Assessing E-Learning Tools in an Academic Environment: A Study of Availability and Use among Undergraduate Students in a Nigerian University

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Abstract
This study investigated the availability and use of e-learning tools as emerging paradigms in Covenant University, Nigeria. The study population comprise of 7000 undergraduate students, out of which 1000 was used as sample. Questionnaire was used as data collecting tool for the study. A total of five hundred and eleven questionnaires were filled and returned. The study revealed that an appreciable number of e-learning tools were available and in use in the University. Notable among them is an electronic learning management system – Moodle. Most of the respondents (61.8%) indicated that they used the e-learning tools mostly for downloading lecture notes. The study further revealed that there was no significant relationship between students' level of study (class) and their use of e-learning tools. Also, no significant relationship between use of e-learning tools and academic performance was established. Majority of the respondents (54%) identified inadequate internet access as the biggest challenge to students' use of e-learning platforms. The study was concluded with recommendations that could enhance the use of e-learning platforms in Universities in Nigeria.

Keywords: E-learning, Undergraduates, Covenant University, Nigeria, E-learning platforms, Universities

Introduction

Innovative learning systems based on various electronic technologies have been in use for many years. Numerous terms have been used to describe these various learning systems, such as computer-mediated learning, web-based training and most recently, e-Learning. Since 1990, a dramatic shift to Internet-based learning has vastly expanded the world of open and distance learning, leading to what has been referred to as Electronic Learning (E-learning) (Anaraki ,2004)

E-learning refers to the use of information and communication technologies (ICTs) to enhance and support teaching and learning processes. It is the instructional content or learning experiences delivered or enabled by electronic technologies and it incorporates a wide variety of learning strategies and technologies. (Sife, Lwoga and Sanga,2007). Functionally, e-learning includes a wide variety of learning strategies and ICT applications for exchanging information and gaining knowledge. Such ICT applications include television and radio; Compact Discs (CDs) and Digital Versatile Discs (DVDs); video conferencing; mobile technologies; web-based technologies; and electronic learning platforms such as Learning Management Systems and Course Management System (Sife, Lwoga and Sanga, 2007). E-Learning can be either synchronous or asynchronous. Synchronous e-learning requires simultaneous participation of all learners and instructors at distributed locations. It refers to any learning event delivered in real-time to remote learners and includes immediate, two-way communication between participants. It can be considered scheduled delivery of learning and may take the form of multicasts, video conferencing, and virtual classrooms, etc. (Mehrotra, Hollister, & McGahey, 2001).

Covenant University, which is the case study for this research makes use of the Moodle Learning Management System among other e-learning platforms. A Learning Management System (LMS) is an e-learning platform which is a collection of online software applications, packaged together to deliver teaching and learning in either a distance education or an on-campus mode. They harness the individual technologies and put them together in one package that can then be used by teachers and learners in a variety of ways. In addition, LMSs offer a number of administrative tools to facilitate the management of courses and student accounts, grade books, usage statistics, content authoring, timed release of materials, calendars, personal information and integration with other administrative systems (Petrovic and Kennedy,2005). Learning Management Systems are either Open Source or Proprietary. Moodle is an example of an open source Learning Management System which can be used for effective online learning.

Students and teachers are the key actors involved in the use of an e-learning platform. It is therefore very important to evaluate the acceptance and use of E-learning Platforms. According to Posea, Matu and Cristea (2007), "The evaluation of e-learning systems is important for all the actors involved in their development and use. Teachers and students need to evaluate the benefits of using e-learning in comparison with the classical methods of learning." This study therefore evaluates the use of e-learning platforms including Moodle among undergraduate students of Covenant University.

Covenant University

Covenant University is a Christian Mission University located in Ota, Ogun state, Nigeria. The University which is owned by the World Mission Agency, an arm of Living Faith Church Worldwide, started academic activities as one of the foremost private Universities in Nigeria in 2002. It is reputed to be the best information and communication technology (ICT) driven University in Nigeria. The University is made up of four colleges – Leadership and Development Studies, Science and Technology, Business and Engineering. The four colleges cater for about 7000 undergraduate students.

