes, optical disks, CD/DVD, radio and television which increasingly pervade various aspects of work, business, leisure, teaching and learning (Olaaja cited in Idhalama, 2014). These technologies, especially, CD-ROM, was also listed in surveys by Epignosis (2014) and Abidoye and Omotunde (2015). There is also a wide acceptance and high usage of electronic journals as reported in several researches (Bar-Ilan, Peritz & Wolman, 2003; Tenopir, 2003; and Natarajau, Sureshi, Sivaraman & Sevukan, 2010). An important enabler of e-learning is software. Some of the major softwares used for learning are Computer-Assisted Instruction (CAI), Video-Based Instruction and Game-Based Instruction (Abidoye & Omotunde, 2015). An article by Anumkua, Uwa and Unagha (2016) identified the specific softwares used in technical colleges to include, among others: ArchiCAD, AutoCAD, Ms Excel, Ms Word, Ms Access, Power Point and CorelDraw. The frequency at which these technologies are used seems to differ in individual institutions. Two available reports point to this fact. While respondents to the study by Kaur (2006) made use of e-resources 2-3 times a week, those in Mohammed and Sreelatha (2006) used electronic journals "every day".

e-Learning Systems and Media of Delivery

There are several e-learning systems, processes and methods. Anastasiades and Retalis (2001) delineated e-learning into three different types, namely: fully-online, mixed mode (also known as hybrid or blended learning) and web-assisted. This was later increased to web-supplemented courses, web-dependent courses, mixed courses

and finally fully-online courses (OECD, 2005). In the past, e-learning was delivered using a blend of computer-based methods like CD-ROM (Epignosis, 2014). These e-learning modes are delivered through different media. For example, the study by Kaur (2006) discovered that majority of the respondents made use of online databases to support their learning. Many published researches have drawn attention to extensive use of electronic journals by students across different tertiary institutions of learning (Raza & Upadhyay, 2006 and Natarajau, et al, 2010). Conducting webinars (live online classes) and communicating with professors via chat and message forums is also an option available to users (Epignosis, 2014). Other media that facilitate the use of e-learning technologies include telecommunications, the Internet, electronic databases, online archives and e-mails (Idhalama, 2014).

Reasons-cum-Advantages

People utilize e-learning technologies for several academic reasons. Tenopir (2003) catalogued some of these reasons pointing out that e-resources have made it considerably easier to locate needed materials; serve as an essential research tool and time saver. It also makes for conveniences and increase work quality. Adeyemi (2014) reiterated this fact stressing that electronic information resources tremendously improve work quality and facilitate research. Majority of students use the Internet on regular basis for the purpose of obtaining academic information (Kolek & Saunders, 2008). Singh (2015) explained further that e-learning technologies are used to set up appointments with professors, discuss grades and get clarifications for assignments. For Sukula (2008), the attraction for e-learning technologies borders on its growing amounts and variety of information content. This is buttressed by Ajayi and Akinniyi (2009) where it was submitted that Internet service ensures that the explosion of information is not a waste because the technology has created easy access to vast information all over the world.

e-Learning technologies offers students the avenue to share material in all kinds of formats such as videos, slideshows, word documents and PDFs. These technologies have liberalized access to education beyond the physical classrooms as they facilitate online submission of assignments, e-examinations and checking of examination results (Singh, 2015). e-

Technologies improve the academic performance of students and get them interested in school subjects (Abidoeye & Omotunde, 2015). They provide learners with the ability to fit learning around their lifestyles, effectively allowing even the busiest person to further a career and gain new qualifications (Epignosis, 2014). This point was amplified by Singh (2015) who stressed that e-technologies offer the flexibility of not having to attend classes at a set time thereby helping busy professionals obtain further credentials outside business hours.

ICTs and other e-learning technologies not only extend and expand peoples' ability to access information, they provide new opportunities for students to apply the new knowledge (Chai, Koh & Tsai, 2010). They also have the capacity to transform conventional university systems and bring advantages and other benefits to the entire country (Wong, Goh, Hanafi & Osman, 2010). Students go online to complete teacher-directed research activities and support the attainment of positive learning outcomes (Levin, 2003). This underlines the claim that online resources are easier and cost effective (Weeks, 2008 and Sansawal, 2009). The summary is that availability of electronic information resources tremendously improve the quality of research (Adeyemi, 2014).

There is no doubt that majority of students use the Internet on regular basis for the purpose of obtaining academic information (Kolek & Saunders, 2008). According to Boss (cited in Ofua & Emiri, 2012), the major advantages of electronic resources are integrity of collection, availability round-the-clock, remote access and multiple simultaneous uses. There are several other reasons for which electronic learning technologies are put to use. These have been summarized to include: to search online catalogues, access citation from the Internet, access a full text article and borrow an e-book by remote access (Ibrahim, 2004 and Kumar & Kumar, 2006).

