JISE 13 (3) (2024): 147-158

Journal of Innovative Science Education

https://journal.unnes.ac.id/journals/jise/

Assessment of E-Learning Facilities and Personnels for Teaching Science in Osun State Senior Secondary Schools in Nigeria

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Article Info

Article History :
May 2024
Accepted
August 2024
Published
December 2024

Keywords:
Assessment; E-Learning Facilities; Personnels; Pornographic Sites; Internet Usage

Abstract

The study assessed e-learning facilities and personnels for teaching science in senior schools in Osun State. The study is a descriptive study; a sample of 300 respondents from Oriade Local Government, Osogbo Local Government and Olorunda Local Government Area of Osun State formed the participants for the study. The instrument for data collections was inventory and check list and reliability level was 0.85. Data collected were analyzed using via percentage, frequency count, t-test and Person Product Moment Correction (PPMC). The findings of the study revealed that high cost of computer, fear of losing computer, monthly subscription for the internet usage, availability of some pornographic sites, underfunding from our government budgeting and irregular power supply were highest challenges encounter by science teachers in using E-learning facilities in Secondary Schools in Osun State. Study revealed that awareness campaign on the benefits of e-learning within and outside institution and employment of ICT skilled teachers are the measures to be adopted for the enhancement of the utilization of e-learning for teaching science. Hence, there is a positive and a significant relationship between e-learning utilization in teaching students and academic achievement in science. The following recommendation were made such as: employers of teachers should give sufficient technical skills to their employees on e-learning tools, ministry of education and local government education authority should provide computers, internet and other ICT tools and teachers training institutions like institutes of education, colleges of education, National Teachers Institutes and so on should make ICTs course compulsory for all the teachers under training.

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p-ISSN 2252-6412
e-ISSN 2502-4523

INTRODUCTION

Teacher education by definition is a set of activities and programme deliberately planned and organized to which teacher trainees are exposed so as to prepare them for their placement into the teaching profession. It is equally means to help individual candidates acquire the skills, disposition, knowledge, values, attitudes, habits, norms and ethics that prepare them for their professional practice as teachers. Thus, teacher education is the process of learning the art and the techniques of teaching. Teacher education also encompasses all forms of education at pre-service and in-service levels that enhance the professional performance of teachers. Certification or licensing is a measure of teacher's qualification that combines aspects of knowledge about subject matter and about teaching and learning (Akinyele, 2012). Despite the complexity in the field of teacher education, one cannot overemphasize the importance of training of teachers of all categories. The efficiency of any institution depends to a large extent on the academic competence of the teaching staff in turn is predicated on the quality of the education received by the teachers since no educational system can rise about the quality of its teachers (FRN, 2014).

Science is a branch of study that deals with energy, matter and their interactions. It is sometimes referred to as the science of measurement and its knowledge has contributed greatly to the production of instruments and devices of tremendous benefits to the human race (Ajadi, 2017). In Nigeria, Science is being taught as one of the best subjects at the senior secondary school level and its branches (that is mechanics, light, waves, and electricity). The importance of science cannot be overemphasized as it forms the basis for technological advancement of any nation. Its study can lead to several scientific fields and professions such as engineering, manufacturing, mining and construction industries. Also, the knowledge of science plays a very significant role in the economic development of any nation (Chukwunenye & Adegoke, 2014)

Computer is now being used to do virtually everything in both public and private sectors. Teaching and learning in the world has gone beyond the teacher standing in front of a group of students and disseminating information to them. Teaching has been made easier by the use of technologically enhanced devices. Teaching as an attempt to assist students in acquiring or changing some skills, knowledge, ideal, attitude or appreciation (Clark & Mayer, 2011; Young, 2016). Also, teaching is a challenge that requires long hours of work and preparation. In other words, the master-mind of effective teaching depends mainly on the pedagogical teachers whose prowess in the use of ICTs facilities must be in conjunction with the students' activities. The global trend is now wheeling around technological advancement in all areas of human development (Lawal, 2016). The major emphasis nowadays is on the use of information technology in all words of life. Computer has become an important tool in today's society.

