
**E-LEARNING RESOURCES AND OPEN EDUCATION
RESOURCES IN NIGERIA**

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Abstract

E-learning resources are not necessarily Open Education Resources (OER). E-learning resources are learning resources such as computers and internet-based courseware and local and wide area networks. They are also instructional delivery systems which can be provided through any appropriate electronic media. Open education resources, on the other hand, are educational resources such as curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts or any other materials that have been designed for use in teaching and learning and are openly available for use by educators and students without an accompanying need to pay royalties or license fees. While, e-learning resources are mainly electronic devices or technologies, open-education resources are all encompassing, consisting of both electronic and non-electronic devices. This paper therefore, focuses on the e-learning resources of open education resources in Nigeria and suggests ways of developing and expanding their areas of application in the educational process.

E-learning is gradually taking the centre stage in the drive to provide instructions that can be student-centered within the educational setting (Akinwale, 2014). Both the developed and developing worlds are also moving away from the conventional methods of teaching and learning to a more controlled environment that is centered on technology integration. The educational world is therefore, experiencing a transformation driven by the convergence of e-learning devices and wireless communication technologies (Shih, 2005). The concept e-learning can provide an alternative to conventional style of learning i.e. teacher-centered instruction. It can also provide an opportunity for students' input and grant the freedom of deciding when and how to learn, which tends to support the ideology of constructivist-school of thought (Bolaji, 2011). E-learning could take several forms like computer-based learning, computer-managed instructions, distance learning, in-learning and so on. The e-learning approach to instruction could be synchronous or asynchronous. It could be synchronous when learning takes place at a go through access to immediate internet facilities or otherwise when it is asynchronous (Justin, 2012).

The synchronized form of e-learning has comprehensive features that allow for interactivity between the learning content and the learners. It has inbuilt features like the forum chatting and audio-effect. In distance learning, students are separated from the teacher, therefore, synchronous form of e-learning aims at providing multi-outlet opportunities to meaningfully engage the learner and therefore, aid comprehension

(Thompton, 2012). The asynchronous form of e-learning only presents the learning content for the students to read, internalize and download, if need be. It does not also allow for immediate feedback whereas synchronous e-learning allows for immediate feedback as much as possible.

Bolagi (2011) designed and developed a multimedia instructional package in mole concept for Nigerian Chemistry Students and it is operated on the asynchronous approach to e-learning system. The design and development of the multimedia instructional content was based on Reeves (1994) multimedia design model and it was evaluated by adopting Dick, Carey and Carey (2005) evaluation stage of the Instructional Design Model (IDM). The transfer of this e-learning instructional content of multimedia instructional package on mole concept to a mobile learning platform is important in order to meet up with current trends in the adoption of technology for learning and bringing out the advantage of reusing an e-learning instructional content for other technologies to improve learning (Ukadike, 2012).

E-Learning Resources

E-Learning resources could be conceptualized as computers and internet-based courseware and local and wide area networks. The computers and networking technologies have by creating conditions for rapid connections, opened up possibilities for many different educational and learning opportunities (Grovinde, 2010). With the computers in the classroom, teachers would be able to demonstrate a new lesson, present new materials, illustrate how to use new programmes and show new websites. A web page can easily be designed for the class and displayed. Teachers can even post homework assignments, students' work and games. Many students now know how to use the computers and navigate their way through a website.

Yekini (2008) stated that "E-mail and the internet could be used to transmit information to and from remotely inaccessible areas very quickly. New technologies can be used to facilitate education through distance learning and this will equally aid the crucial goal of development of local content with the populace actually depending on the extent of their educational status". The web 2.0 as a potential resource has certainly entered education, carrying with it the notion that users add values through their participation. It has changed the web browsing culture from passive to participation with easily - created user-generated content (UGC). This call to users to become content creator, radically challenging the traditional authoritatively driven teaching and learning model (Grabson, 2009). Web 2.0 structure and networking applications allow users to produce more easily and widely share user-generated content (Ukeje, 2012).

