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AVAILABILITY AND UTILIZATION OF E-LEARNING TECHNOLOGIES IN SCIENCE EDUCATION PROGRAMMES IN UNIVERSITIES AT OSUN STATE NIGERIA

Abanikannda Mutahir Oluwafemi[1], Damilola Adeola Fadele[2]
[1,2]Osun State University, Osogbo, Osun State, Nigeria
mo.abanikannda@uniosun.edu.ng

Abstract

The study examined the availability and utilization of e-learning technologies in science education programmes in universities in Osun State. This study adopted a descriptive research design and inventories that were applied to collect data. The respondents in the study were sixty lecturers and three hundred students from three universities in Osun State. The collected data were analyzed by using frequency counts, percentages, mean, standard deviation, and t-tests. Findings reveal that the use of e-learning technologies by lecturers to enhance their teaching and learning activities in science education programmes in universities at Osun State is the same as that of students. Both of them have a high proficiency in utilizing e-learning technologies. However, some recommendations are suggested in this research such as free access to relevant materials should be provided at the university as well as the need for training to be more professional users.

Keywords: Availability, E-learning Technologies, Utilization

INTRODUCTION

Information and Communication Technology (ICT) have become key tools in educational methodology and curriculum delivery globally. It has been identified as an indispensable instrument for the development of quality teaching and learning in the education system (Kozlova & Pikhart, 2021). ICT is fundamental for the preparation of students in meeting the innovations in the global arena (Ololube, 2010). ICT is a global connection of many different types of computer networks linked together. ICT has greatly influenced and affected innovations and developments in almost all sectors and works of life (Ratnasari et,al, 2023; Zahraini, 2023). The growth of information and

communication technologies has dramatically reshaped teaching and learning processes in higher education (Pulkkinen, 2011) The application of ICT in higher institutions is more critical today than ever before since its growing power and capabilities are triggering a change the learning environments in education (Pajo & Wallace, 2011). The application of ICT to education has given rise to a new set of vocabularies used to describe new approaches to learning and curriculum delivery. Such terms include e – teaching, e – learning, and so on, which are facilitated via the internet. The availability of the internet provided the channel for the use of electronic approach to education known as electronic learning or e – learning.

E-learning according to Olaniyi (2016) is all about learning that occurs at the computer. In our contemporary world, the learning through the aid of a computer simply means online knowledge acquisition through the internet or offline through CD-ROM etc. In other words, it is the use of network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere. E-learning has the potential to revolutionize the way we teach and how we learn (DfES, 2013).

E-Learning is the use of technology to enable people learn at anytime and anywhere. E-learning refers to the use of internet technologies in the delivery of a wide variety of services and processes, leading to the enhancement of knowledge, performance and productivity. Olaniyan (2016) wrote that e-learning is used to refer to a wide variety of activities that incorporate ICT. These activities consist of a wide variety of terms that describe educational technology that electronically or technologically supports teaching and learning. These include, technology-enhanced learning, computer-based instruction, computer managed instruction, computer-based training, computer-assisted instruction or computer-aided instruction, internet-based training, web-based training, online education, virtual education, virtual learning environment, m-learning and digital education. These terms are similar and overlapping and their usage depends on which

particular digitization approach, component or delivery method is given emphasis. E-learning can itself be seen as an education subject in which case it is called “computer studies” or “information and communication technology”.

The role of e-learning facilities in teaching and learning has become one of the most important and widely discussed issues in contemporary education policy (AWODOYIN et.al., 2024). E-learning is an important factor in this information age so much so that when properly adopted and applied holds a great promise to improving teaching and learning in educational institutions.

Horton (2001) argued that e-learning gives learners an opportunity to broaden their knowledge because they can learn on their own and that increases learners’ level of confidence and independence. It is an important instructional tool to facilitate the transfer of many types of information and an effective means of communication in schools and colleges. E-learning or Internet-based instruction has been manifested in one-to-one (teacher-to-student), one-to-many (teacher-to-group) and many-to-many (group-to-group) approaches to instruction (Webb 2014). E- Learning is the application of a whole range of technologies involved in information processing and electronic communications, such as computers, internet, e-mail, computer software, satellite, mobile communication gadgets, and other allied electronic devices for dissemination of knowledge and information. It involves the application of computer and information technology in teaching and learning. According to Adesoji (2012), e-learning comprises computer and ICT materials and applications, which aid information collection and dissemination, research and global exchange of ideas that are critical for advancing meaningful, educational initiatives and understanding issues related to global development.