Information and Communication Technology (ICT) have become key tool and had a revolution impact on how we see the world and how we live in it. Today, the place of ICTs in education and the world in general cannot be undermined. ICT is a revolution that involves the use of computers, internet and other telecommunication technology in every aspect of human endeavour (Bandele, 2016). ICTs are increasingly playing an important role in organizations and in society's ability to produce access, adopt and apply information. Observations showed that the most successful teachers were those who used examples and counterexamples and involved students in explaining and modelling in the class. Teachers who favoured ICT were likely to have well-developed ICT skills and to see ICT as an important tool for learning and instruction. They were also likely to value collaborative working, enquiry and decision making by students. Teachers' pedagogical approaches are in turn affected by a number of key factors. First, they are affected by knowledge about their own subject.

ICTs (Information and Communication Technologies) are the way forward for the improvement in our educational system. Multimedia technology affords teachers and students a lot of opportunities for effective learning outcomes. Multimedia is a carefully woven combination of text, graphic, art, sound, animation, and video elements. It is an integration of multiple media elements, for example; video, graphic, texts, audio, animation, and so on, into one synergetic and symbiotic while that results into more benefits for

the end users than any one of the media elements can provide individually (Cox et al., 1999).

The benefits of utilizing ICTs facilities to teachers in science are also numerous and they include: creativity, time saving, replacement of ineffective learning activities, making lessons more interesting, more enjoyable and motivating for both teachers and learners (Cox et al., 1999). Studies show that accessibility to e-learning facilities form the bases of success of university programmes. In Jamia MilliaIsilomia Central University (Naqvi, 2007), found that access to e- learning facilities motivates students to search for information for research proposes and for effective learning.

It was also found that the provision of many computer terminals enhance access to e-learning at Guru Wanak Development University (Kaur, 2008). However, Sharma (2009) study revealed that 80% of teachers and 86.67% of researchers have access to e-learning opportunities in Guru GbinaSlugh, Indraprastha University, India. This made their research works faster, easier and better. Also, Lazinger et al. (1997) study indicated that only a very poor percentage (12.5 %,) of the university students have access to internet facility with 83% relying on their personal laptops while 91.7% relied on cyber cafés. They also found that only 4.1% have access to e-learning through university internet connectivity. Similarly, Eze (2012) observed that teachers have poor access to e-learning facilities in Enugu state, Nigeria. Eze's study revealed that only 14.5% of secondary school teachers in Enugu State, Nigeria, had personal computers (PC) or laptops while only 21.2% of them have e-mail accounts.

Teachers' gender seems to be one of the major controlling factors in the ICTs facilities utilization for science instructions. Male teachers are more ICTs compliant than their female counterparts (Cox et al., 1999). In fact, he opined further that, male teachers are technophile, while female are technophobic, thus, the former are more fully ready and prepared to make use of ICTs facilities in their instructions than the latter. However, very few female teachers are found teaching the science courses in Nigeria secondary schools. However, in spite of the obvious advantages of e-learning adaptation in the developing economies, its adaptation is rather too low because of the high illiteracy rate and poor educational funding by the federal and state government. Keramati et al. (2011), Bhuasiri et al. (2012), Chen & Tseng (2012) and Hu & Hui (2012) show that e-learning adoption by vast number of professional organizations and learners is motivated by geographical and savvy remote reach, separate learning environment, juicy paybacks/returns, continuous upgrades of skills within a short time, learners' controln terms of adaptability, flexibility and convenience, and cost effectiveness in course/programme delivery and management. In the developing countries, high institutions are facing poor funding and dearth of qualified staff, resources and access to educational materials (Ahmed, 2010; Eze 2012) compared to those in the developed economies and they perceive that e-learning, with all its potentials, pools resources and develops quality materials alleviate the shortcomings of their traditional education strategies and make the senior schools competitive since instructors are empowered to exchange their ideas with students devoid of restrictions on space, time or facilities (Bhuasiri et al., 2012). Therefore, this study appraised the e-learning facilities and personnel for teaching science in Senior Schools in Osun State.