It is pertinent to note that computer as a very vital e-learning resource has been a useful tool in teaching and learning (Taiwo, 2010). The experience of introducing computers in educational settings all over the world and over the past decades show that the educational benefits of computers cannot be underestimated (Yusuf, 1999). The Federal Government of Nigeria recognised that the use of the computer is a strategic

imperative for national development. The National Commission for Colleges of Education (NCCE) has therefore, made the acquisition of basic computer skills part of the national minimum standards for teacher education at the colleges of education (Akinloye, 2011). With the new NCCE curriculum, all students in colleges of education are expected to achieve minimum computer standard as a mandatory component in pre-service programmes. In 2003, NCCE directed all lecturers in colleges of education to acquire computer literacy and proficiency in computer (Adeyanju, 2012).

The use of computers makes lessons more interesting, more enjoyable for teachers and their students, more motivating and more supportive of productive learning. The most critical factor in the successful integration of computer in education is the extent at which educators (lecturers) are able to prepare teachers with the required knowledge and skills to utilize computers effectively (ICT in Education, 2004). Although, there are no clear synergies in defining computer proficiencies for teacher educators, they need training not only in computer literacy, but also in the application of various kinds of educational software in teaching and learning (Ololube, 2009). Olasedidun (2011) stated that appropriately well functioning computer is of vital importance to tertiary education because it has the potential to streamline and reduce administrative task, expand access and improve the quality of instruction and learning at all levels, and vastly broaden access to information and data across the globe. Michael (2008) explained that the adoption of computer technology into the practice of education is not something that began with the emergence of new digital services. Computer integration means using computers as tools in teaching better than the corresponding traditional tool (James, 2007).

The use of computers offers greater information access, greater communication via electronic means, increased cooperation and collaboration, cost effectiveness and pedagogical improvement through simulations, virtual experiences and graphic presentations (Badmus, 2013). In a study on impact of accessibility on adaptation and use of electronic materials among scientists and engineers in universities and colleges, the results showed that among the system and professional factors that influence adoption and use, accessibility was the key factor (Abels, Liebsher and Denman, 2003). It is therefore, one thing for lecturers to possess the required proficiency to use and be favourably disposed to the use of computer or ICT resources, it is quite a difficult thing for the resources to be available for use at the time they are needed. However, various research studies identify several reasons for lack of access to technologies. Becta (2009) states that the inaccessibility of computer technology resources is not always due to the non-availability of the hardware or other ICT materials within the school, it may be the result of one of the number of factors such as poor organization of resources, poor quality hardware, inappropriate software or lack of personal access by teachers.

Busari (2003) conducted a study to find out how adequate teacher trainers were on the use of computers and other elements of ICT, using all the tertiary institutions in

Lagos State. One of the items on the questionnaire asked if the teacher trainers had the ability to operate the computer, 57.9 percent of the respondents answered Yes, while 15.8 percent answered No. The remaining 26.3 percent were uncertain whether they could operate computer. Adeyanju (2012) also reported a research conducted by Chukwu, Ajare and Afolabi (2008) on teachers' literacy level, availability of computer for instruction and the level of the use of computer in teaching in various departments in colleges of education in Plateau State. The result of the study showed that 28.3 percent of the teachers were computer literate while 71.7 percent were computer illiterate. In a bid to achieve high levels of proficiency in computer usage and application by lecturers, training is inevitable (Okumu, 2009), Ifinedo (2005) carried out a research to determine the readiness of some African countries to fully embrace the new information technology. The countries are Botswana, Cote d'voire, Egypt, Ghana, Kenya, Mauritius, Nigeria, South Africa and Tunisia. The result of the research revealed that Africa is right below the ladder in the global network economy. Bondaryk (2006) noted that the adoption of any learning tool is dependent on awareness, willingness and ability to use it.

Computer has a wide application in education. Computer-Based Education (CBE) and Computer Based Instruction (CBI) are the broadest terms and can refer to any kind of computer used in educational settings, including drill and practice, tutorials, simulations, instructional management, supplementary exercises, programming, database development and so on.

Basic Issues

The role of e-learning in teaching and learning cannot be over emphasized. It is a widely discussed issue in the contemporary educational arena. It is upheld as a model which when adopted and applied could enhance teaching and learning (Tajudeen, 2011). It could facilitate the transfer of many types of information and could be an effective means of communication in 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, Jones, Barker and Schalk, 2009). Conceptually, it (e-learning) is the application of computer and information technology in teaching and learning process. It comprises of computer and ICT materials and applications which enhance 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 (Adesoji, 2012). On a rather simplistic note, it (e-learning) has to do with 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.