Despite the wide use of information and communication technology in university teaching, research on e-learning adoption suggests that it has not reached its full potential (Zemsky & Massy, 2004). This implies that a lot more need to be done in order for university teaching to be improved via ICT. E-

learning adoption is hampered when there is absence of improved technology in any university system. As noted by Psycharis (2005), the successful implementation of e-learning by an educational system should fulfil certain criteria such as the acquisition of adequate technological infrastructure and adequate educational content of persons with university skills and a developed culture which encourages learning and sharing. The introduction of e-learning facilities to the education systems is aimed at improving educational delivery and preparing students for a role in an information age. Application of e-learning facilities provides productive teaching and learning in order to increase people's creative and intellectual resources especially in today's information society and gives ample and exceptional opportunities to the teachers and students to develop capacities for high quality learning and to increase their ability to innovate (Adesoji 2012). Ozioma & Offordile (2011) state that teachers are able to fashion a focused and relevant assignment for discussion between students and teachers, and among students through e-learning devices. Abidoye (2010) maintains that e-learning devices such as the web, internet, multimedia, computer, projector, television, etc provide easy access to quality learning materials and make reasonable and responsible contributions to the learning process. The Federal government of Nigeria in an attempt to brace up to the contemporary world in computer education, in 1988, enacted a policy on education which was to establish pilot schools and thereafter diffuse the innovation first to all higher institutions, Okebukola (2011).

Alexander (2001: p240) concludes that successful e-learning takes place within a complex system involving the students' experience of learning, teachers' strategies, teachers' planning and thinking, and the teaching/learning context. E-learning if integrated into education programme could attract the following benefits to the students, lecturers and other stakeholders in science education: Provide access to information with the latest technologies to support professionalism in science education (Ile and

Okoli, 2013). Enhance the development of standards through curriculum development design and innovation, which will put in place appropriate human and material instructional resources for effective teaching and learning It helps to engage students in the learning process and skills that will be useful in social life and the world of work. Furthermore, it promotes the motivation of students and teachers (Castillo-Merino & Serradell-López, 2014) to engage in research for indebt knowledge in business education, information communication technology, and general education.

In spite of the above observation about the potentials, and benefits of using technologies, the level of awareness and use in Nigeria appears to be very minimal. Organisational, environmental and cultural factors stand against the good and perceived will of the use of technologies. Omolayole (2012) points out three strong reasons that stand against the effective access of e-learning facilities in Nigerian tertiary institution. Each of the factors she has mentioned has a resultant effect on availability and utilization of e-learning facilities. The factors are: low level of computer culture: poor telecommunications infrastructure; and general lack of awareness.

The world is technologically getting advanced. It is sometimes referred to as a global village. The reason for this assertion is attributed to the influence of information and communication technology. E-learning as a matter of fact is fast becoming popular in business education instructional delivery method, most especially in tertiary institutions in Europe, America, and other developed and technologically advanced countries. In Nigeria, its usage as instructional method of teaching and learning in science education programme of tertiary institutions needs to be emphasized in line with what obtains in other part of the world. However, there is dearth of enough e-learning tools and technologies that are required for teaching and learning. In addition, many teachers and students do not have the required skills and competency in the utilization of e-learning for impacting science education courses. The light of the above observations inspired the researcher's curiosity

to investigate the availability and utilization of e-learning technologies in science education programme in Universities in Osun State. The present study is therefore interested in investigating the availability and utilization of e-learning technologies in science education programmes in usniversities in Osun State.

METHOD

This study adopted the descriptive survey research design. The population consist of lecturers and students in science education in universities in Osun State. They are: A federal, a state and a private university in Osun State. Simple random sampling was adopted in this study to select three universities in Osun State Twenty 20 lecturers and one hundred 100 science education students was selected from each of the universities making a total of three hundred and sixty 360 respondents.

The main instrument for the research was constructed by the researcher. Section A of the inventory was based on bio-data information such as gender, type of university and level. Section B consist of questions for the respondents. The inventory was based on 5-points Likert scale of Strongly Agreed (SA), Agreed (A), Undecided (U), Disagreed (D) and Strongly Disagreed (SD). The instruments were validated by two educational technologists and an expert in test construction. The test-retest over a period of three weeks was used to establish the reliability of the instrument. The researcher administers the instruments to the respondents at each universities. 360 copies of the inventory was administered and was collected back personally by the researcher. The collected data were analyzed by using frequency count, percentage, mean, standard deviation and t-test.

