

Utilisation of Information and Communication Technology for E-Learning among Select Secondary Schools in Port Harcourt, Nigeria

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Abstract

Information Technology (IT) has changed the modern workplace because of its development of new knowledge and skills. E-learning is the wholesome incorporation of information and communication technology (ICT) resources, particularly the Internet, into the process of teaching and learning. Although this is relatively new in Nigeria, some institutions are already using it to promote distance education (DE) and lifelong learning. Thus, this study appraises the extent of the use of modern ICT in e-learning in select secondary schools in Port Harcourt, Nigeria. It employed descriptive survey with a tested questionnaire and interview guide as major instruments for data gathering. The findings confirmed that schools in Port Harcourt are just beginning to adopt ICTs as an e-learning method. It also found that the available ICT tools are not in use because the teachers are not skilled in computer application. It is therefore recommended that the government and school authorities should make provision for adequate e-learning facilities in schools and that both teachers and students should be encouraged to make use of the materials to enhance their academic performance and learning experience generally.

Keywords: Computer, E-learning, Secondary school, Students, Teachers, Internet, ICT

Introduction

The ever-increasing utilisation of contemporary information and communication technology (ICT) in the modern-day human society, especially with regards to computers and the Internet cannot be overemphasised. In a global context, ICT is increasingly accessible and influential. Therefore, most countries of the world see ICT as a gate for the raising of educational standards (Noor-UI-Amin, 2013). This increase has impinged on educational systems in terms of aims and methods of teaching and learning. This is partially because, over the past years, information and

communication technology (ICT) resources has drastically changed the way we teach and learn, our beliefs, values, culture, religion and the entire way of life of people. It is obvious that in making an effort to keep up-to-date with some of the new advances, acceptance and applications of these newly discovered technologies to teaching and learning has become very essential. Apart from educational system, the other most relatively affected areas include commerce and industry, manufacturing process, and the entire social system.

In the present day, computers, intranet and Internet services and other ICT resources are used in teaching and learning in schools. ICT can impact student learning when educators understand how to use it and integrate it into the curriculum. Already, the role of ICT and e-learning in teaching and learning process is acknowledged by the Nigeria National Policy on Education (FRN, 2004) as it states that, “the government shall provide facilities and necessary infrastructure for the promotion of ICT and e-learning” (p. 53). The aim of this is that through ICT, images can easily be used in teaching and learning process to improve the retentive memory of the students. This is to also help the teachers to easily explain complex instructions and ensure students' understanding and enable the teachers to create interactive classes that will make the lessons more participatory, enjoyable as well as enhance students' attendance and concentration.

Thus, the modern ICTs provide a good opportunity to reflect on the existing practice of teaching and learning process and consider how schools can retain what is best, while changing to meet the needs and demands of the new world (Taylor & Hogenbirk, 2001). This implies that the new instructional method (e-learning) that uses ICTs provide a different modality of instrument for instruction. Today, schools use a diverse set of ICT tools to communicate, create, disseminate, store and manage information (Blurton, 2000). For the students, e-learning method allows for increased individualisation of learning. It facilitates learning supports and reinforces the introduction of the new process of teaching and learning that conform with the educational demands of the 21st Century knowledge and information society. For instance, e-learning method of teaching can assist skilled teachers to create rich learning environments where students are introduced to new ideas, develop new skills, and expand their perspectives. The informed use of e-learning in teaching and learning process can engage students in new experiences and create a community of learners across geographical boundaries.

Statement of the Problem

Now living in a digital world, it is difficult to think of any event in the contemporary era that is not using ICTs, schools and classrooms inclusive. Studies today, continue to highlight the opportunities and potentials of ICTs for enhancing the quality of education (UNESCO, 2003). Notwithstanding the healthy potentials of ICTs in e-learning to facilitate and make teaching and learning easy and homely, its use as a

method of teaching and learning in the secondary schools in Port Harcourt and Nigeria, in general, seems to be very poor and at its earliest stage. There are many challenges concerning the efficiency and sustainability of the use of ICT in e-learning efforts in secondary schools in Port Harcourt. It is against this backdrop that this study critically examines the extent of the use of ICT in e-learning method of teaching and learning in secondary schools in Port Harcourt. The paper also seeks ways in which this new method could be maximally employed to make teaching and learning more participatory in order to enhance the students' academic performances and general learning experience.