Statement of Problem

Covenant University is an information and communication technology (ICT) driven institution. In the past two years, the University has invested huge amounts of money on the acquisition, installation and management of e-learning platforms, with the aim of enhancing teaching, learning and research. Currently, the management of the University is driving the integration of e-learning platforms with traditional teaching and learning methods, with emphasis on the former. The last year has seen a revolutionized learning and teaching environment in Covenant University, since the adoption of the Moodle teaching platform,

The Moodle system of learning and lecture delivery has been roundly embraced with over 450,500 activities, with a projection that by the commencement of the first and second Semesters of 2013/2014 academic session, the Virtual Learning Environment of the University would have attracted as much as 2.5 million activities. This study serves to evaluate these claims. It therefore examines the use of the e-learning platforms available in the university. It also examines the impact of e-learning platforms on students' academic performance.

Objectives of the Study

The objectives of this study are to:

  i.   Identify the e-learning tools available to students in Covenant University

  ii.   Ascertain the frequency of students' use of e-learning tools

  iii.   Identify which of the e-learning tools is used the most by students

  iv.   Determine the purposes for students' use of e-learning tools

  v.   Identify the challenges encountered in using e-learning tools among students in Covenant University

Hypotheses

  i.   There is no significant relationship between use of e-learning tools and students' level of study

  ii.   There is no significant relationship between students' academic performance and use of e-learning tools

Literature Review

Increase in the use of information and communication technology (ICT) as a result of advancement in internet provides a new trend for higher institutions to introduce new teaching and learning technologies (Ayanda, Eludiora, Amassoma and Ashiru,2011). Learning technologies have been evolving over the last two or three decades, and have gone through many phases and approaches. A specific learning approach that combines blended and hybrid learning to learning that is entirely online is referred to as e-learning. These innovative learning systems try to support learners in expanding their knowledge by providing structured learning content and intercommunication facilities to specific topics (Nichols,2003;Ellis,2004; Hedge and Hayward,2004) E-learning can encompass disciplines such as collaboration, traditional learning and content management (Gartner, 2002). It is also considered as a modern type of distance education that is delivered via the use of computers, Internet and multimedia presentation (Lau, 2000).

The environment of higher education is evolving. Rising costs, shrinking budgets, and increasing needs for distance education (New Media Consortium, 2007) are causing educational institutions to re-examine the way that education is delivered. In response to this changing

environment, e-learning is being implemented more and more frequently in higher education, creating new and exciting opportunities for both educational institutions and students. E-Learning is not particularly new but the advancing technology is bringing a new approach to learning. Use of ICT in education made its debut quite early in the life of computers, in the form of CAI (Computer Aided Learning) and CAL (Computer Aided Instruction) systems implemented on single-user systems in the 1960s (Merrill, 2002). With advances in IVTs-, networking, Internet, Web, CDs, Mobile telephony- which is the dominant focus of use of ICT in educational technology has in recent times been expressed in e-learning systems.

E-learning activities in developed countries continue to grow day by day. Connolly and Stransfield, (2007) carried out surveys on the use of e-learning in training and professional development in Europe and America; the result shows that many universities in Europe and America are using e-learning platforms for teaching and learning. Another report by CEDEFOP, (2001) in Europe shows that 14 percent of total spending by users of training went to e-learning related content in 2001-appreciable more than two years earlier when the figure was 10 percent. In sub Saharan Africa, only a few countries such as Kenya, Ghana and Uganda could boast of success stories with limited but appreciable impact achieved through specific e-learning models (CEDEFOP, 2001)