RESULTS AND DISCUSSION

This section presents the data analyses and interpretations of data collected for the study through the administered instrument (inventory). The

first part presents the demographic distribution of respondents using descriptive statistics while the second part gives the analyses of research question using frequency, percentage, mean, standard deviation and t-test.

Table 1 presents the gender distribution of respondent. It shows that 38.3% are male while 61.7% are female.

Table 1. Respondent Distribution by Gender (N = 360)

	F	%
Male	138	38.3
Female	222	61.7
Total	360	100.0

Table 2 present the Analysis to know the extent to which e-learning technologies are adequate in science education programme in Universities in Osun State. The items in the inventory the respondent agreed with were; Internet services provided by the university are adequate (92.5%), Internet services provided by the university are fast (69.2%), Students can easily get access to a computer in the ICT centre or within the university (83.4%), Multimedia projectors are available in the university (74.4%), Interactive white boards are available in the university (88.4%), Computers are adequately provided (89.7%), E-books are adequately provided (82.0%), Software is sufficiently provided (81.1%), Printers are adequately provided (64.4%), Since the grand mean is 4.04, it implies e-learning technologies are adequate high in science education programme in Universities in Osun State.

Table 2. Analysis to know the extent to which e-learning technologies are adequate in science education programme in Universities in Osun State (N = 360)

S/N	ITEMS	RESPONSE										Mean	SD
		Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree			
		F	%	F	%	F	%	f	%	f	%		
1	Internet services provided by the university are adequate.	164	45.6%	169	46.9%	7	1.9%	18	5.0%	2	0.6%	4.32	0.79
2	Internet services provided by the university are fast	67	18.6%	182	50.6%	15	4.2%	88	24.4%	8	2.2%	3.59	1.11
3	Students can easily get access to a computer in the ICT centre or within the university	110	30.6%	190	52.8%	30	8.3%	28	7.8%	2	0.6%	4.05	0.86
4	Multimedia projectors are available in the university	117	32.5%	151	41.9%	20	5.6%	66	18.3%	6	1.7%	3.85	1.11
5	Interactive white boards are available in the university	254	70.6%	64	17.8%	20	5.6%	14	3.9%	8	2.2%	4.51	0.92
6	Computers are adequately provided	205	56.9%	118	32.8%	14	3.9%	15	4.2%	8	2.2%	4.38	0.91
7	E-books are adequately provided	140	38.9%	155	43.1%	26	7.2%	39	10.8%			4.10	0.94
8	Software is sufficiently provided	103	28.6%	189	52.5%	25	6.9%	39	10.8%	4	1.1%	3.97	0.94
9	Printers are adequately provided	94	26.1%	138	38.3%	34	9.4%	80	22.2%	14	3.9%	3.61	1.21
		Grand Mean										**4.04**	

Table 3 presents the analysis to know how proficient Students are in the use of e-learning technologies in teaching and learning in science education programme in Universities in Osun State. The items the respondent in the student inventory agreed with were; Students are aware of the internet (95.5%), Students browse the internet frequently (93.1%), Students browse the internet for academic information (90.8%), Students prefer the internet to books

when sourcing for academic information (87.5%), Students browse to get news/sports/fashion information (83.9%).

Since the Grand mean is 4.36 which is greater than 3.0 it implies that Students have a High proficient in the use of e-learning technologies in teaching and learning in science education programme in Universities in Osun State.

Table 3. Analysis to know how proficient are Student in the use of e-learning technologies in teaching and learning in science education programme in Universities in Osun State (N = 300)

S/N	ITEMS	Strongly Agree		Agree		Undecided		Disagreed		Strongly disagreed		Mean	SD
		f	%	f	%	f	%	f	%	f	%		
1	Students are aware of the internet	220	73.3%	67	22.2%	8	2.8%	3	1.1%	2	0.6%	4.67	0.64
2	Students browse the internet frequently	180	60.0%	99	33.1%	13	4.2%	7	2.2%	2	0.6%	4.50	0.73
3	Students browse the internet for academic information	143	47.5%	130	43.3%	18	5.8%	8	2.8%	2	0.6%	4.36	0.76
4	Students prefer the internet to books when sourcing for academic information	106	35.3%	158	52.5%	19	6.4%	14	4.7%	3	1.1%	4.17	1.09
5	Students browse to get news/sports/fashion information	127	42.2%	125	41.7%	13	4.2%	26	8.6%	10	3.3%	4.12	1.04
	GRAND MEAN												**4.36**

Table 4 shows if there is difference between lecturer and Student in the use of e-learning technologies to enhance their learning in science education programme in Universities in Osun State. The result reveals that there is a no significant difference between lecturer and Student in the use of e-learning technologies to enhance their learning in science education programme in Universities in Osun State. ($t = 0.714$, $df = 348$, $p > 0.05$). This implies that the

use of e-learning technologies by lecture to enhance their learning in science education programme in Universities in Osun State is the same with that of student.