Challenges

Although ICTs have made appreciable inroads into the Nigerian society, available research reports suggest that the penetration into the tertiary education sector has been insufficient while students use of e-technologies for purely academic purposes remains low (Gambari & Okoli, 2007). This position is supported by the claim that students in higher educational institutions have various ICTs which they use

more for social networking and least for educational reasons (Nwosu, Odenigbo & Ndubuisi-Okoh, 2016). The lecturers in these institutions may not have fared any better as evident in the submission by Onasanya, et al (2010) to the effect that whilst some Nigerian lecturers have enthusiastically integrated e-technologies like computers and Internet in the discharge of their responsibilities, others have been cautious in their welcome while some simply reject these technologies.

Amongst the major challenges to the use of technologies for learning by undergraduates are insufficient infrastructure and poor funding. Al-Suqri (2011) reported the issue of poor Internet connection speed. Ofua and Emiri (2012) restated the constraints of public power supply emphasizing that electronic resources can be destroyed by frequent power failures and hacking. Ajuwon (2003) drew attention to the challenges arising from the high cost of e-technologies. Singh (2015) amplified these points stressing that high cost or large amounts are needed to purchase, install, service/maintain and update various electronic devices for optimal performance. Other studies have revealed that some of the user-centred barriers to the appropriation of e-resources/e-technologies include: lack of skills on how to use information sources, lack of consistent technical support and insufficient time for information search (Tompsett & Alsop, 1997 and Ray & Day, 1998). These points buttress subsequent claims by Ibrahim (2004) that the use of e-technologies and online resources require basic knowledge of computing and information searching skills.

Justification for the Study

Since the mid-1960s, various technologies have emerged with revolutionary impacts on education, in particular and society, in general. As such, teaching, learning and information search are no longer confined to the walls of classrooms and libraries. These innovation which started in the developed countries has spread to the rest of the world (Rosenberg, 2005 and Vinitha, Kanthimathi & Devi, 2006). African countries are steadily embracing the technologies that drive these innovations as majority of universities in the continent have commenced distant and online education while their library services have gone virtual, powered by the deployment of electronic and other ICT facilities (Kwak, Jun, Gruenwold & Hong, 2002). In Nigeria, considerable resources have

been committed to make computers, e-technologies and other ICTs an integral part of undergraduate students' learning experiences. As a result, many universities in the country now have campus-wide networks, computerized classrooms and library services, as well as Internet access (Martey, 2004; Rosenberg, 2005 and Ojo & Quadri, 2014). However, despite the efforts made so far, the impact remains suspect as reported in recent studies. This is because, while many students are reluctant to use e-books (Dewan & Nyirenda cited in Walters, 2014), another study produced a clear preference for print materials (Onoyeyan & Awe, 2016). This makes it imperative for specific institutional surveys. Instructively, most of the earlier studies are campus-wide surveys. In the light of the foregoing, it becomes necessary to ascertain the extent to which undergraduate students in a specific faculty/college utilize the available e-learning technologies.

Methodology

This study used a combination of two (2) research designs, namely: descriptive survey and linear correlation. Descriptive survey design enabled the researchers to collect and analyze data from a representative sample of a larger population that is heterogeneous in gender, age, departmental affiliations, year/level of study and social status at relatively low cost. The descriptive survey design was combined with linear correlation which involved matching the mean rating of identified variables as analyzed in the contingency tables. This helped to statistically ascertain the relationship and differences between these variables amongst the respondents. A modified Likert-scale type of instrument was used for data collection. The face and content validity of the instrument named *Rating Scale for Undergraduate Students' Use of e-Learning Technologies* was confirmed separately by experts in ICT, LIS and Test and Measurement. The computation of the reliability coefficient using Cronbach's Alpha Testing Technique produced an index of $r=0.83$.

A combination of accidental and stratified random sampling techniques was used to select respondents from various sub-sets of the study population. The accidental sampling method, which is a situation in which 'elements which the researcher can easily reach are included in a study' (Uzoagulu, 2011, p. 67) was applied considering the need to save time, effort and cost while stratified random sampling technique

ensured that the samples drawn cut across the seven (7) departments in COED, MOUAU. Forty (40) copies of the research instrument was distributed to respondents in each department which gives a total of 420 copies. The data collection, which lasted for two months (May and June, 2017), was accomplished with the assistance of class leaders under the direct supervision of the researcher. At the end of this exercise, 411 completed copies of the rating scale (97.9%) was retrieved and used for analysis.

Descriptive and inferential statistics were used for data analysis while results were presented in

frequency tables. The Pearson Product Moment Correlation (PPMC) and t-test analytical technique were used to ascertain the strength of the relationship between the variables in the hypotheses. A criterion mean of 2.5 was used while the hypotheses was tested at 0.05% level of significance.