Statement of the Problem

The teaching and learning of science in secondary schools have over the years based on traditional textbooks (local and foreign) with the use of teaching strategies. The situation has persisted despite the invention and availability of computer and internet facilities, and a wide range of science teaching which is computer based.

In Nigeria, the continual reduction of education budget to abysmal 8% in the 2017 budget and the attendant rationing of funds amongst greater number of public HEIs amidst. stiff competition coming from private HEIs, suggests each HEI should turn to e-learning as a strategic source of socio-economic sustenance (Aboderin & Kumuyi, 2013). However, in spite of the fact that University of Port Harcourt as one of the first Nigerian universities to venture into e-learning, partnered with the University of Nairobi, Kenya to launch open and distance learning (ODL) in some specific disciplines the programme has some difficulties of poor awareness and poor infrastructures and abysmal management commitment to interactive

knowledge environment (Bukhari, 2010). Also, this institution and many others may have suffered limited resources and awareness, inadequate manpower and training, instability in energy, and poor internet and network facilities in their bid to exploit complete utilization of e-learning facilities (Markus & Robey, 2012; Bhuasiri et al., 2012; Bukhari, 2010; Allen & Seaman, 2003). Although, all institutions in Nigeria have connected to the internet that facilitate e-payment of school fees, e-library, e-registration, and e-payroll coupled with the constant innovation and the innovative approaches adopted by teachers.

Purpose of the Study

The aims of this study were to:

1. identify the type of e-learning facilities available for teaching science in Senior Secondary Schools in Osun State.
2. investigate the challenges encountered by science teachers in using e-learning facilities in Senior Secondary Schools in Osun State.
3. establish to be adopted for the enhancement of the utilization of e-learning for teaching science in Senior Secondary Schools in Osun State.

Research Questions

1. What type of e-learning facilities and available for teaching Science in Senior Secondary Schools in Osun State?
2. What are the challenges encountered by Science teachers in using E-learning facilities in Senior Secondary Schools in Osun State?
3. What measures are to be adopted for the enhancement of the utilization of e-learning for teaching Science in Senior Secondary Schools in Osun State?

Research Hypotheses

Ho_1. There is a significant difference in the competence of science teachers in using e-learning facilities and achievement of students?

Ho_2. There is a significant relationship between e-learning utilization in teaching students and academic achievement in science?

METHODS

A descriptive (survey) research design was adopted for this study. This design is suitable for this study because this study involves collection of information from a sample for analysis and generalization without manipulating any of the variables.

Population of the study

The population for this study was comprised all secondary school Science teachers in Three Local Governments. Specifically, Oriade Local Government, Osogbo Local Government and Olorunda Local Government Area of Osun State.

Sample and Sampling Technique

The researcher employed simple random sampling to select 30 secondary schools in the three local Governments: Oriade Local Government, Osogbo Local Government and Olorunda Local Government Area of Osun State. Ten respondents were selected in each of the three local governments making a total of 300 respondents for the sample.

Research Instrument

A validated questionnaire and check list was used for the study titled 'Assessment of E-learning Facilities and Personnel's for Teaching Science in Senior Schools in Osun State (AEFPTSSSOS) The questionnaires were consist of two sections (A and B), section A elicit responses on the demographic data of the respondents while section B will sub-divided into three with relevant items that was used to elicit relevant responses from the respondents in line with the research questions and hypothesis.

Validity of the Instrument

The questionnaire was validated by an expert in tests and measurement and two specialists in instructional technology, as well as two secondary school teachers who are science educators. This is with a view to determine the effectiveness and appropriateness of the instrument, to reduce ambiguity in the contents and structures of the sentences used, and in order to establish construct validity. The validators corrections and modifications were used to improve the quality of the instrument.

Reliability of the Instrument

The questionnaire instrument was subjected to test-retest method for a period of three weeks to ascertain the internal consistency at 0.05 level of significance. It was administered on twenty (20) respondents who are not part of the study sample after which the instrument was subjected to Person Product Moment Correlation (PPMC). A reliability value of 0.79 obtained established the reality of the instrument.