In Nigeria, very few universities have the facilities for e-learning, though, what is obtainable is at the lowest aspect of ICT such as print, audio/video tapes and digital radios (World Bank, 2002). However, a semblance of e-learning exist, at the departmental levels rather than institutional, and these departments are more in the medical, engineering, environmental sciences, computer science or informatics, where the synergy between research and teaching is strongest, and the development and delivery are most accessible (Curran and Fox, 1999).This position is not a surprise, because Nigeria had no specific policy for ICT in education. It is only in February 2007 that the Federal Ministry of Education created its ICT department (Wiki Educator, 2008). The slow pace in e-learning development may have in part accounted for the low rating of Nigerian universities globally in terms of impact and productivity in web-related activities. Interestingly, no Nigerian University has been ranked among the first 50 in the world in terms of web size, papers, rich files and scholarship. In Africa, a Nigerian University took the 44th position while in the world it ranked 5, 834 (InterLab, 2007). According to Saint (1999), the core medium of instruction on the African continent remains print, with other technologies acting as a supplementary means of delivery. There are some surveys that have been carried out in Nigeria on e-learning. In 2007, Obashoro-John carried out a survey on e-learning provision and their implications for quality development and assurance. The survey concentrated on three universities located in the Lagos area. The findings indicated that availability and adequacy of e-learning resources (Human and Materials) and infrastructure against some minimum benchmarks is low. Folorunso, Ogunseye and Sharma (2006) found that mass unawareness, low computer literacy level and cost were identified as critical factors affecting the acceptability of e-learning by students and lecturers of Nigerian Universities. In addition, access to connectivity to internet has remained one of the major challenges in many developing countries such as Nigeria. In 2007, Bassey et al investigated the Nigerian graduating students' access to e-learning technology in universities in South-South Nigeria. Result of the survey indicated that the number of graduating students in Nigerian higher institution who have access to e-learning technology was negligible

According to Olasina (2012), who carried out a study on Student's e-learning/ m-learning experiences and impact on motivation in Nigeria, discovered from his findings that Students considered e-learning/m-learning resources' usage helpful in individualizing their academic work and ultimately as viable educational tools that have the potential to bring about different improvements to their institution and classrooms. A high percentage of students want e-learning resources to be applied to teaching of all courses offered in the university. All the results reported draw a conclusion which is also stated in the literature by many researchers: the goal of the integration of e-learning and m-learning resources into students' learning, like in all other areas, has yet to be reached.

Interestingly, none of these studies considered private Universities (including Covenant University); this study on Covenant University (a private University) therefore hopes to bridge the gap in literature and perhaps serve as an update on current happenings in the world of e-learning in Nigeria.

Research Methodology

The research design for this study is survey (descriptive), which is a systematic approach of collecting data to find out respondent's opinion. Survey as a research method is used in studying a segment of the population for the purpose of making assertion about the nature of the entire population from which the sample has been selected.

The sampling procedure/ technique used for the study is the stratified random sampling. This sampling technique was adopted because the population was divided into homogeneous groups known as strata and samples were drawn from each stratum using the simple random sampling technique. Each stratum is represented by course and level of study. The stratification ensures that each type of a population member is included in the sample and hence yields higher precisions even though the total number of people in each stratum may vary.

The population comprises of about 7000 undergraduate students of Covenant University and a sample of 1000 students was used for the study. The data from these students was collected through the use of questionnaire. Out of the 1000 students used as sample, 511 completed and returned their questionnaires. The data analysis was carried out with the use of descriptive statistics and test of hypothesis.

Data Presentation and Interpretation

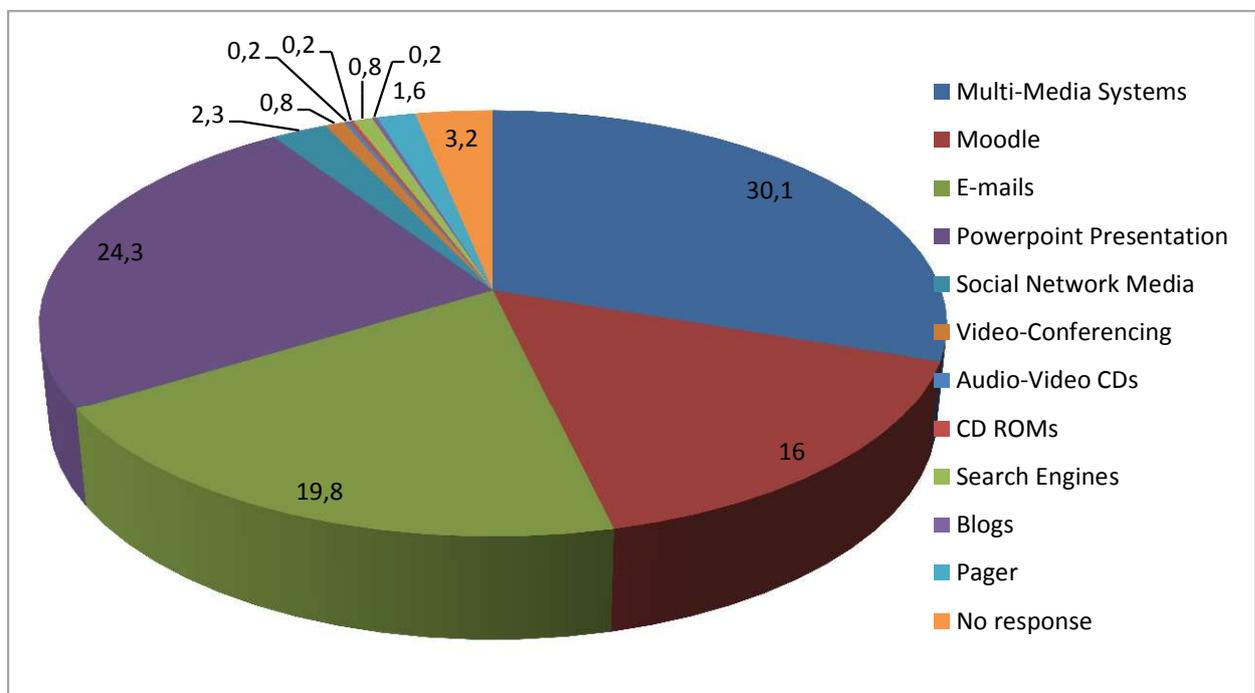**Objective 1:** Which e-learning tools are available to students in Covenant University?