Research Findings and Discussion

The findings of this study are presented in *Tables 1-6* while results of the two hypotheses are shown in *Tables 7 and 8*, respectively. Discussions follow immediately after each table.

Table 1: Undergraduate Students' Awareness of e-Learning Technologies in COED, MOUAU (N = 411)

S/N	Awareness of e-Learning Technologies	SA	A	D	SD	MEAN	REMARK
1.	I have seen e-learning technologies	270	141	-	-	3.66	Accept
2.	I have heard about e-learning technologies	162	153	40	56	3.02	Accept
3.	I have read about e-learning technologies	155	160	47	49	3.02	Accept
4.	I have not used e-learning technologies before	-	-	271	140	1.66	Reject
5.	I usually discuss e-learning technologies	151	158	60	42	3.02	Accept
6.	I have written assignments on e-learning technologies	69	75	146	121	2.22	Reject
7.	I own e-learning technologies	250	161	-	-	3.61	Accept
Total						2.89	Accept

Criterion Mean 2.5

Table 1 reveals the level of undergraduate students' awareness of e-learning technologies in COED, MOUAU. It is apparent that majority of the items raised were accepted as the respondents agreed to have seen and own e-learning technologies (M = 3.66 and 3.61, respectively), as well as discussed, read and heard about e-learning technologies (M = 3.02 each). This is evident in the grand mean of 2.8 which is greater than the criterion of 2.50 set for this study. Based on this result, it can be concluded that the level of undergraduate students' awareness of e-learning technologies in COED, MOUAU is very high. The inference from this finding is that students in the faculties (colleges or schools) of education in Nigerian universities know about the existence of different electronic learning technologies that could be applied to enhance their research and other educational pursuits. The negative responses to items 4 and 6 do not invalidate the fact that most respondents are reasonable aware of the existence of these technologies. The result of this study as presented in *Table 1* buttresses earlier reports by Abidoye and Omotunde (2015), Anumkua, Uwa and Unagha (2016), as well as Nwosu, Odenigbo and Ndubuisi-Okoh (2016) that students in tertiary institutions of

learning are highly knowledgeable about e-learning technologies. This couldn't have been otherwise considering that incessant curriculum reviews have led to the injection of ICT topics into the content of various disciplines. This is in addition to deliberate government policies which have liberalized of access to these information technologies. Hence, this result is a confirmation that sustained efforts at directing attention of young people to various technologies are yielding the desired results.

Table 2 reveals the types of e-learning technologies used by respondents to this study. Based on the ranking, it is observed that the main types of e-learning technologies used by undergraduate students in COED, MOUAU are e-mail, phone/GSM, Internet, databases, e-documents/e-books and interactive boards. It is evident in this result that most undergraduate students utilize different kinds of e-technologies to facilitate their studies, widen their knowledge and smoothen other research activities. Hence the earlier position in *Table 1* that respondents are highly aware of the educational potentials of e-learning technologies is upheld. This study, inadvertently, gives insight to the diversity of e-learning technologies available to undergraduate students in Nigerian universities. Of particular

note is the fact that e-books have become popular amongst students contrary to the position of Dewan and Nyirenda (cited in Walters, 2014). This result, therefore supports the submissions of Abidoye and Omotunde (2015) and Anumkua, et al (2016) that students pursuing first degree in Nigerian universities use assorted e-learning technologies in their academic quests. Despite the positive elements of the result as presented in *Table 2*, the discussion would not lose sight of the negatives. For instance, item 9 indicate that an appreciable

number of undergraduate students use social media tools for largely non-educational purposes. This confirms the position of Nwosu, et al (2016) that many undergraduate students in Nigeria still use e-technologies for entertainment and recreational reasons. In the same token, items 11 and 17 suggest that majority of the respondents do not yet use webinar and weblogs to enhance their studies. This could be a pointer to the need for more awareness on the capacity of these media to enhance teaching and learning.