Objectives of the Study

The study sought to:

1. Find out the ICT tools that are available for teaching and learning processes in the select secondary schools in Port Harcourt, Nigeria.
2. Ascertain whether the available ICT tools are currently used by both teachers and students in select secondary schools in Port Harcourt, Nigeria.
3. Determine the extent to which ICT is used for E-learning and teaching in the select secondary schools in Port Harcourt.
4. Find out the prospects and challenges of applying ICT in e-learning method to teaching and learning in select secondary schools in Port Harcourt, Nigeria.

Conceptual Review

Information and Communications Technology

According to Young (2012), Information and Communication Technology (ICT) is a term that describes types of technology that are used specifically for communications. Although ICT is like Information Technology (IT), it focuses more on technology that deal with communication, like cell phones, the Internet and wireless networks, among others. Within a very short time, the modern information and communication technology has become one of the basic building blocks of the contemporary society. Both developed and developing countries now regard the understanding and mastering of basic skills and concepts of ICT as part of the mainstay of education (Anderson & Weert, 2002). ICTs have created a "global village," in which people can communicate with others across the world as if they were living next door. For this reason, ICT is often studied in the context of how modern communication technologies affect society. Thus, ICT refers to technologies that provide access to information through telecommunication technologies. These include as pointed out earlier; the Internet, wireless network, cell phones, and other communication media.

Understanding the Concept of E-learning

Electronic learning (e-learning) can simply be regarded as using information and communication technology in the teaching and learning process by the student with or without a teacher. It is all about learning that occurs through the use of a computer and other technologies. Olaniyi (2006) states that “the use of network technologies to create, foster, and deliver instructions facilitate learning anytime and anywhere. It is also the delivery of individualised, comprehensive, dynamic learning content in real time, aiding the development of communities of knowledge, linking learners and educators with experts” (p. 3). Similarly, Aboderin & Kumuyi (2013) hold that e-learning could be regarded as the acquisition of knowledge and skill using electronic technologies such as computer and the Internet. In other words, e-learning is a method of instruction that permits alternative approaches to curriculum implementation in an ICT age. This is why Richmond (1997) examines that there is a great connection between the curriculum and ICT and there are three major areas that technology can influence learning. They include:

1. Presentation, demonstration and the implementation of data using productivity tools.
2. Use of curriculum - specific applications such as educational games, drills and practice, simulations, tutorials, virtual laboratory visualisation and graphics, representations of abstract concepts, musical composition and expert systems.
3. Use of information and resources on CD-ROM, the online encyclopaedia, interactive maps and atlases, electronic journals and other references.

Aboderin & Kumuyi (2013) argue further that, there are two major forms of e-learning: synchronous and asynchronous. On the one hand, the synchronous form has comprehensive features that allow for interactivity between the learning content and the learners. It has in-built features like the forum chatting and audio-effect. In distance learning for instance, where students are separated from the teacher, asynchronous form of e-learning helps to provide multi-outlet opportunities to meaningfully engage the learner and therefore aids assimilation and comprehension.

On the other hand, an asynchronous form of e-learning is the direct opposite of synchronous form. Whereas, the latter by design has multifarious features, the former does not. It only presents the learning content for the students to read, adopt and download if need be. Also, whereas synchronous e-learning allows for immediate feedback as much as possible, asynchronous may not necessarily allow for immediate feedback. Looking at the features of the types of e-learning, one can say that secondary schools students will benefit more from the synchronous type of e-learning than asynchronous e-learning.