Figure 1: Availability of e-learning tools

Figure 1 shows that there are various e-learning tools in Covenant University. Multimedia system is the most available e-learning platform in Covenant University with a frequency of 154(30.1%) while Audio-Video CDs, CD ROMs and Blogs were the least available e-learning platforms in Covenant University with a frequency of 1 respectively (0.2%).

Objectives 2 and 3: Ascertain the frequency of students' use of e-learning tools and the most used e-learning tool.

Table 1: Frequency of students' use of e-learning tools

Use of e-learning platform	Always		Occasionally		Seldom		Never		No response		Total	
	N	%	N	%	N	%	N	%	N	%	N	%
Multimedia	148	29.0	139	27.2	80	15.7	91	17.8	53	10.4	511	100.0
Moodle	285	55.8	100	19.6	132	25.8	36	7.0	72	14.1	511	100.0
E-mails	127	24.9	125	24.5	34	6.7	43	8.4	24	4.7	511	100.0
PowerPoint	171	33.5	100	19.6	132	25.8	36	7.0	72	14.1	511	100.0
Social media	202	39.5	108	21.1	60	11.7	89	17.4	52	10.2	511	100.0
Audio-Video C CDs	32	6.3	84	16.4	91	17.8	227	44.4	77	15.1	511	100.0
CD-ROMs	48	9.4	76	14.9	81	15.9	232	45.4	74	14.5	511	100.0
Search Engines	237	46.4	109	21.3	38	7.4	77	15.1	50	9.8	511	100.0
Blogs	131	25.6	152	29.7	64	12.5	114	22.3	50	9.8	511	100.0
Pager	44	8.6	75	14.7	107	20.9	238	46.6	47	9.2	511	100.0

Students were asked to mention the frequency of use of e-learning tool with five options always, daily, occasionally, seldom and never. Table 1 revealed that majority of the respondents (55.8%) used Moodle Learning Management System always and had the most frequency of usage, (30.1%) of the respondents used E-mails occasionally, Powerpoint (25.8%) always, (46.6) of the respondents never used Pager e-learning platform while just few (6.3) always used Audio-Video CDS.