Table 2: Types of e-Learning Technologies Used by Undergraduate Students in COED, MOUAU (N = 411)

S/N	Types of e-Learning Technologies Used	SA	A	D	SD	MEAN	REMARK
8.	I use the Internet to learn/study	150	152	51	58	2.96	Accept
9.	Social media aid my study	64	70	140	137	2.15	Reject
10.	I use online information technologies to learn my courses	161	150	46	54	3.02	Accept
11.	I make regular use of webinar	41	49	170	151	1.95	Reject
12.	I use the e-mail to learn	171	150	48	42	3.09	Accept
13.	I use e-documents/e-books to learn	164	130	44	73	2.94	Accept
14.	Interactive boards enhance my learning experience	142	140	60	69	2.86	Accept
15.	I use my phone/GSM to connect to Internet and expand my knowledge on some courses	160	151	47	53	3.02	Accept
16.	I use various databases for studies and research	152	150	50	59	2.96	Accept
17.	I learn through weblogs	49	51	159	152	1.99	Reject
Total						2.70	Accept

Criterion Mean 2.5

Table 3: Major Media of e-learning used by Undergraduate Students in COED, MOUAU (N = 411)

S/N	Preferred Media of e-Learning	SA	A	D	SD	MEAN	REMARK
18.	I prefer audio conferencing as e-learning media	152	153	51	55	2.98	Accept
19.	Chatting is not my favourite media of e-learning	51	49	160	151	2.00	Reject
20.	I always prefer instant messaging as e-learning media	142	140	50	79	2.84	Accept
21.	I rarely use video conferencing as e-learning media	160	150	46	54	3.02	Accept
22.	Web conferencing does not appeal to me as e-learning media	171	150	42	48	3.08	Accept
23.	White boarding is my preferred media of e-learning	142	140	69	60	2.89	Accept
24.	My favourite e-learning media is application sharing	150	152	51	58	2.96	Accept
25.	I prefer forum as an e-learning media	164	130	44	73	2.94	Accept
26.	I prefer text messaging as an e-learning media	134	160	45	72	2.87	Accept
27.	I prefer streaming audio as e-learning media	46	44	161	160	1.94	Reject
28.	I prefer streaming video as e-learning media	54	46	150	160	1.98	Reject
Total						2.68	Accept

Criterion Mean 2.5

The analysis on *Table 3* draws attention to the major media of e-learning used by undergraduate students in COED, MOUAU.

Based on the mean ranking of responses, it can be concluded that the major media of e-learning used by undergraduate students in COED,

MOUAU include audio conferencing and application sharing with 2.98 and 2.96, respectively. It is also evident that majority of these undergraduate students prefer learning with the interactive white board and enjoy the instant messaging media. The preference of these respondents for text messaging is not surprising given the high tele-density in Nigeria. Added to this is the concomitant widespread use of this technology amongst youths who constitute the largest percentage of undergraduates in the country. The same explanation could be given for the response to the item statements 19 and 25 which addressed the use of chatting and forums (i.e. online discussion groups) as learning media. This is because, most students belong to various online chat groups/forum through which they share various educational news and information. This study has underscored earlier reports that information technologies have made considerable inroads into the Nigerian society (Ibrahim, 2004; Idhalama, 2014 and Abidoeye & Omotunde, 2015). On the contrary, a substantial number of respondents do not prefer audio and video streaming, as well as video/web conferencing. Two inferences could be drawn from this result. The first is that these e-learning media could be expensive hence outside the reach of the students. Secondly, it is possible that these students may not have acquired the

kind of advanced competency required to exploit the educational potential of these specialized technologies. This points at the possibility that there could be a subsisting skill deficiency in the adaptation of technologies for certain specialized tasks despite the widespread use of these gadgets.

Table 4 shows the frequency of use of e-learning technologies by undergraduate students in COED, MOUAU. As observed from the analysis of responses to items 29 to 32, majority of undergraduate students of education in Nigerian universities use e-learning technologies on regular basis. Such frequent utilization of these e-learning technologies strongly attest to the importance which these would-be educators attach to non-book information sources. This result substantiates the findings of Kaur (2006) and Mohammed and Sreelatha (2006) where respondents made regular use of available e-learning technologies. The veracity of this finding resides in the responses to item statements 33 and 34 where it was established that the use of these learning aids is neither sporadic nor totally absent. The present study, therefore, generally agrees with Kolek and Saunders (2008) that students make regular use of the Internet and other e-learning technologies for the purpose of obtaining academic information.

Table 4: Frequency of Use of e-Learning Technologies by Undergraduate Students in COED, MOUAU (N = 411)

S/N	Frequency of Use of e-Learning Technologies for Studies	SA	A	D	SD	MEAN	REMARK
29.	I use e-learning technologies for my studies on daily basis	170	151	48	42	3.09	Accept
30.	I use e-learning technologies to study every other day	152	150	59	50	2.98	Accept
31.	I make use of e-learning technologies to study every week	142	140	50	79	2.84	Accept
32.	I consult e-learning technologies for my studies once in a month	47	53	160	151	1.99	Reject
33.	My use of e-learning technologies is best described as sporadic.	164	130	43	74	2.93	Accept
34.	I do not use e-learning technologies for study at all	-	-	270	141	1.66	Reject
Total						2.58	Accept

Criterion Mean 2.5

Table 5: Reasons for the Use of e-Learning Technologies by Undergraduate Students in COED, MOUAU (N = 411)