E-Learning Method in Nigerian Secondary Schools

The increasing use of communication technologies for enhancing teaching and learning arises from the need to overcome challenges of schooling and teacher training in many parts of the world. According to Taylor & Hogenbirk (2001), ICTs have already had a significant impact on education in many countries around the world. They view that education today should be seen as a priority for both the developed and developing countries. In Nigeria, for instance, the Federal Government is aware of the conspicuous role of ICTs in the modern world, (National Policy on Education, 2004). To actualise this goal, the National Policy on Education (2004), states that government will provide basic infrastructure and training at the primary school level. At the junior secondary school, computer education has been made a pre-vocational elective, and it is a vocational elective at the senior secondary school. It is also the intention of the government to provide necessary infrastructure and training for the integration of ICTs in the secondary school system.

Again, faced with the need to rapidly expand and improve educational provision, and to achieve the Millennium Development Goals (United Nations, 2010), many countries including Nigeria have adopted the use of technologies for teaching and learning possess in the school system. Shohel and Kirkwood (2012) point out that in order to achieve the United Nations Millennium Development Goals; many countries have attempted to exploit the potentials of e-learning in education. Kukulsa-Hulme (2009) claims that there are numerous examples involving the use of recorded media such as audio-visual CDs and tapes, in particular, to provide 'authentic' language in the process of teaching and learning.

Many schools in Nigeria have introduced ICTs and e-learning for educational purpose, however, their effectiveness and sustainability have tended to be limited. There are many challenges and problems regarding the introduction of technologies for enhancing teaching and learning in developing nations like Nigeria. For instance, the results of studies conducted by Effiong (2005), Jegede & Owolabi (2008) and Nwana (2012) revealed that ICT and e-learning facilities such as computers, computer labs, printers, scanners, e-books, textbooks, workbooks and books on ICT are not available and not in use in Nigerian secondary schools. In like manner, the studies carried out by Seiden (2000) and Uhaegbu (2001) showed that, Nigeria shows a low level of usage of ICT equipment and facilities in e-learning and teaching in secondary schools.

Apart from the unavailability of ICTs tools in secondary schools, Goshit (2006) found out that inadequate ICT manpower in the schools was another main problem facing Nigeria and its ICT programme. In a study he carried out, he found that 91 respondents forming 52% of the total respondents indicated lack of manpower as a major problem to ICT application. Similarly, Ighoroje & Ajayi (n.d) study revealed that 70 respondent (40%) of the total respondents pointed out that the poor perception of ICTs among teachers and administrators is a major inhibitor to Nigeria fully embracing ICTs as a method of teaching and learning in schools. Adomi, Okiy

and Ruteyan (2003) also reported that 75% of the teachers in the NEPAD's e-Schools Project have no or very little experience and expertise regarding ICTs in education.

Furthermore, various scholars already found that electricity failure has been a persistent problem militating against ICT application and use in Nigeria (Adomi, 2005a; Adomi, Omodeko, & Otole, 2004; Adomi, Okiy, & Ruteyan, 2003). This definitely, makes the few schools with ICT facilities unable to use them regularly. Another study conducted by Adomi also found that 83 respondents, making 47% of the total respondents indicated that high cost of ICT facilities is one of the factors which influence the effective utilisation of ICTs in secondary schools (Adomi, 2006). However, a study by Becker (2000) found out that in United States of America, both primary and secondary schools use computers in all subjects, particularly in the teaching of languages and mathematics.

Based on these and many other challenges, many students and teachers still prefer the traditional method of learning to more innovative, technology-based method of teaching and learning. Above all, in a country like Nigeria, where electricity is both unreliable and is still not available to most people, this remains a great challenge to the use of e-learning in Nigeria as a whole. Thus, the extent of the use and effectiveness of e-learning tools in secondary schools in Nigeria generally is the crux of this study.

Theoretical Framework

This study is anchored on the Media Equation Theory of Clifford Nass and Byron Reeves (Reeves & Nass, 1996). The theory explicates that people have a propensity to respond to media the same way they would to a real person or place. According to Asemah, Nwammuo & Nkwam-Uwaoma (2017), this theory envisages that people respond unconsciously and automatically to communication media as if they were human beings. This means that people can react to media by being polite, cooperative, attributing personality characteristics such as aggressiveness, humour, expertise, and even gender – or to places and phenomena in the physical world – depending on the cues they receive from the media.