Table 4. Summary of t-test Analysis to know if there is difference between lecturer and Student in the use of e-learning technologies to enhance their learning in science education programme in Universities in Osun State

	N	Mean	S.D	T	Df	Sig.(2-tailed)	Remark
LECTURER	60	39.07	5.57	0.714	348	0.205	Not significant
STUDENT	300	39.01	4.74				

Having presented the results of the analysis of data, a detailed discussion of the result will be necessary. The sequence of the discussion is in accordance with the research questions. The section also highlights the summary, discussions, conclusion, and recommendations of the study.

The result analysis shows that e-learning technologies are adequately high in science education programme in universities in Osun State. This means that the majority of the respondents unanimously agreed to the items used in knowing to what extent are e-learning technologies adequate in science education programmes in universities in Osun State. The result obtained is in line with Pulkkinen (2011), who found that e-learning technologies are adequately high in education programme. A study conducted by (Egoeze et.al., 2018) and Pohekar (2018) also confirm a high demand for ICT utilization at the university not only for teachers and students but also for administrative service staff.

The second finding of this study shown that lecturers have a high proficiency in the use of e-learning technologies in teaching and learning in science education programme I universities in Osun State. This means that a larger percentage of the respondents agreed that lecturers have a high proficiency in the use of e-learning technologies. The finding reveals that

lecturers can fashion a focus and relevant assignment for discussion between students and lecturers through e-learning devices (Ozioma & Offordile,2011).

Lastly, students have a high proficiency in the use of e-learning technologies in teaching and learning in science education programme in universities in Osun State. This result supported the earlier work of Topez (2013), who found that students browse the internet for current and up-to-date materials. ICT utilization for students is significantly pivotal due to the demand for ICT-required learning tasks. Thus, they should be more frequently exposed to ICT usage because this frequency will closely impact the students' proficiency in employing information and communication technologies (Verhoeven et.al., 2016). However, further intensive and regular training for lecturers and students is also needed to enhance technological skills as has been suggested by Oladele & Modebelu (2021) and Fagbola, et.al.,(2023).

CONCLUSION

Based on the findings of the study as summarized above, the study concluded that: E-learning technologies are adequately available and used by lecturers and students in science education programme in universities in Osun State. Based on the findings of the study, the following recommendations were made: 1) Accessing relevant materials online should be made free to encourage internet usage; 2) There should be trained personnel to maintain information and technology (ICT) infrastructures; 3) Parents/Guardians should encourage their children by enrolling them into ICT programs at an early stage. This is to enable them to acquire knowledge and exposure to the internet before attending higher institutions and provide adequate E-learning facilities for them.

REFERENCES

Adesoji, F. F. (2012). Undergraduate students' perception of the effectiveness of ICT use in improving teaching and learning in Ekiti State University,

Ado-Ekiti, Nigeria. *International Journal of Library and Information Science* 4(7), 121-130.

Alexander, S. (2001) E-learning developments and experiences. Education and Training, 43 (4/5),240-48.

AWODOYIN (PhD), A. F., Olutoyin O. Oso, P. D., & Adeogun, O. (2024). LIBRARY AND INFORMATION SCIENCE UNDERGRADUATES USAGE EXPERIENCES AND PERCEPTIONS ABOUT ONLINE LEARNING PLATFORMS IN UNIVERSITIES IN SOUTH-WEST, NIGERIA. *The Catalyst Journal of Library and Information Literacy - CJLIL*, *3*(2), 233–254.

Castillo-Merino, D., & Serradell-López, E. (2014). An analysis of the determinants of students' performance in e-learning. *Computers in Human Behavior*, *30*, 476–484. https://doi.org/10.1016/j.chb.2013.06.020

DfES (2013). *Towards a Unified E-Learning Strategy, London:* DfES Economist Intelligence Unit Federal Ministry of Education: http://www.fmegovng.org/ [Including links to parastatal organizations. In English. Retrieved on 20/1/2015.