S/N	Reasons for Using e-Learning Technologies	SA	A	D	SD	MEAN	REMARK
35.	They make learning easy and convenient	162	153	44	52	3.03	Accept
36.	They assist me to combine my studies with work and other activities	142	140	61	68	2.87	Accept
37.	e-learning technologies enable me to learn from other sources outside the teacher and hardcopies	170	151	42	48	3.08	Accept
38.	e-Learning technologies give me access to current information sources	150	152	54	55	2.97	Accept
39.	e-Learning technologies enable me have real-time discussions with other participants irrespective of time and space	131	163	47	70	2.86	Accept
Total						2.96	Accept

Criterion Mean 2.5

Table 5 gives insights into the reasons for the use of e-learning technologies by undergraduate students. Based on the mean ranking of responses, it can be concluded that the two reasons for the use of e-learning technologies by undergraduate students in COED, MOUAU revolve round the fact that e-learning technologies enable them to learn from other sources outside the teacher and hardcopies, and the ability of these technologies to make learning easy and convenient. The respondents also agreed with item statements 37, 38 and 39 that e-learning technologies give them access to current information sources, assist them to combine their studies with work and other activities, as well as enable them have real-time discussions with other participants irrespective of time and space. The simple deduction from this concurrence with all item statements in

Table 5 is that undergraduate students in colleges/faculties of education in agriculture-oriented universities in Nigeria have learned to harness the potentials of e-learning technologies in their academic quests. This is a clear pointer to the high level of awareness and use of these learning aids amongst people engaged in educational pursuits in Nigerian universities. This result contradicts an earlier submission that the use of e-technologies for purely academic purposes remains very low (Gambari and Okoli, 2007). It is most likely that the more than a decade interval between both studies accounts for the variance in the two results. The high use of e-technologies for educational reasons recorded in this survey also conflicts with Nwosu, et al (2016) where respondents used e-learning technologies more for entertainment.

Table 6: Challenges to the Use of e-Learning Technologies by Undergraduate Students in COED, MOUAU (N = 411)

S/N	Challenges to the Use of e-Learning Technologies	SA	A	D	SD	MEAN	REMARK
40.	e-Learning technologies are costly	153	162	44	52	3.01	Accept
41.	I lack the money to procure needed e-learning technologies	163	151	47	50	3.04	Accept
42.	Irregular power supply affects my use of e-learning technologies	155	152	50	54	2.99	Accept
43.	I am challenged in my use of e-learning technologies because of my skill deficiency in ICT	42	48	170	151	1.95	Reject
44.	I don't have enough time to use the e-learning technologies	45	42	170	151	1.94	Reject
45.	My use of e-learning technologies is affected by incessant breakdown of the machines/facilities	153	163	45	50	3.02	Accept
46.	e-Learning technologies are not user-friendly	41	55	162	153	1.96	Reject
Total						2.56	Accept

Criterion Mean 2.5

The analysis in *Table 6* reveals respondents' perception of the challenges to the use of e-learning technologies. Based on the ranking of the mean responses, it can be concluded that the challenges to the use of e-learning technologies by undergraduate students in COED, MOUAW include; lack the money to procure needed e-learning technologies, incessant breakdown of the machines/facilities, high cost of e-learning technologies and irregular power supply. This result tallies with the earlier observations of Ajuwon (2003), Al-Suqri (2011), Ofue and Emiri (2012) and Singh (2015). A vital inference from this finding is that poor funding and infrastructural deficits remain the strongest impediments to the availability and use of e-learning technologies by university undergraduates in Nigeria. The rejection of item statement 43 is contrary to the submission of Tompsett and Alsop (1997) and Ray and Day (1998). The interpretation is that the initial skill deficiency in ICT use has been substantially addressed in the countries tertiary institutions.

This is clearly an aftermath of the high ICT density in contemporary Nigerian society. Whereas the response to item statement 44 shows that time is not an obstacle to use of e-learning technologies amongst undergraduate students in Nigerian universities, the analysis of the response to item statement 46 could not have been otherwise. This is against the backdrop that modern technologies are now more user-friendly. This fact has been attested to by assertions that online resources are easier (Week, 2008 and Akinniyi, 2009), flexible (Singh, 2015) and time-efficient (Tenopir, 2003).

Test of Hypotheses

The two hypotheses developed for this study were tested at 0.05 level of significance. The result is summarized and presented in *Tables 7 and 8*, respectively.

Ho1: Awareness of e-learning technologies has no significant influence on its use by undergraduate student in COED, MOUAW

Table 7: Pearson’s Correlation Analysis on Awareness of e-Learning Technologies and their Use by Undergraduate Student

Variables	Correlation Coefficient (r)	t-value
Pearson’s Correlation	0.967	77.015**
N	411	
P-value	0.000	

Source: Researcher’s Computation, 2017

** Correlation is significant at the 0.01 level (2-tailed)

Decision Rule: Reject Ho if p-value is ≤ 0.05 (significance level, 5%), otherwise do not reject.