Procedures for Data Collection

The researcher personally visited the schools and obtain permission from the school authorities for this study, copies of the instrument was personally distributed to the respondents and efforts was made to see that the respondents understand the content of the materials and assistance was given so that they comply with the directives. At the end of the exercise, the questionnaires were collected by the researcher immediately.

Method of Data Analysis

Descriptive statistics via percentage, frequency count and t-test were used in analyzing the data.

RESULTS AND DISCUSSION

Table 1. Respondent Distribution by Gender (N = 300)

Gender	F	%
Male	135	45.0
Female	164	55.0
Total	300	100.0

Table 1 presents the gender distribution of respondent. It shows that 45.0% are male while 45.0% are female.

Table 2. Respondent Distribution by Age N = 300

Age	F	%
15-25	17	5.7
25-35	55	18.3
35-45	149	49.7
45 and above	79	26.3
Total	300	100.0

Table 2 presents the Age distribution of respondent. It shows that 5.70% are between 15 and 25, 18.3% are between 25 and 35, 49.7%% are between 35 and 45 while 26.3 are above 45 years of age.

Analysis of Research Question

Research Question 1: What type of e-learning facility available for teaching science in senior secondary school in Osun State

Table 3. Analysis of the type of e-learning facility available for teaching science in senior secondary school in Osun State (N = 300)

S/N	Items	Available		Not Available	
		f	%	f	%
1	Computer	242	80.7%	58	19.3%
2	Scanner	179	59.7%	121	40.3%
3	Printer	228	76.0%	72	24.0%
4	Projector	55	18.3%	245	81.7%
5	Digital library	44	14.7%	256	85.3%
6	Fax machine	63	21.0%	237	79.0%

S/N	Items	Available		Not Available	
		f	%	f	%
7	Computer laboratory	138	46.0%	162	54.0%
8	Internet	118	39.3%	182	60.7%
9	Audio tapes	34	11.3%	266	88.7%
10	Interactive whiteboard	156	52.0%	144	48.0%
11	Digital cameral	50	16.7%	250	83.3%

Table 3 presents the analysis of the type of e-learning facility available for teaching science in senior secondary school in Osun State. The items in questionnaire that the respondent reported available for e-learning facility available for teaching science in senior secondary school in Osun State were; Computer (80.7%), Scanner (59.7%), Printer (76.0%), Interactive whiteboard (52.0%). While the e-learning facility that were not available were; Projector (81.7%), Digital library (85.3%), Fax machine (79.0%), Computer laboratory (54.0%), Internet (60.7), Audio tapes (88.7%), Digital cameras 83.3%)

Research Question 2: What are the challenges encountered by science teachers in using E-learning facilities in Secondary Schools in Osun State

Table 4. Analysis of the challenges encountered by science teachers in using E-learning facilities in Secondary Schools in Osun State (N = 300)

S/N	Items	Response									
		Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
		F	%	F	%	F	%	F	%	f	%
1	The high cost of computer unite has contributed immensely in reducing their availability and usage by teacher and students	120	40.0%	123	41.0%	20	6.7%	24	8.0%	13	4.3%
2	Teachers and students hardly bring their computer units to school for fear losing them	75	25.0%	155	51.7%	32	10.7%	25	8.3%	13	4.3%
3	Most students come school without any prior knowledge on usage of computer systems and internets; hence they find it difficult to use the e-learning facilities	78	26.0%	131	43.7%	49	16.3%	29	9.7%	13	4.3%
4	Teachers who have computers could hardly afford the monthly subscription for the internet usage	62	20.7%	117	39.0%	46	15.3%	51	17.0%	24	8.0%
5	Most parents consider computers as luxury instead of necessity thereby refusing to equip their children with such provision	104	34.7%	123	41.0%	11	3.7%	41	13.7%	21	7.0%
6	Due to availability of some pornographic sites, most parents rarely allow their wards the access to surf the internet or even use computer system	151	50.3%	98	32.7%	8	2.7%	22	7.3%	21	7.0%
7	Underfunding from our government budgeting has affected the availability of e-learning facilities in our tertiary institutions	106	35.3%	118	39.3%	30	10.0%	29	9.7%	17	5.7%
8	Irregular power supply	90		79		62		59		10	