Objective 4: Determine the purposes for students' use of e-learning tools
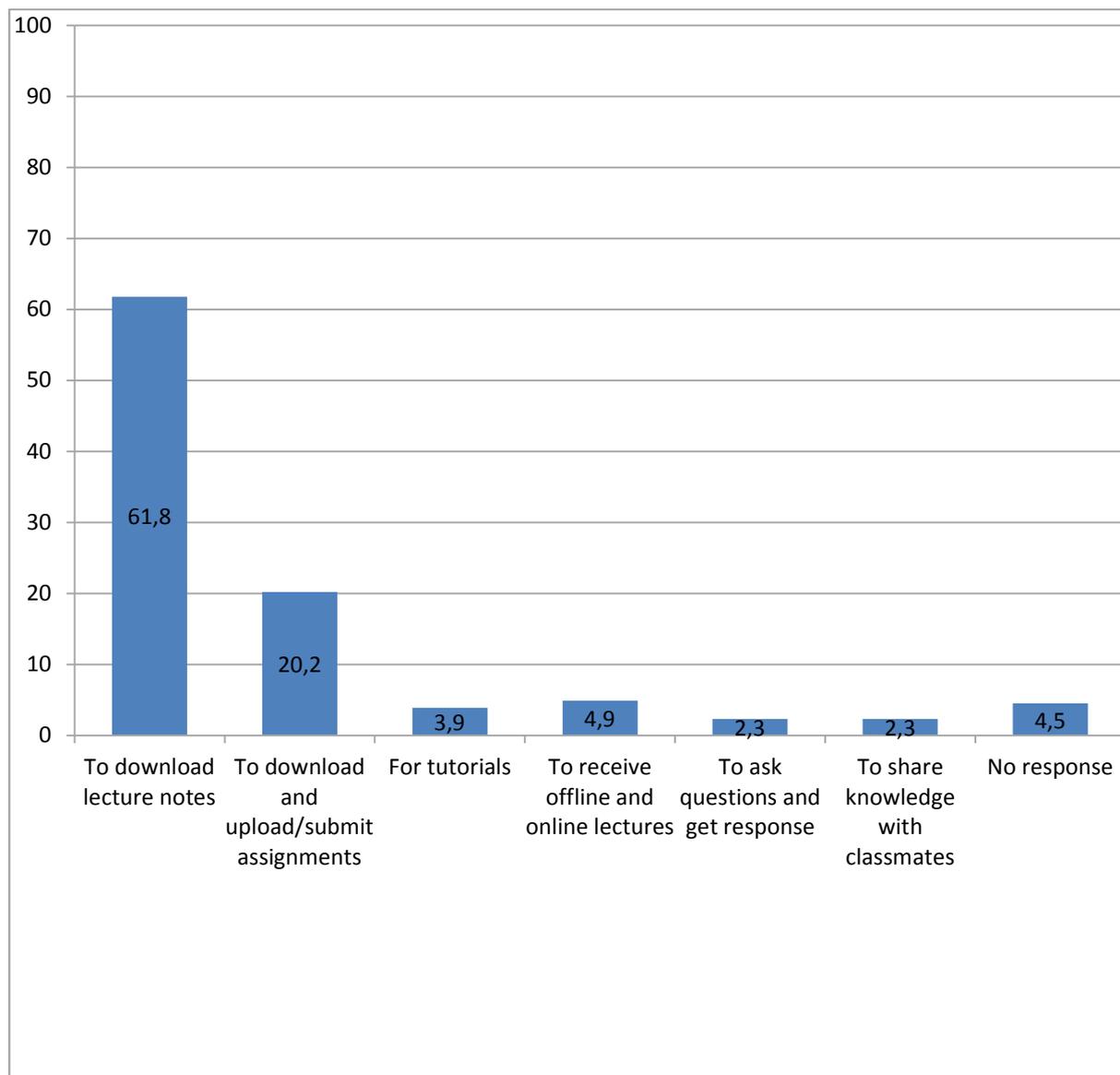

Figure 2: E-learning Tools - Purpose of Use

Figure 2 shows the purpose for student's use of e-learning tools. The major purpose for using e-learning tools is to download lecture notes. This is revealed in figure 2, having 61.8%. Other purposes include; downloading and uploading /submitting assignments. (20.2%), for tutorials (3.9%),To receive offline and online lectures (4.9%), To ask questions and get response (2.3%), To share knowledge with classmates (2.3%).