The correlation analysis result in *Table 7* is significant at 0.01 level (2-tailed). It indicates that at p<0.01 level of significance (r = 0.967; t = 77.015), awareness of e-learning technologies has a strong positive effect on its use by respondents. This result gives a 95% confidence that awareness of e-learning technologies has a significant influence on its use by undergraduate student in COED, MOUAW. The implication is that the higher the awareness of e-learning technologies by undergraduate student in COED, MOUAW, the greater their utilization of e-learning technologies. It can be further deduced from this result that awareness is a critical factor

in students' use of learning technologies. Hence, the null hypothesis (Ho) is rejected and acceptance of the alternative which states that "awareness of e-learning technologies has a significant influence on its use by undergraduate students". The result of this correlation analysis reinforces the claim of Sukula (2008) that knowledge of the information content of e-learning technologies is the major reason for their popularity and use amongst younger people.

Ho2: There is no significant difference between the mean scores of LIS students and core education students of COED, MOUAW in the use of e-learning technologies.

Table 8: T-test Result for Difference Between Core Education Students and LIS Students on the Use of e-Learning Technologies

Group	N	Mean	SD	Df	t-statistic	p-value
Core Education Students	375	25.285	8.863	409	0.642	0.521
LIS Students	36	24.278	10.291	40.142		

Decision Rule

Reject Ho if p-value is ≤ 0.05 (significance level, 5%), otherwise do not reject.

The analysis in *Table 8* yielded a t-statistic value of 0.642 with a p-value of 0.521. Since the p-value is greater than 0.05 (significance level), the null hypothesis is accepted. The conclusion is that there is no significant difference between the mean scores of LIS students and core education students of COED, MOUUAU in the use of e-learning technologies. This suggests that both LIS students and core education students adequately utilize e-learning technologies. The result is the rejection of the alternative hypothesis (H_{a2}) which states that "there is a significant difference between the mean scores of LIS and core education students of COED, MOUUAU in the use of e-learning technologies". The result of this test of hypothesis clearly underlines the fact that undergraduate students in Nigerian universities, irrespective of course of study and areas of specialization, make extensive use of e-learning technologies. The utilization of these technologies cuts across disciplinary boundaries. This result contradicts Gambari and Okoli (2007) and Nwosu, et al (2016) who doubted the extent to which Nigerian students use e-learning technologies for educational purposes.

Conclusion and Recommendations

Although the developed Western countries have institutionalized and expanded the use of e-learning technologies in their universities, the awareness has spread to developing countries who are now striving hard to catch up with their counterparts. Nigeria has realized the need to make the teaching and learning processes technology-driven. This national effort at increasing the use of e-learning technologies has led to policy, legislative and administrative measures. The result is an upsurge in awareness of these devices amongst undergraduate students in the country. Most of these students use these e-technologies on regular basis and for largely educational purposes. However, the benefits and liberalized access to e-learning technologies do not vitiate the challenges attendant upon their utilization by undergraduate students in Nigerian universities. It is on that basis that the following recommendations are proffered:

1. The three tiers of government in Nigeria should work out appropriate policy and legislative frameworks to subsidize the procurement, installation and maintenance of e-learning technologies in the nations tertiary institutions in particular and education in general.
2. Efforts should be increased and sustained to ensure quality and regular public power supply. This measure is crucial considering that these technologies require electricity.
3. Appropriate policies should be enunciated to sustain the procurement of durable, cost-effective and user-friendly e-learning technologies for the nation's tertiary institutions of learning.
4. Curriculum experts and planners across various disciplines should inject contents that could enhance the knowledge and use of audio and video streaming, as well as web conferencing by undergraduate students.
5. Deliberate steps should be taken to sensitize undergraduate students in Nigerian tertiary institutions on the educational potentials of the social media. This suggestion is against the backdrop of the response to item 9 in *Table 2*.
6. Considering the high level of awareness and extensive use of e-learning technologies amongst undergraduate students in colleges/faculties of education, libraries and other bibliographic agencies should tailor their services in line with the observed predilection of undergraduate students for e-learning technologies.