		30.0%	26.3%	20.7%	19.7%	3.3%

Table 4 presents the analysis of the challenges encountered by science teachers in using E-learning facilities in Secondary Schools in Osun State. The items that the respondent agree that are the challenges encountered by Science teachers in using E-learning facilities in Secondary Schools were; the high cost of computer unite has contributed immensely in reducing their availability and usage by teacher and students (81.0%), Teachers and students hardly bring their computer units to school for fear losing them (76.7%), Most students come school without any prior knowledge on usage of computer systems and internets; hence they find it difficult to use the e-learning facilities (69.7%), Teachers who have computers could hardly afford the monthly subscription for the internet usage (59.7%), Most parents consider computers as luxury instead of necessity thereby refusing to equip their children with such provision (75.7%), Due to availability of some pornographic sites, most parents rarely allow their wards the access to surf the internet or even use computer system (83.%), Underfunding from our government budgeting has affected the availability of e-learning facilities in our tertiary institutions (74.6%), Irregular power supply (56.3%).

Research Question 3: What is the measure to be adopted for the enhancement of the utilization of e-learning for teaching science in Senior Secondary School in Osun State?

Table 5. Analysis of the measure to be adopted for the enhancement of the utilization of e-learning for teaching science in Senior Secondary School in Osun State (N = 300)

S/N	Items	Response									
		Strongly Agree		Agree		Undecided		Disagree		Strongly Disagree	
		F	%	F	%	F	%	F	%	f	%
1	There should be an awareness campaign on the benefits of e-learning within and outside institution	125	41.7%	104	34.7%	16	5.3%	27	9.0%	28	9.3%
2	Students' examination should be conducted online under their teachers supervision	89	29.7%	127	42.3%	36	12.0%	30	10.0%	18	6.0%
3	The students tutor marked assignment (TMA) should be online-based so as to encourage e-learning usage	95	31.7%	123	41.0%	22	7.3%	39	13.0%	21	7.0%
4	The unit cost of computer should be subsidized to boost procurement	86	28.7%	103	34.3%	36	12.0%	51	17.0%	24	8.0%
5	Effort should be made by ministry of education in both federal and state levels to post ICT skilled teachers to Secondary Schools	102	34.0%	91	30.3%	16	5.3%	59	19.7%	32	10.7%

Table 5 presents the analysis of the measure to be adopted for the enhancement of the utilization of e-learning for teaching science in Senior Secondary School in Osun State. The items that the respondents agreed with were; there should be an awareness campaign on the benefits of e-learning within and outside institution (76.4%), Students' examination should be conducted online under their teachers supervision (72.0%), the students tutor marked assignment (TMA) should be online-based so as to encourage e-learning usage (72.7%), the unit cost of computer should be subsidized to boost procurement (63.0%), Effort should be made by ministry of education in both federal and state levels to post ICT skilled teachers to Secondary Schools (64.3%).

Hypotheses Analysis

Hypothesis 1: There is no significant relationship between the competence of science teachers in using e-learning facilities and achievement of students.

Table 6. Summary of using Pearson Correlation to know the relationship between the competence of science teachers in using e-learning facilities and achievement of students

Variable	N	Pearson Correlation	Sig. (2-tailed)	Remark
competence of science teachers in using e-learning facilities Academic achievement in science	300	0.77	0.00	Significant

Table 6 shows the relationship between in the competence of science teachers in using e-learning facilities and achievement of students. It was reveals on the table that there is a positive and a significant relationship between the competence of science teachers in using e-learning facilities and achievement of students ($r = 0.77$; $p<0.05$). It implies that the relationship between the competence of science teachers in using e-learning facilities and achievement of students is positive and significant.

Hypothesis 2: There is no significant relationship between e-learning utilization in teaching students and academic achievement in science.