The essence of the application of e-learning resources is to provide teachers and students the opportunities to develop capacities for high quality learning and to increase their ability to introduce innovation in teaching and learning process. It is also

to provide productive teaching and learning in order to increase people's creative and intellectual resources, essentially in today's information society (Aduwa-Ogiegbeen and Iyanmu, 2005). Through e-learning devices, teachers are able to focus on relevant assignment for discussion between students and teachers and among students (Ozioma and Offordile, 2011). E-learning devices or resources such as computer, web, television, projectors, internet, multimedia and so on provide easy access to qualitative learning materials and contribute immensely to the learning process (Abidoye, 2010). In an effort to brace up to the challenge in the contemporary world of computer education, the Federal Government of Nigeria enacted a policy on education in 1988 to establish pilot schools and diffuse the innovation, first, to all secondary schools and later to the primary schools in Nigeria (Okebukola, 1997). The National Policy on Education (2004) states expressly that the government shall provide facilities and necessary infrastructures for the promotion of ICT and e-learning in schools. This is a tacit attestation to government's recognition of the importance of ICT in curriculum implementation.

The growth in internet technology and its application in education have brought about great transformation in teaching and learning and particularly made the entire process less tasking, more effective, result oriented and engendered an avenue for showing idea and information (Oye, Iahad, Madar and Ab. Rahim, 2012). The development of new innovative curriculum delivery strategy in the education sector has resulted from the revolution in Information Technology, particularly in the area of Internet and Computer Technology. Today, learning devices or resources such as power point presentation, e-books, computer-based training and web based training, video-tutorials and so on can be used to deliver well researched and well packaged teaching materials prepared by teachers to the students. Here in Nigeria, the availability and application of these e-learning infrastructure cannot easily be achieved and therefore, pose a big challenge to the educational sector.

E-Learning Resources as Tools for Teaching and Learning

Many research studies revealed that e-learning can enhance instructional process and facilitate students' learning. These also have positive effects associated with technology - aided instruction (Oziome and Offordile, 2011). The advanced nations such as United State and the European Union have made computers very accessible to their citizens and for use in teaching and learning (Harper, 1987). Today, the developing world is striving to do same. The governments have initiated internet connectivity and technology training programs (Aduwa Ogiegbaen and Iyanmu, 2005).

Lau-Ho (2005) in his study stated that teachers can download relevant lesson plans for use in curriculum delivery, obtain online tests and quiz samples, guide students to read learning materials on screen e.g. files, links and even use computer simulations for demonstration lessons. Aburime (2010) stated that global interconnectedness enabled by information technology, calls for new skills, knowledge and ways of learning to prepare students for living and working in the 21st century. E-Learning facilities do not only help students but also assist teachers in the preparation

of teaching materials and demonstration of equipment and concept (Okoroh, 2006). It has therefore, become necessary for individuals and educational institutions to imbibe the culture of e-learning giving the rapidly changing world of e-commerce, e-government, e-banking and so on.

The e-learning approach has the capacity to provide higher interactive potentials for users to develop their individual, intellectual and creative ability (Shavinina, 2001). Information and communication technologies are being used in the developed and developing world for instructional functions; and computers and internet perform a host of functions in teaching and learning. Nations are adding computer literacy, reading and writing literacy as skills students need for succeeding in a technologically developed world (Thomas, 1987). E-learning resources enhance the development of the capacities of teachers to carry out high quality research and teaching (Nwana, 2009). E-learning resources also provide information about staff and participants, subscriptions for examinations, marking of students' examination scripts, communication about the instructional process, self-assessment, collaborative research activities and collaborative learning (Aburime and Uhomoibhi, 2010). E-learning also has the potentials that will offer teachers improved method of researching. The library function of using indexes to find articles or journals, can be made very easy through the use of goggle search on the internet, which will provide extensive list of articles, publications and even topics by different authors just in a short time frame (Akinwale, 2012).

Open and Distance Learning

Open and Distance learning is a shift from content to learner (Wilson, 2006). It is an amalgamation of two approaches which focus on expanding access to learning (Freeman, 2004). In ODL philosophy and practice, the terms represent approaches that focus on opening access to education and training provision, freeing learners from constraints of time and place and offering flexible learning opportunities to individuals and groups of learners (UNESCO, 2002). It is conceptualised as a multidimensional concept aimed at bridging the time, geographical, economic, social, educational and communicative distance between students and course ware and students and peers. ODL focuses on removing barriers to access learning, flexibility of learning, student-centeredness, supporting students and constructing learning programmes with the expectation that students can succeed (UNISA, 2008).