Egoeze, F., Misra, S., Maskeliūnas, R., & Damaševičius, R. (2018). Impact of ICT on Universities Administrative Services and Management of Students' Records: ICT in University Administration. *International Journal of Human Capital and Information Technology Professionals (IJHCITP)*, *9*(2), 1–15. https://doi.org/10.4018/IJHCITP.2018040101

Fagbola, O. O., Bashiru, M. O., Ajani, A. Y., & Bankole, Q. A. (2023). OPEN EDUCATIONAL RESOURCES AWARENESS AND USE AMONG LIBRARY AND INFORMATION SCIENCE UNDERGRADUATES IN KWARA STATE, NIGERIA. *Journal of Library, Science Education and Learning Technology (JOLSELT)*, *4*(2), 81–102.

Horton, W. (2000), *Designing Web-based Training*. New York: John Wiley and Sons.

Ile and Okoli, (2013) *Information and communication technology (ICT) in education*: The place of teleconferencing. *Journal of Adult Education Studies* (JAES), 3(1) 86-91.

Kozlova, D., & Pikhart, M. (2021). The Use of ICT in Higher Education from the Perspective of the University Students. *Procedia Computer Science*, *192*, 2309–2317. https://doi.org/10.1016/j.procs.2021.08.221

Oladele, E. O., & Modebelu, O. J. (2021). Perception of E-Learning and Facilities Available in Distance Learning Institute, University of Lagos. *Pakistan Journal of Distance and Online Learning*, *7*(1), 15–32.

Olaniyi, S. S. (2016*) e-Learning Technology: The Nigeria Experience* p.2-3. A paper presented at the Shape the Change XXIII FIG Congress Munich Germany, October 8-13, 2006. The International Bureau of Education of UNESCO (2014): http://www.ibe.unesco.org/links.htm. Retrieved on 19/1/2015.

Ololube (2010). *Old, new and current technology in education*. UNESCO Africa, 14 (15), 7-18.

Omolayole *W. M. (2012). E-learning access and usage by secondary school students in a Nigerian. SAJnl Libs & Info Sci. pp. 138-148.*

Ozioma C. A., & S. Offordile. (2011). Strategies for improving the use of electronic teaching and learning (ELearning) for vocational education in tertiary Institutions of Anambra State-Nigeria. *Mediterranean Journal of Social Sciences*. 2 (6), 123-129

Pajo & Wallace. (2011) *Computer education in Nigerian secondary schools:* Gaps between policy and practice. Meridian: *A Middle School Technology Journal,* 6(2) 1 – 11. Retrieved from http://www.ncsu.edu/meridian/sum2003/nigeria/nigeria.pdf

Pohekar, D. (2018). Role of ICT on Universities Administrative Services and Management. *International Research Journal of Engineering and Technology (IRJET)*, *05*(11), 266–271.

Pulkkinen,J. (2011).Cultural globalization and integration of ICT in education.InK.Kumpulainen (Ed.), Educational technology: Opportunities and challenges (pp.13-23). Oulu, Finland: Universitys of Oulu.

Psycharis, S. (2005). *Presumptions and actions affecting an e-learning adoption by the educational system complementation using virtual private networks*. Available at: http://www.erodl.org/materials/contrib/2005/sarantos_psycharis.htm

Ratnasari, D., Widyanto, O. D., Widiarto, T., Sitorus, D. S., & Faresta, R. A. (2023). THE EFFECTIVENESS OF THE TEAM GAMES TOURNAMENT (TGT) COOPERATIVE LEARNING MODEL ON LEARNING OUTCOMES OF

STUDENTS IN SMA NEGERI 3 SALATIGA. *Jurnal Tatsqif*, *21*(2), Article 2. https://doi.org/10.20414/jtq.v21i2.7420

Topez, L. (2013). Access to quality teacher education in Nigeria. Nigeria Journal of Teacher Education and Teaching, 9(1), 15-22.

Verhoeven, J. C., Heerwegh, D., & De Wit, K. (2016). ICT learning experience and research orientation as predictors of ICT skills and the ICT use of university students. *Education and Information Technologies*, *21*(1), 71–103. https://doi.org/10.1007/s10639-014-9310-3

Webb, E. (2014). *Using e-learning dialogues in higher education*. Innovations in Education and Teaching International, 41(1), 93-103.

Zahraini. (2023). ADAPTATION OF PESANTREN IN THE MIDST OF WAVES SOCIETY 5.0 ERA: BETWEEN TRADITION AND TECHNOLOGY. *Jurnal Tatsqif*, *21*(2), Article 2. https://doi.org/10.20414/jtq.v21i2.9443

Zemsky, R. and Massy, W (2004). *Thwarted innovation: what happened to e-learning and why.* The Learning Alliance at the University of Pennsylvania. Retrieved from http://www.irhe.upenn.edu/weatherstation.html