Reeves and Nass (1996) argue that, “Individuals' interactions with computers, television, and new media are fundamentally social and natural, just like interactions in real life,” (p. 5). Unfortunately, the effects of this phenomenon or interaction on people experiencing these media are often profound, leading them to behave and to respond to these experiences in unexpected ways, most of which they are completely unaware (Reeves & Nass, 1996). Griffin as cited by Asemah *et.al* (2000) rightly put that media are equal to real life.

The relevant of this theory to the study is that ICTs can be given human attribute, which can allow the students and teachers of secondary schools to use the media tools relatively as they would to physical beings for the purpose of augmenting the process of teaching and learning. The ICTs now become a complimentary method

to the existing method of teaching and learning for the benefit of both students and teachers. This process is made possible as a result of the diverse features or potentials of the ICTs to aid e-learning method in secondary schools. Thus, this theory can help teachers to organise and deliver their topics using ICTs tools (e-learning method) which invariably may boost the academic performances and creativity of the students.

Methodology

The study is a descriptive survey carried out among students of secondary school in Port Harcourt, as well as teachers. The 'purposive sampling technique' which is also referred to as 'judgment sampling', was adopted; the key informants (students and teachers) were targeted for sampling (case studies). These participants were strategically taken from the eight secondary schools in Port Harcourt to mirror the present ICT usage in Nigeria secondary schools. The interview guide and choice of interviewees were carefully arranged and chosen in order to deal with different aspects under investigation.

The selected secondary schools in Port Harcourt are: Model Girls' Sec. Sch. Oromunike, D. Line; Community Sec. Sch. Rumopara, Choba Road; Community Sec. Sch. Nkpolu, Mile 3; Community Sec. Sch. Rumuolumeni, Iwofe Road; Government Girls' Sec. Sch. Rumuokwuta, Community Sec. Sch. Okoro/Nodo, Rumuoholu Road, Rumuokoro; Community Sec. Sch. Rumuokurusi; Community Sec. Sch. Eneka; and Community Sec. Sch. Rumuomasi. The population of the study consists of all the students, teachers and heads of schools in eight selected secondary schools in Port Harcourt which stood at 15,600 as at 2015/2016 academic session (Schools Registrars' Records). The actual sample size for the study comprised 576 students and teachers that were purposively determined by the researcher. The 254 male and 290 female students in eight secondary schools in Port Harcourt with 14 male and 18 female teachers were purposively and randomly selected. The schools were purposively chosen because they are government owned and are accessible to the researcher. Sixty-eight (68) respondents were selected using the Availability Sampling technique, from the senior secondary schools. In each school 4 teachers (head and vice teachers with Computer/ICT teachers) were also purposively selected for in-depth interview.

The instruments of data collection were the questionnaire for students and interview schedule for teachers. All the copies of the questionnaire that were administered on the respondents by the researcher were returned but 4 could not be used for computation because of error concerns. So also 4 teachers were not available and disposed for the interview. A thirty-item questionnaire was developed to elicit data on the extent of the use of modern ICTs in e-learning method of teaching in secondary schools in Port Harcourt. Respondents were asked to rate each item using 5-point Likert scale. The values assigned to the different scaling were as follows: SA –

Strongly Agree 5; A – Agree 4; U – Undecided 3; D –Disagree 2; SD – Strongly Disagree 1. Descriptive statistics (Mean) was used in calculating the mean with the formula: $\bar{x} = \frac{\sum fx}{N}$, where x stands for the weight (Likert Scale) and f is the observed frequency.

Since the items were structured on a five-point rating scale, the decision rule was based on the mid-point of the scale, 3.0. Therefore, items with mean scores of 3.0 and above were regarded as agreed or positive responses while items with below 3.0 were regarded as disagreed or negative responses. The face and content validation of the instruments were established through some selected experts in the discipline and through pilot test. The data collected were analysed using frequency distribution and mean and presented in tables and charts.

Data Presentation and Analysis

Survey Data

Here, the results of qualitative data were presented and discussed in parallel with the interview outcomes. The data were analysed based on research questions using simple percentage and mean score.