Most definitions of ODL pay attention to the following characteristics: a way of providing learning opportunities characterised by the separation of teachers and learners in time or place, or both time and place and learning that is certified in some ways by an institution. The use of a variety of media is employed, including print and electronic two-way communication that allow learners and tutors to interact, the possibility of occasioned face-to-face meetings and a separated division of labour in the production and delivery of courses. (The Commonwealth of Learning (COL) (2000). Moon, Beach and Stevens (2005) define ODL as the open learning approach, which

when combined with distance education methodologies, is often referred to collectively as open and distance learning. ODL often makes use of several different media. Students may learn through print, broadcasts, the internet, through occasional meetings with tutors and with other students, cassette recordings, computer-based materials, computer interaction, video conferencing and face-to-face learning. The term ODL has become an internationally preferred label of innovative, non-traditional modes of delivery whose defining purpose is to overcome barriers to success (Waghid, 2005).

Relevance of ICT in ODL

The use of distance education and ICT can improve the quality and variety of the resources and support available to teachers, opening up new avenues to professional development, changes in knowledge, skills, attitudes and the mindset of teachers and head-teachers (Robinson, 2008). While there is an increase interest in the integration of technology in teaching and learning, very little remains known about how the use of ICTs is changing students' approaches to learning (Rumble, 2000). According to Perraton (2000), technology has spurred the development of ODL. Students can learn by means of computers where technology is used as a tool that can be applied to a variety of goals in the learning process and can serve as a resource to help develop higher-order thinking, creatively and research skills (Ringstaff and Kelley, 2002).

The ICT used in distance education systems includes e-mails, telephone, face-to-face sessions, radio, television, audio and video cassettes, compact discs and other computer conventions, and teleconferencing systems. Online technologies can help address uses of educational system equity and social exclusion and open up accessible educational opportunities (Gulati, 2008). Modern developments of innovative technologies have placed more demands on teachers to learn how to use those new technologies in their teaching (Robinson and Latchem, 2003). A variety of ICTs can facilitate not only delivery of instruction, but also the learning process itself (Jung, 2005). ICT can also promote international collaboration and networking in education and professional development. ICT range of options such as videoconferencing through multimedia delivery to websites, can be used to meet the challenges teachers face today. ICT may be able to provide more flexible and effective ways for lifelong professional development of teachers (Oguntayo, 2009).

Arguably, the developed countries move to wider participation and lifelong learning for non-traditional learners and are closely linked to the development of a string knowledge economy (Peters, 2010). In contrast, however, the developing countries' motives for distance learning are to provide basic and literary education to a large number of poor people (Zhang, 2009). Advances in e-learning in developing countries have been reported and several determinants may influence e-learning success in these countries (Ibid, 2009).

Recently, many teachers in Africa have been found to use ICT in developing new curricula, to get guidance and support in putting it into practice, for communication, cooperation and conscious inquiry into their lessons, to develop new

skills in using technology, to develop new teaching approaches, to create a humanistic learning environment, to share resources, to exchange experience and to develop together (Haddad, 2007). Research has also indicated that ICT can change the way teachers teach and that it is especially useful in supporting more student-centered approaches to instruction and in developing the higher order skills and promoting collaborative activities (Haddad, 2007).

There have been several efforts around the world to effectively use technology to train teachers to use technology as tools for enhancing teaching and learning (Jung, 2005). Today, best practices in using ICT in teaching and learning are now being shared among teachers scattered around the world.

Open Educational Resources

Open Educational Resources are freely accessible licensed documents and media that are useful for teaching, learning and assessing as well as for research purposes. It is the leading trend in distance education / open and distance learning domain as a consequence of the openness movement (Jawal, 2009). Some people though, consider the use of open file format to be an essential characteristics of OER, this is not a universally acknowledged requirement.

There are many numerous working definitions of OER. William and Flora Hewlett Foundation defines it as "teaching, learning and research resources that reside in the public domain or have been released under an intellectual property license that permits their free use and re-purposing by others. Open educational resources textbooks, streaming videos, tests, software, course materials, modules and any other tools, material or techniques used to support access to knowledge".