Reference

- Abidoye, J. A. & Omotunde, C. T. (2015). Effect of computer animation package on senior secondary school students' academic achievement in geography in Ondo State, Nigeria. *Journal of Teaching and Teacher Education*, 3 (2), 23 - 40.
- Adebayo, M. A. (2010). University faculty use of electronic resources: a review of the recent literature. *PMLA Quarterly*, 34 (6), 67 - 98.
- Adeyemi, B. M. (2014). Awareness and utilization of electronic databases collection by postgraduate students at Kenneth Dike Library, University of Ibadan: a case study. *Communicate: Journal of Library and Information Science*, 16 (1), 59 - 74.
- Ajayi, N. A. & Akinniyi, R. A. (2009) The impact of Internet usage on book loans at Hezekiah Oluwasanmi Library, Obafemi Awolowo University, Ile-Ife. *Gateway Library Journal*, 2 (1), 13 - 23.
- Ajuwon, G. A. (2003). Computer and Internet use by first year clinical and nursing students in a Nigerian teaching hospital. *BMC Medical Informatics and Decision Making*, 10 (3).
- Al-Suqri, M. N. (2011). Information seeking behaviour of social science scholars in developing countries: a proposed model.

- International Information and Library Review*, 54 (2), 250-255.
- Anastasiades, P. & Retalis, S. (2001). The educational process in the emerging information society: condition for the reversal of the linear model of education and the development of an open type hybrid learning environment. *Proceedings of ED-MEDIA 2001*, Tampere, Finland, June 25th - 30th.
- Andreou, A. C. (2001). Providing electronic information sources to undergraduate students. MA Dissertation, Department of Information and Library Science, University of Wales, Aberystwyth.
- Anumkua, C. U., Uwa, I. N. & Amanze-Unagha, B. (2016). Use of Internet-based library service by students of Imo State University, Owerri, Nigeria. *Ebonyi Journal of Library and Information Science*, 3 (1), 243 - 254.
- Bar-Ilan, J. Peritz, B. C. & Wolman, Y. (2003), A survey of the use of electronic databases and electronic journals accessed through the web by academic staff of Israeli universities. *Journal of Academic Librarianship*, 29 (6), 246 - 261.
- Chai, C. S., Koh, J. H. L. & Tsai, C. C. (2010). Facilitating teachers' development of technological, pedagogical and content knowledge, *Education Technology and Society*, 13 (4), 63-73. Available at http://www.ifets.info/journals/13_4/7.pdf.
- Clark, R. C. & Mayer, R. E. (2003). *e-Learning and the science of instruction*. San Francisco: Jossey-Bass.
- Engelbrecht, E. (2005). Adapting to changing expectations: postgraduate students' experience of an e-learning tax program. *Computers and Education*, 45 (2), 217-229.
- Epignosis, LLC (2014). *e-Learning: concept, trends and applications*. Retrieved from: <http://www.efrontlearning.net>.
- Gambari, A. I. & Okoli, A. (2007). Availability and utilization of information and communication technology (ICT) facilities in higher institutions in Niger State, Nigeria. *The Information Technologies*, 4, 34 - 36.
- Ibrahim, A. E. (2004). use and user perception of electronic resources in the United Arab Emirates University (UAEU), *Libri*, 54, 18 - 29.
- Idhalama, O. U. (2014). Adoption and use of ICT by lecturers in Delta State University. *Communicate: Journal of Library and Information Science*, 14 (1), 2 - 18.
- Jenkins, M. & Hanson, J. (2003). *e-Learning series: a guide for senior managers*. United Kingdom: Learning and Teaching Support Network (LTSN) Generic Centre.
- Kaur, A. (2006). Use of e-resources by teachers and researchers of the science, engineering and technology faculties in Guru Nanak Development University, *Library and Information Networking*, 34 (3), 264 - 285.
- Kelly, T & Bauer, D. (2004). Managing intellectual capital via e-learning at CiscoIn: C. Holsapple (ed;), *Handbook on knowledge management 2: knowledge directions* (pp. 511-532), Berlin: Springer.
- Kolek, E, & Saunders, D. (2008). Online disclosure: an empirical examination of undergraduate Facebook profiles. *NASAP Journal of Students Affairs and Practice*, 54 (1), 1-25.
- Kumar, G. T. & Kumar, B. T. S. (2008). *Use of electronic information sources by the academic community: a comparative study*. Paper presented at the 6th International CALIBER-2008, University of Allahabad.
- Kurt, L. & Stephen, V. L. (2005), *Impact of ICT on tertiary education*. Paper presented at a seminar by Organization for Economic Co-operation and Development (OECD), Directorate for Educational Research and Innovation. Retrieved from: <http://www.google.com>.
- Kwak, B. H., Jun, W., Gruenwold, L. & Hong, S. (2002). A study on the evaluation model for university libraries in digital environments. In: *Research and advances in technology*. Proceedings of 6th European Conference on Digital Libraries held in Rome, Italy, Sept., 16 - 18.
- Levin, H. (2003). making history come alive: learning and learning. *Journal of Technology*, 31 (3), 22 - 27.
- Martey, A. (2004). Information and communication Technology (ICT) in distant education in Ghana. *Library Hi-Tech News*, 21 (5), 16-18.
- Mohammed, H. K. & Sreelatha, I. (2006). Use of e-resources by doctoral students of Calicut University. *Proceeding of the National Convention on Knowledge, Library and Information Networking (NACLIN) held at University of Jammu, Jammu*.
- Natarajan, B. Suresh, P., Sivaraman, P. & Serukan, P. (2010). Use and user perception of electronic resources in Annamalai University: a case study. *Annals of Library and Information Studies*, 57, 59-64.
- Nnadozie, C. O., Chukwueke, C & Iroegbu, C. (2017). Innovations in technology for teaching and learning of library and information