Table 1: Mean Responses on the Availability of E-learning Tools

S/N (Items)	Availability of e-learning tools	SA	A	U	D	SD	X	Decision
1	Offline or ordinary computers	283	115	15	77	50	3.93	AV
2	On-line or Internet computers	90	40	30	250	130	2.46	NA
3	Multimedia television	0	0	120	240	180	1.89	NA
4	Projectors	260	115	30	95	40	3.85	AV
5	Telephone/wireless Application	80	40	0	280	140	2.33	NA
6	VCD Players	190	160	50	99	41	3.66	AV
7	Digital Library	60	76	30	224	150	2.39	NA
8	Printers	295	107	20	78	40	4.00	AV
9	Scanners	235	130	40	80	55	3.76	AV
10	Educational/courseware: CD-ROM etc.	80	40	80	240	100	2.56	NA

Table 1 as illustrated above, shows that e-learning materials that are available in the schools were Off-line or ordinary computer, projectors, VCD players, printers and scanners while items such as on-line or Internet connected computers,

telephone/wireless application, multimedia television, digital library and educational CD-ROM were not available. This means that some of the ICT tools that could facilitate e-learning method in secondary schools in Port Harcourt were not enough and in most place not available. More so, the responses of the teachers that were interviewed affirmed the shortage of ICT materials in schools. For instance, 73% of the interviewees said that the facilities were not available and that the available few were not enough for the students. In fact, one head of school, Mrs. G. Abati stated that "my school is not computer-based. The few computers in the school are not connected to the Internet." This means that few ICT tools in the school are not used to facilitate teaching and learning process. On Internet connection, eighteen interviewees forming 64% from six schools agreed that their schools were not connected to the Internet. Eight interviewees making 29% said that their schools are in the process of being connected to the Internet while Mr. B. Uche and Mr. A. Ogbona said that "the Internet facility in our school is undergoing repairs." Mr. Uche opined that "the Internet and the ICT tools will be made available to both students and teachers when the repair is completed".

Table 2: Mean Responses on the Extent of Use of the Available Materials

S/N (Items)	Use of Available Tools	SA	A	U	D	SD	X	Decision
11	Offline or Ordinary computers	255	180	20	45	40	4.05	AV
12	Projectors	45	50	80	235	130	2.34	NA
13	VCD Players	90	50	45	205	150	2.50	NA
14	Printers	55	45	0	300	140	2.21	NA
15	Scanners	20	20	70	280	150	2.04	NA

The data in Table 2 above showed that even the ICT tools that are available as revealed in Table 1 in some of the schools, were not used by the teachers and students. Probably the poor state of the tools did not encourage adequate use for learning. However, the only material available and in use is offline or ordinary computers.

Table 3: The extent to which ICT is used for E-learning and teaching in the secondary schools

S/N (Items)	Are ICTS used for e-learning & teaching?	SD	A	U	D	SD	X	Decision
16	Responses	90	40	10	310	90	2.56	NA

The data in table 3 show the responses to item 16 which was to determine the usage of ICTs for e-learning and teaching in the select secondary schools. The result showed a total of 400 respondents that said that the ICT tools were not used to

facilitate e-learning and teaching in their schools. This result confirmed the fact that the ICT tools were not available in the schools.

Table 4: Mean Responses on the Prospects of Application of E-learning Method

S/N (Items)	Prospects of e-learning	SA	A	U	D	SA	X	Decision
17	Using e-learning makes it easy to control large class	358	155	17	7	3	4.59	Agree
18	E-learning makes the lesson easier and enjoyable	295	80	50	70	45	3.94	Agree
19	It enables the learner to learn at his/her own pace and encourages individual learning	275	178	25	15	47	4.15	Agree
20	E-learning makes teaching and learning effective and efficient	295	180	1	39	25	4.26	Agree
21	E-learning makes teaching more interesting and facilitates students centredness	255	178	19	54	34	4.05	Agree
22	Using e-learning makes it easy to achieve lesson objectives	338	119	33	19	31	4.32	Agree
23	E-learning assist learners to develop problem solving skills	230	112	78	69	51	3.74	Agree

From the table above, it is obvious that the potentials of the ICTs in educations cannot be overemphasised. The students' responses also proved this as all the mean ratings were above 3.0. One of the interviewees, Miss A. Obungwa, was very articulate on this when she said that "the use of modern ICTs in education offer a new mode of teaching and learning experience. For instance, it will allow the students to use the ICT tools for self development both in school and at home". Also, one head teacher, Mr. O. Effiong also said that "if the materials are available in school, teachers will be able to prepare and deliver their lesson with ease". Based on all these, it is no longer debatable to say that the use of modern ICTs in education in Nigeria should be indispensable.