Objective 5: Challenges students encountered during usage of e-learning tools
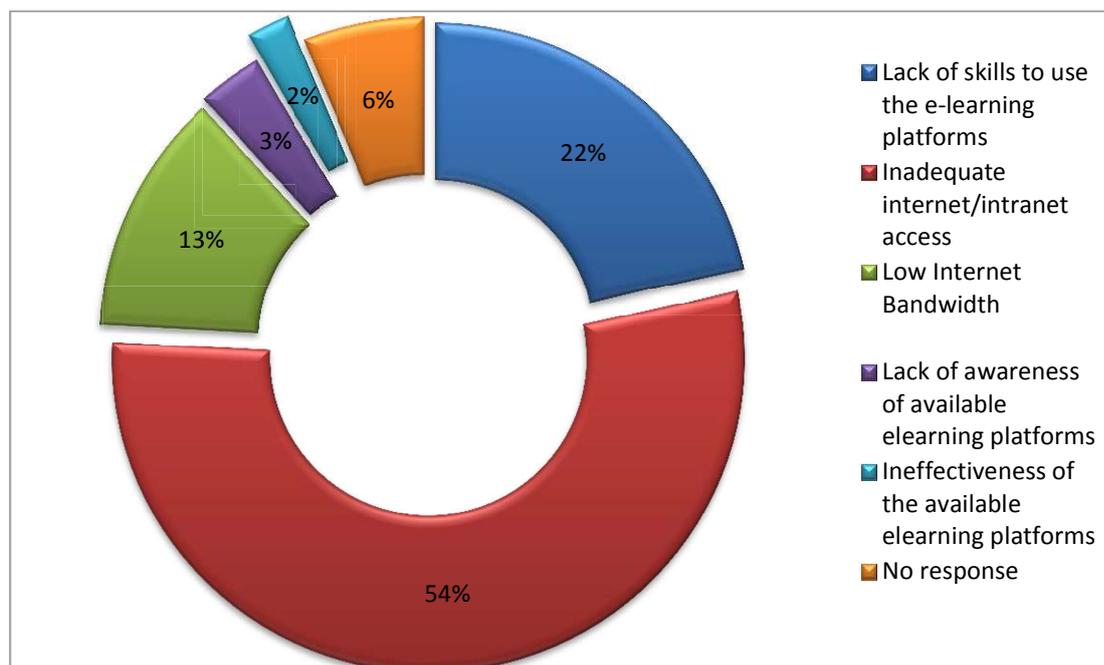

Figure 3: Challenges Encountered in using e-learning tools among students in Covenant University

Figure 3 shows the challenges encountered in the course of using an e-learning tool. The major challenge encountered by students is inadequate internet/intranet access (54%). Also 22 % indicated that they lack the skills to use the e-learning tools. Other challenges include low internet Bandwidth (12.3%), Lack of awareness of available e-learning tools (3.3%) and also ineffectiveness of the available e-learning platforms (2.2%)

Hypothesis

i.   **There is no significant relationship between use of e-learning tools and students' level of study**

Table 2: Chi-Square Tests for Hypothesis 1

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	51.379(a)	20	.000
Likelihood Ratio	56.144	20	.000
Linear-by-Linear Association	3.711	1	.054
N of Valid Cases	508		

From the table above, P=.000. This tells us that there is no statistically significant relationship between the use of e-leaning platforms and students' level of study. This directly implies that students irrespective of their levels made use of e-learning platforms.

ii.   **There is no significant relationship between students' academic performance and use of e-learning tools**

Table 3: Chi-Square Tests for Hypothesis 2

	Value	df	Asymp. Sig. (2-sided)
Pearson Chi-Square	97.363(a)	55	.000
Likelihood Ratio	61.510	55	.254
Linear-by-Linear Association	6.764	1	.009
N of Valid Cases	504		

From the above table, P = .000. This tells us that there is no statistically significant relationship between academic performance and available e-learning platforms. This implies that the use of e-learning platforms did not show any significant relationship with enhancement of students' academic performance.

Discussion

This study evaluates the availability and use of e-learning tools among undergraduate students in Covenant University, Nigeria.

The study discovered that there were various e-learning tools available to students. However, the most available was the multimedia system. This agrees with Cheung, Kundur and Senior (2010) who postulated the proliferation of multimedia systems and their importance especially in education institutions. Students use multimedia systems in their daily academic activities like writing assignments, presentation of term papers and seminars (Eryaman, 2007). Taking cognizance of the importance of multimedia, Covenant University management have acquired numerous multimedia systems to serve the teaching and learning needs of members of the University Community.