OER is also defined by the organization for Economic Cooperation and Development (OECD) as "digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research. OER includes learning content, software tools to develop, use and distribute content and implementation resources such as open licenses". (Attan, 2007). It is also concerned as "materials offered freely and openly to use and research (Johnson, 2010). It is also defined as educational resources (lesson plans, quizzes, syllabi, instructional modules, simulations, etc) that are freely available for use, reuse, adaptation and sharing (Ibid, 2010)".

In its simplest form, the concept of open educational resources describes any educational resources (including curriculum maps, course materials, textbooks, streaming videos, multimedia applications, podcasts and any other materials that have been designed for use in teaching and learning) that are openly available for use by educators and students without an accompanying need to pay royalties or license fees (Bantain, 2012). OER has emerged as a concept with great potential to support educational transformation. While its educational value lies in the idea of using resources as an integral method of communication of curriculum in educational courses (i.e. resource – based learning), its transformative power lies in the ease with which

such resources, when digitized, can be shared via the internet. (Renchard, 2008). Mostly, there is only one key differentiator between an OER and any other educational resource: the license. Thus, an OER is simply an educational resource that incorporates a license that facilitates reuse and potentially adaptation, without first requesting permission from the copyright holder (George, 2013).

E-Learning Resources of Open Education Resources

E-learning has been conceptualised as the comprehensive framework for the delivery of education using information and communication technology as tools. It is presented to learners through ICT advances in computer hardware and software facilities and communication and networking system. It indeed comprises of all educational activities that are carried out by individuals or groups working online or offline and synchronously or asynchronously through network or stand-alone computers and other electronic devices (Madu, 2006). For easy comprehension, it can be dubbed as web learning, virtual learning, online learning, network learning or distributed learning. It could use the internet technology to deliver digital content and engender a learning environment for the teachers and the students.

It (e-learning) could also be seen as a broad combination of contents and infrastructure to use computers and networks to scale or improve one or more significant parts of a learning value chain, including management and delivery (Nwokolo, 2015). It is imperative to underscore the importance of e-learning as a veritable electronic learning covering a wide set of applications and process such as web-based learning, digital collaboration and computer-based learning. It also includes satellite broadcast, interactive Tv and CD-ROM, delivery of content via internet / extranet and audio and video tape (Ibid).

Olabode (2012) stated that giving the diverse nature of e-learning resources, particularly the ICT, e-learning has become a knowledge provider and a veritable tool for the enhancement of intellectualism. The resources are freely accessible license, documents and media that are useful for teaching, learning, and research. They include open educational resources, textbooks, streaming videos, tests, software, course materials, modules and techniques for knowledge acquisition (Afikpo, 2014). They are also lesson plans, quizzes, syllabi, instructional simulations that are available for use and adaptation. They include also, podcasts, multimedia applications and internet. The major e-learning resources are computers, web, television, projectors, multimedia, internet and several other applications (Maaji, 2009). They all come under the aegis of Information Communication Technology (ICT). The difference between the two concepts is the area of nomenclature, while e-learning resources fall within the confines of electronic technology, open education resources encompass both information technology and several other applications aimed at improving teaching, learning and research.

Specifically, however, the application of computer for instructional delivery and several other computer-based learning application fall within the ambience of e-

learning. But generally, e-learning resources and open educational resources are relatively similar but conceptually different (Abiodun, 2015).

Open Educational Resources: Need for Expansion and Development

The development and promotion of open educational resources is often motivated by a desire to curb the commodification of knowledge and provide an alternative or enhanced educational paradigm (Salisu, 2015). UNESCO is taking a leading role in making countries aware of the potential of OER. The organization has instigated debate on how to apply OERs in practice and chaired discussions on this matter through its International Institute of Educational Planning (IIEP).

OER Africa is an initiative established by the South African Institute for Distance Education (SAIDE) to play a leading role in driving the development and use of OER across all education sectors on the African continent. The OER project focuses on the use of OERs in teacher education on sub-Saharan Africa.