Table 5: Mean Responses on the Challenges of Applying to E learning Method

S/N (Items)	Challenges to e-learning method	SA	A	U	D	SD	X -	Decision
24	Lack of qualified teachers	259	148	0	65	68	3.86	Agree
25	Lack of Internet connected computers and slow connectivity	327	129	19	45	20	4.29	Agree

26	Frequent electricity interruption	349	159	0	29	3	4.52	Agree
27	Poor maintenance culture	257	155	48	70	10	4.07	Agree
28	Time constraint	240	130	0	99	71	3.68	Agree
29	High cost of facilities/materials	380	117	25	18	0	4.59	Agree
30	Lack of interest by the teachers	275	140	50	35	40	4.06	Agree

Table 5 above show that despite the roles and potentials of the use of ICTs tools in fostering a better education that is interactive, secondary schools in Nigeria are still faced with many challenges which make the implementation of e-learning methods in such schools very difficult. At present, these challenges are having adverse effects on the students' academic performance and the delivery of lessons by the teachers. For instance, various scholars already found that electricity failure has been a persistent problem militating against ICT application and use in Nigeria (Adomi, 2005a; Adomi, Omodeko, and Otolé, 2004; Adomi, Okiy, & Ruteyan, 2003). This definitely, makes the few schools with ICT facilities unable to use them regularly.

Discussion of Findings

This study established the existence of a positive perception of e-learning method in teaching and learning as a contributing factor towards the delivery of qualitative education to students in secondary schools in Port Harcourt and Nigeria generally. The results from this study show the availability of five out of the ten items listed for e-learning applications. The five items that are available are off-line or ordinary computers, projector, VCD player, printers and scanners. This supports the findings of Akinola (2005) and Nwana (2012) in which only five out of the twelve ICT and e-learning tools needed for Business Education and e-learning application in secondary schools were available. Also, this study is in consonance with the findings of Ikemenjima (2005) and Jegede & Owolabi (2008) that there are infrastructural deficiencies and shortage of facilities, including computers, computer laboratories and online classrooms for the study of Computer Education in secondary schools in Nigeria. This finding is further corroborated by Ndiku (2003) cited by Wims & Lawler (2007) who discovered that insufficient numbers of computers and peripheral devices inhibit the deployment of ICT by teachers. Okwudishu (2005) also discovered that unavailability of some ICT components in the schools hampered teachers' use of ICTs. This problem may be due to underfunding (Enakrire & Onyenenia, 2007).

The findings of this study also revealed the extent of the use of those available e-learning materials for teaching and learning in secondary schools. The study

unfortunately, showed that the few materials that are available are not used for teaching and learning in the schools. This was affirmed by the respondents as indicated in the mean ratings below 3.0 for each of the items. The respondents indicated that the only material available and in use are the off-line or ordinary computers with a mean rating of 4.05. Again, this confirms the results of Effiong (2005), Jegede & Owolabi (2008), and Nwana (2012) that ICT and e-learning facilities such as computers, computer labs, printers, scanners, e-books, textbooks, workbooks and books on ICT are not available and not in use in Nigerian secondary schools.

In a like manner, these findings agree with that of Seiden (2000) and Uhaegbu (2001) that, Nigeria shows a low level of usage of ICT equipment and facilities in e-learning and teaching in secondary schools. However, Becker (2000) found out that in USA, both primary and secondary schools use computers in all subjects, particularly in the teaching of languages and mathematics. Equally, Ojo (2014) found out that private schools in Port Harcourt are computer-based (e-learning) in the process of teaching and learning. This is contrary to the current study in which the public/government secondary schools in Port Harcourt lack the modern ICT materials which can foster the process of e-learning and teaching in schools.