A further investigation revealed that respondents, as shown in figure 2, indicated they used e-learning tools the most for downloading lecture notes. This supports the assertion of Wagner, Hassanein and Head (2008) that e-learning platforms could be used asynchronously to download recorded information including lectures. A probe into the finding shows that this could be because students are required to download lecture notes and tutorials through the University's various e-learning platforms using intranet and internet facilities.

On challenges students encounter in the use of e-learning tools, the study revealed inadequate internet/intranet access as the greatest challenge (54%). It was discovered that this was principally due to inadequate computer systems provided in the University's cybercafés and media centres. A further probe also revealed that even when the computer systems are available, students' access to the internet was limited as each student was allotted six (6) megabyte of data monthly; once this is exhausted, access to the internet is denied. The findings of Udende and Azeez (2010) agreed with this position. Another major challenge encountered by the students was lack of skills to use the e- learning platforms. Grant, Malloy and Murphy (2009) underscored the importance of requisite skills in computer usage. It is therefore not surprising that the respondents indentified lack of computer skills as a challenge to the use of e-learning platforms.

The first hypothesis tested the relationship between students' level of study (class) and use of e-learning tools. It was discovered that there was no significant relationship between the two variables. This is because the University's model of teaching and learning compels students to make use of the e-

learning tools irrespective of their levels or classes. This is in agreement with Otunla (2013) who in her study of undergraduates' access to internet resources found out that level of study or class played no role in students' use of internet resources. The second hypothesis tested the relationship between use of e-learning platforms and academic performance. Academic performance as used here refers to score or grade acquired for each course during the semester (or term). Interestingly, unlike previous studies which indicated that use of e-learning platforms could improve academic performance (Udende and Azeeze (2010), and Otunla (2013)), this study revealed that the respondents indicated that the use of e-learning tools did not help them to improve on their score or grade for each of their courses. However, the students agreed that e-learning platforms help to facilitate writing and submission of assignments, term papers and researches. This result may change with time, as the use of e-learning platforms among undergraduates is still at an infant stage in Covenant University. Almena, Cejudo and Lozano (2013) in their study posited that the contributions of e-learning platforms to academic performance can only be appreciated over a period of time.

Recommendations and Conclusion

This study offers several implications for practice and research. First, there is a need for Universities in Nigeria to provide adequate e-learning platforms and utilize them in the teaching and learning processes. This should go beyond the mere use of e-mails and social networks to the deployment of electronic learning management systems that are geared towards the attainment of goals, objectives, and expectations for the learners. Continuous experimentation with different platforms that are most effective for online learning will also help facilitate the attainment of goals ,objectives and expectations of learners.

Second, adequate internet bandwidth is part of the necessary infrastructure needed for implementation of e-learning. Inadequate bandwidth adversely affects teaching and learning using technological platforms. However, institutional bandwidth can be conserved using bandwidth optimisation. The proposed two - level bandwidth optimization model by Suhail and Mugisa (2007) is recommended. At first level, there is the optimization of available institutional bandwidth by controlling bandwidth hungry applications and uses, and at second level by optimizing media performance. Optimization of media performance entails optimizing various media types like text, graphics, animation, audios and videos. In spite of the possibilities in optimization, Suhail and Mugisa (2007) opined that Higher Education Institutions must meet minimum standards in internet bandwidth provision in order to operate e-learning platforms effectively and efficiently.

Finally, there is the need for continuous research related to e-learning platform strategies in a variety of contexts to enable the advancement of best practices in the dynamic world of e-learning. Expectedly, the growth of the internet and online learning will continue and as indicated in this study, it will come with challenges. Experiences will be unique to both individuals and institutions. As educators and learners become more adept to e-learning platforms, it will remain imperative that best practices associated with these learning environments continue to be explored.

Limitation and Future Research Direction

This study considered undergraduates' use of e-learning platforms in Covenant University, Nigeria. Its findings may not be considered as generalised conclusions for all other institutions. This limitation was inevitable as the authors could not identify any other institution with appreciable number of e-learning platforms like Covenant University within Southwest Nigeria (where Covenant University is located). However, other institutions can learn from the findings when setting up their own platforms. The study could also serve as an update to researchers and scholars on the use of e-learning in Universities in Nigeria. The authors hope to carry out a study of a more generalised and comparative nature in future.

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