Table 6. Summary of using Pearson Correlation to know the relationship between e-learning utilization in teaching students and academic achievement in science

Variable	N	Pearson Correlation	Sig. (2-tailed)	Remark
E-learning utilization in teaching students Academic achievement in science	300	0.87	0.00	Significant

Table 6 shows the relationship between e-learning utilization in teaching students and academic achievement in science. It was reveals on the table that there is a positive and a significant relationship between e-learning utilization in teaching students and academic achievement in science ($r = 0.87$; $p<0.05$). It implies that the relationship between e-learning utilization in teaching students and academic achievement in science is positive and significant.

Summary of Findings

Based on the analysis of the findings above, the following were deduced:

1. Findings of the study revealed that computer, scanner, printer and interactive whiteboard are available for teaching science in senior secondary school in Osun State
2. High cost of computer, fear losing computer, monthly subscription for the internet usage, availability of some pornographic sites, underfunding from government budgeting and irregular power supply were highest challenges encounter by science teachers in using E-learning facilities in Secondary Schools in Osun State.
3. The findings revealed that awareness campaign on the benefits of e-learning within and outside institution and employment of ICT skilled teachers are the measures to be adopted for the enhancement of the utilization of e-learning for teaching science.
4. Finally, the findings revealed that there is a positive and a significant relationship between e-learning utilization in teaching students and academic achievement in science.

Discussion of Findings Research Question One

Results on research question one revealed that computer, scanner, printer, interactive whiteboard are available for teaching science in senior secondary school in Osun State. While were projector, digital library, Fax machine, Computer laboratory, internet, audio tapes, and digital camera were not available. The result corroborated with the findings of Hepp et al. (2004) attributed that e-learning resources such as computer, internet facilities, scanner, printer, stabilizer, CD-ROM, diskettes are available which the students utilized to certain extent needed to effectively apply, use and manage when solving problems specifically related to information and communication. Also, in the study of Jackson (2021), ICT is an agent of socio-

economic changes and a force for creative destruction in human existence especially n the educational milieu, where the academic and consultants progressed from providing simple teaching aids to interactive learning environments.

Moreover, Jamia MilliaIsilomia Central University (Naqvi, 2007), found that access to e-learning facilities motivate students to search for information for research proposes and for effective learning. In another study it was also found that the provision of many computer terminals enhances access to e-learning (Kaur, 2008). However, Sharma (2009) study revealed that 80% of teachers and 86.67% of researchers have access to e-learning opportunities. This made their research works faster, easier and better. Also, Lazinger et al. (1997) study indicated that only a very poor percentage (12.5 %,) of the university students have access to internet facility with 83% relying on their personal laptops while 91.7% relied on cyber cafés. They also found that only 4.1% have access to e-learning through university internet connectivity.

Discussion of Findings Research Question Two

Result on Research Question Two revealed that high cost of computer units has contributed immensely in reducing their availability and usage by teacher and students, teachers and students hardly bring their computer units to school for fear losing them, most students come school without any prior knowledge on usage of computer systems and internets; hence they find it difficult to use the e-learning facilities, teachers who have computers could hardly afford the monthly subscription for the internet usage, most parents consider computers as luxury instead of necessity thereby refusing to equip their children with such provision, due to availability of some pornographic sites, most parents rarely allow their wards the access to surf the internet or even use computer system, underfunding from our government budgeting has affected the availability of e-learning facilities in our tertiary institutions, and irregular power supply were challenges encounter by Science teachers in using E-learning facilities in Secondary Schools in Osun State. This finding is corroborated with the study done Aderibigbe & Aramide, (2012) identify inadequate communications infrastructure, limited financial resources inadequate public private partnership, limited data management capacity. It also corroborates the study that: Teaching is an attempt to assist students in acquiring or changing some skills, knowledge, ideal, attitude or appreciation (Clark & Mayer, 2011; Young, 2016). Moreover, some of these advantages as revealed by a survey carried out by Brown (2003) and Kibuku et al. (2020) are that e-learning provides access to quality open educational resources, fosters information exchange and sharing, enables teachers to invest in more innovative teaching, students are active on their own learning, bridges the gap between learner and facilitator and improves the teaching methods. In Jamia MilliaIsilomia Central University (Naqvi 2007), found that access to e-learning facilities motivate students to search for information for research proposes and for effective learning. It was also found that the provision of many computer terminals enhance access to e-learning at Guru Wanak Development University. (Kaur, 2008). However, Sharma (2009) study revealed that 80% of teachers and 86.67% of researchers have access to e-learning opportunities in Guru GbinaSlugh, Indraprastha University, India. This made their research works faster, easier and better. Murphy et al. (2002) explains that teachers use DES not only to supplement instruction, as in the past, but to introduce topics, provide means for self study, and offer opportunities to learn concepts otherwise inaccessible to students. Manifests two key assumptions about how computers can assist learning. First, the users' ability to interact with the software is narrowly defined in ways designed specifically to promote learning with the tools. Second, computers are viewed as a medium for learning, rather than as tools that could support further learning.