The current study also found that the secondary schools in Port Harcourt were short of qualified teachers to drive the e-learning initiatives. This was evident in greater percentage of the respondent that disagreed and strongly disagreed having qualified teachers to implement the method. Thus, it has the means score of 2.56 which means, they are not enough qualified teachers to implement or facilitate the method of e-learning in the secondary schools. This was in line with Goshit (2006) argument that the main challenge facing Nigeria and the implementation of ICT programme is lack of trained manpower. Some of the teachers interviewed preferred the e-learning method to traditional learning method but many teachers were not trained in the use of ICTs and this makes it difficult for them to implement such initiatives.

No doubt, e-learning method of teaching and learning in schools has a lot of prospects and challenges. These were shown in the greater number of students that agreed with all variables listed on Table 4 as prospects of e-learning in secondary schools. Mrs Chidozie specifically stated that "there is no doubt; the provision of e-learning tools makes performance better. The opportunity of using e-learning as a method of teaching and learning makes performance good but in a situation where there was no access, performance could not be rated". This corroborates the opinion of Adomi & Kpangban (2010) that the adoption and use of ICTs in schools have a positive impact on teaching, learning and research and also stresses the point of Aboderin (2012) that application of ICT in the classroom makes learning very interesting, interactive and easy to deliver. Notwithstanding the excellent contributions of ICTs to e-learning and teaching, the respondents agreed that all variables listed on Table 5 are challenges to effective use of e-learning facilities in secondary schools in Port Harcourt, Nigeria.

In conclusion, it is worrisome that despite the roles ICT tools play in education, secondary schools in Nigeria are yet to extensively adopt e-learning as a method of teaching and learning. Efforts geared towards the introduction and application of e-learning tools in the secondary school system in Port Harcourt is yet to yield the desired results. Challenges such as lack of qualified teachers, lack of Internet-connectivity in the available computers, frequent electricity interruption/power outage, poor maintenance culture, lack of Internet or slow connectivity, time constraint, the high cost of facilities or material, lack of interest among teachers and students and many other challenges militate against the effective utilisation of modern ICTs for e-learning and teaching in secondary schools in Port Harcourt, Nigeria.

Although, this study does not say that there are no qualified teachers in secondary schools in Port Harcourt generally; the qualified teachers that could use ICT for e-learning/teaching are grossly inadequate. In other words, the application and the implementation of e-learning method in secondary schools in Port Harcourt is still very poor and at the infancy stage. For instance, in two of the schools studied, teachers who come to teach ICT classes were employed on part time basis. Moreover, out of the schools studied, only one was able to operate the ICTs tools irrespective of the challenges. Even at that, there were occasions whereby network problems hampered the use of e-learning method for learning in Port Harcourt, Nigeria.

Conclusion and Recommendations

It is obvious that teaching and learning are in transition in the era of advanced communication technologies. The current study confirmed that learning in the 21st century has moved out of passivity into activity in the learning process. As established by the Media Equation Theory, technologies have extended accessible educational opportunities for both students and teachers by enhancing academic performances and fostering easier teaching and learning experiences for both teachers and students respectively.

Though it is evident from this study, that e-learning method of teaching and learning has challenges affecting its effective use, we cannot ignore the truth that this method of learning can make learners' education more productive and qualitative. Thus, the use of ICTS in e-learning and teaching process is an effective aid that could make the teaching and learning a beneficial process to both teachers and learners. Some of the respondents of this study contended that, applying, maintaining and sustaining e-learning method of instruction in the secondary educational system will stand as a catalyst to promote qualitative educational system in the country. Consequently, both state and federal government policies on education should include the provision, monitoring and effective utilisation of modern ICTs for e-learning method in secondary schools across the state and the country at large to give students a better and quality education. Ministry of Education in particular should make effort to post teachers who are skilled in ICTs to secondary schools in order to

impact ICT skills to the students. Also, students and teachers should judiciously utilise the ICT tools available to them to make the process of teaching and learning more interactive leading to improved academic performance of the students.

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