- science in Nigeria. *International Journal of Education* (in press).
- Nwosu, M. C., Odenigbo, P. & Ndubuisi-Okoh, E. O. (2016). *Students' perception of e-learning in Akanu Ibiam Federal Polytechnic, Unwana and the implications for sustainable development in Nigeria*. Paper Presented at the Annual Conference of Nigeria Library Association (NLA), Ebonyi State Chapter held in November, 2016 at the Akanu Ibiam Federal Polytechnic, Unwana.
- Ofua, O. J. & Emiri, O. T. (2012). Use of electronic resources in colleges of education libraries in Delta State. *Delta Library Journal*, 6 (1&2), 7-14.
- Ojo, R. A. & Quadri, G. O. (2014), Assessment of computer technology acceptance and use by undergraduate students in Tai Solarin University of Education Library. *Journal of Library, Education media and Information Studies*, 6, 1 - 7.
- Onasanya, S. A., et al, (2010). Higher institution learners' attitude towards integration of ICT into teaching and research in Nigeria. *Research Journal of Information Technology*, 2, 1-10.
- Onoyeyan, G. O. & Awe, O. A. (2016). Investigation of law students' preference for reading: e-materials versus print materials use in Ogun State, Nigeria. *Ebonyi Journal of Library and Information Science*, 3 (1), 221 - 233.
- Organization for Economic Co-operation and Development (OECD) (2005). *e-Learning in tertiary education; where do we stand?* Paris: OECD.
- Ray, K. & Day, J. (1998). Student attitudes towards electronic information resources. *Information Research*, 4 (2). Retrieved from: <http://www.informationr.net/ir/4-2/paper54.html>.
- Raza, M. M. & Upadhyay, A. K. (2006). Use of e-journals by researchers in Aligarh Muslim university: a study. *International Information and Library Review*, 38 (3), 170-179.
- Rosenberg, D. (2005). *Towards the digital library: findings of an investigation to establish the current status of universities in Africa*. Retrieved from <http://www.inasp.info>.
- Sansawal, D. N. (2009). *Use of ICT in teaching, learning and evaluation*. New Delhi: Central Institute of Educational Technology.
- Selim, H. (2007). Critical success factors for e-learning acceptances: confirmatory factor models. *Computer and Education*, 49, 396-413.
- Sukula, S. (2008). *Information technology: bridge to the wired world*. New Delhi: Ess Ess Publications.
- Tagoe, M. (2012). Students' perception on incorporating e-learning into teaching and learning at the University of Ghana. *International Journal of Education and Development using Information and Communication Technology*, 8(1), 91-103.
- Tenopir, C. (2003). *Use and users of electronic library resources: an overview and analysis of recent research studies*. Washington, DC: Council on Library and Information Resources. Retrieved from: <http://www.clir.org/pubs/abstract/pub120abst.html>.
- Tompsett, C. & Alsop, G. (1997). A study of human communication issues in interactive scholarly electronic journals: final report. Retrieved from: <http://www.ulcoln.ac.uk>.
- Uzoagulu, A. E. (2011). *Practical guide to writing research project reports in tertiary institutions*. Enugu: Cheston Limited.
- Vinitha, K., Kanthimathi, S. & Devi, K. T. (2006). Impact of information and communication technology and its services. In: *Proceedings of DRTC-ICT Conference on Digital Learning Environment*, from 11-13 January, 2006.
- Walters, W. (2014). e-Books in academic libraries: challenges for sharing and use. *Journal of Librarianship and Information Science*, 46 (2), 84 - 95.
- Weeks, O. (2008). We are in the business of service: serving students and faculty in an academic law library. In: *The changing role of academic law librarianship* (pp. 125 - 142). London: Aspatore Books.
- Wong, K. T., Goh, S. C., Hanafi, H. F. & Osman, R. (2010). Computer attitudes and use among novice teachers: the moderating effects of school environment. *Malaysian Journal of Learning and Instruction*, 7, 93-112. Available at: <http://mjli.uum.edu.my/index.php/joomla-home/category/7mjli-vol-7-2010>.