In 2003, the ownership of Wikipedia and Wiktionary projects was transferred to the Wikimedia Foundation, a non-profit charitable organization whose goal is to collect and develop free educational content and to disseminate it effectively and globally. In 2008, the OER Commons Teachers Training Initiative was launched to advance open educational practices and building opportunities for systemic change in teaching and learning. In August, 2006, Wiki Educator was also launched to provide avenue for planning education projects built on OER, creating and promoting open education resources (OERs) and networking towards funding proposals (Wiki-Educator, 2006). Its Wiki-Educator's Learning Content Project built skills in the use of Media Wiki and related free software technologies for mass-collaboration in the authoring of free content and claims to be the world's largest wiki training project for education (Wiki educator, 2010).

In 2011-2012, academicians from Legon, Ghana, created OER portal with free resources on macro and micro economics and soft skills which were made available for global learners. In 2006, the African Virtual University (AVU) released 73 modules of its Teacher Education Programs as open education resources to make the courses freely available for all. In 2010, the AVU developed the OER Repository which has contributed to increase the number of Africans that use, contextualize, share and disseminate the existing as well as future academic content (Bade, 2011).

Many developing countries in Africa particularly Nigeria, have been strategizing on the need to develop the nation's educational resource base as a way of contributing to the global emphasis on open educational resources development. The establishment of educational resource centers in all the states of the Federation was geared towards achieving this goal. Though, there are Institutional Resources Centres which are often referred to as Learning Resource Centre (LRC) and Centre for Educational Technology (CETs), and Government Resource Centres known as Educational Resource Centre (ERC) and National Educational Institute (NEI), they all perform similar functions such as acquiring and circulating educational materials,

providing professional assistance to teachers and students in the design, production, usage of instructional materials, and administration of media materials for improvement of teaching and learning.

Conclusion / Recommendations

The paper provided simple and practical definitions of e-learning and Open Educational Resources as freely available resources used by educators and learners. E-learning is particularly seen as a new educational concept using the internet technology and it delivers the digital content and provides a learning- oriented environment for the teachers as students. It is an electronic learning covering a wide set of applications and processes, such as web-based learning, computer-based learning, virtual classroom and digital collaboration. Some of the resources include web, multimedia, computer, projectors, television, Intranet, content and instructional methods delivered through CD-ROM, audio and Videotape, Satellite broadcast and interactive.

Open Education Resources, on the other hand, also consist of the e-learning resources most of which are today available in vast quantities in Universities across the world. No one is generating any meaningful commercial return from these resources, yet, many more are being produced every week. However, these represent a common intellectual capital that should be unlocked to drive and support education rather than being kept hidden away from sight.

References

- Abels, F.N. (2003). *A Handbook of Technology Education* (Second Edition) Lagos: Media and Graphics Centre.
- Dick, J.J. (2005). *Contextual Factors Affecting Learning*. Thousand Oaks, California: Sage.
- Federal Republic of Nigeria (2004). *National Policy on Education: Revised Edition*, Abuja: NERDC Press.
- Freeman, O. (2004). *Open and Distance Learning: Managing Open and Systems*. London: Kogan
- FRN. (2004). *National Policy on Education* (4th ed), Lagos, Nigeria: NERDC Press.
- George, R. (2013). *Open Education Activities: Challenge of Innovation*. London: Kongon Press.

Grabson, D.G. (2005). Designing and Conducting Research in Education. *The Internet and Higher Education*. 3(6 - 10), 104-112.

Grovinda, S.A. (2010). Utilization of Information and Communication Technology (ICT) for Education in Africa. *Journal of Information and Knowledge Management* (4), 290 – 299.

Harper, D.O. (1987). The Creation and Development of Educational Computer Technology. In R.M. Thousand and V.N. Kobayashi (EDs.), *educational Technology: Its Creation, Development and Cross-Cultural Transfer*, Oxford: Pergamon Press, 35 – 36.

ICT in Education (2004). *Information and Communication Technologies in Teacher Education: A Planning Guide*. Retrieved February 10, 2012 from <http://www.unescobk.org/index.php?id:3806>.

Ifinedo, A. (2005). Measuring Africa's Readiness in the Global Networked Economy: A Wine-Counting Data Analysis. *International Journal of Education and Development Using ICT*. 1(1) pp.53 – 11. Retrieved on March 14, 2012 from <http://www.ijedict.dec.uwi.edu/include/getdoc/phd?id=241&article=12> and mode.

Jawal, S.O. (2009). *Development and Application of Open Educational Resources for Instruction*. New Jersey: Prentice Hall International Inc.