Discussion of Findings Research Question Three and Hypothesis

Result revealed that awareness campaign on the benefits of e-learning within and outside institution, students' examination should be conducted online under their teachers supervision, the students tutor marked assignment should be online-based so as to encourage e-learning usage, the unit cost of computer should be subsidized to boost procurement and effort should be made by ministry of education in both federal and state levels to post

ICT skilled teachers to Secondary Schools are the measures to be adopted for the enhancement of the utilization of e-learning for teaching science.

Consequently, there is a positive and a significant relationship between e-learning utilization in teaching students and academic achievement in science ($r = 0.87$; $p<0.05$). It implies that the relationship between e-learning utilization in teaching students and academic achievement in science is positive and significant. This is in tandem with the studies by Adeyemi, & Olaleye, (2010) found that there is significant relationship between the use of e-learning in the teaching and academic achievements *as* secondary school students mostly used it to do their assignment and communicate with their colleagues. Similar result was reported by Ritonga et al. (2020), in his study found significant difference between students' use of the e-learning and learning outcomes as most students used it for learning activities.

According to Berhanu (2010) which points out that promoting E-learning provides a potential and comparative ladder for developing countries to leapfrog to the knowledge economy. Al-Harbi (2011) shows that different factors influence E-learning acceptance. Students' attitude toward E-learning is the most important factor in determining their intention to use E-learning. Students' decision to use E-learning also determined by their subjective norm, the influence of people around them. Bendania (2011) shows the factors related to mainly experience, positive attitudes, confidence, enjoyment, usefulness, intention to use, motivation, and whether students had ICT skills are all correlated. Fageeh (2011) demonstrates that informants identified the facilitators and inhibitors of E-learning previously recognized in prior research. He also shows that students are ready to accept technology implementation and shift to an E-learning model of education.

CONCLUSION

In this research, a result of the assessment of e-learning facilities and personnel for teaching science in senior schools in Osun State has been presented and discussed. Based on the findings from this study, it was deduced that computer, scanner, printer and interactive whiteboard are available for teaching science in senior secondary school in Osun State. High cost of computer, fear losing computer, monthly subscription for the internet usage, availability of some pornographic sites, underfunding from our government budgeting and irregular power supply were highest challenges encounter by science teachers in using E-learning facilities in Secondary Schools in Osun State. Study revealed that awareness campaign on the benefits of e-learning within and outside institution and employment of ICT skilled teachers are the measures to be adopted for the enhancement of the utilization of e-learning for teaching science. Hence the study revealed that there is a positive and a significant relationship between e-learning utilization in teaching students and academic achievement in science.

Based on the results of data study and tested hypotheses, it is hereby recommended that:

1. Employers of teachers should give sufficient technical skills to their employees on e-learning tools so as to make them competent with the use of ICT tools.
2. The ministry of education and local government education authority should provide computers, Internet and other ICT tools in all the government own schools so as to encourage teachers use of e-learning
3. Teachers training institutions like institutes of education, colleges of education, National Teachers Institutes and so on should make ICTs course compulsory for all the teachers under training to make them familiar with the use of e-learning resources in teaching and learning.

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