Johnson, O.R. (2010). *Technology-Enhanced Learning for the Sixth Graders*. SAS Institute, Cary, NC.

Jung, D.Y. (2005). Learner Support Services for Institutional Transformation. *Journal of Distance Learning Administration*, xiv (2).

Justin, A.A. (2012). *Acceptance of web-based learning Technologies (WLT)*. New York: Routledge.

Krauth, B.D. & Carbajal, F. (2009) *Open Education Resources*. New Jersey: Merrill Prentice Hall.

Lau-Ho, L.K. (2005). Information and Communication Technologies in Home Economics: What is the situation? Retrieved from <http://repository.ied.edu.hk/displace/handle/2260.2/8351>

World Educators Forum ISSN: 2350-2401

Ludwig – Hardman (2010). Innovation Policy: New Dimension. *Journal of Computer Assisted Learning*, 25, 19 – 36.

Maagi, A.A. (2009). Web-Based Training Programme. *Journal of Science Teachers' Association of Nigeria (STAN)*, 24 (4) 200 – 214.

Madu, S. (2006). *E-learning: A Guide Book of Principles, Procedures and Practices*. Asia: Commonwealth of Learning

Michael, A.A. (2008). Building Interactivity into Web Courses. Tools for Social and Instructional Interaction Literature Review. *Educational Technology*, 37 (4) 36 – 49.

Nwana, S.E. (2009). Impediments to Effective Supplementation of the National Open University in an Age of Computer Technology. *Journal of Research and Production*, 15 (1), 180-188.

Nwokolo, J.O. & Nande, B. K. (2015). Comparative Effects of the use of E-Learning in Teaching Technical Vocational Education and Training (TVEI) for Job Creation and Employment Opportunity, 3rd International Conference Proceeding, School of Science and Technology Education, FUT, Minna, 4th – 7th Oct., 2015

Nwokolo, J.O. & Sunday Patrick, U. (2015). The Effects of Computer Assisted Instruction and Computer Enhanced Video Games on Pupils' Cognitive Learning in Brighter School. 3rd International Conference Proceedings, School of Science and Technology Education, FUT, Minna.

Oguntayo, P.G. (2009) *Research in Educational Technology Media*. Ibadan: Heinemann Educational books.

Okebukola, P. (1997). Old, New and Current Technology in Education. UNESCO Africa, 14(15).

Okoroh, L. (2006). *Information and Communication Technology*. Lagos: Macmillan Publishers.

Okun, H.O. (2009). *Introduction to Educational Technology*. Ilesha: Onibonaje Publishing Company.

- Olabode, O.T. (2012). Impact of Structured Learning Programme on Children's Academic Growth in Oyo State. *Journal of Educational Technology Teachers*. 4(2) 44 – 58.
- Olasedidun, O.K. (2011). The Effect of Information Communication Technology (ICT) on the Reading Habit of Colleges of Education Students. Being a paper in the Proceedings of the 32nd International Conference of Nigeria Association of Education Media and Technology (NAEMT). Vol. 1. Pp 178 – 181
- Ololube, P.O. (2009). Appraising the Relationship between ICT usage and Integration and the standard of Teacher Education Programs in a Developing Economy. *Instructional Journal of Education and Development Using Information and Communication Technologies* 2(3), 70 – 85.
- Oye, N.D., Jahad, N., Madar, M.J., and Ab-Rahim, I. (2012). The Impact of E-Learning on Students' Performance in Tertiary Institutions. *International Journals of Computer Networks and Wireless Communications*, 2(2), 39 – 53.
- Ozioma, C.A., and S. Offordile. (2011). Strategies for Improving the Use of Electronic Teaching and Learning (E-Learning) for Vocational Education in Tertiary Institutions of Anambra State, Nigeria. *Mediterranean Journal of Social Sciences*, 2(6), 123 – 129.
- Perraton, M.O. (2000) *New Information Technology and Learning Proficiency*. Washington, DC: Economic Development Institute.
- Peters, K.C. (2010). *Philosophy of Education*. Jos: Fab. Education Books.
- Rajah, O.D. (2009). *Education in Africa*. New York: Frederick A. Praeger Publishers.
- Reche, T.J. (2009). Media Centre Development: Perspective Innovation. Jingsing Technology Institute, hong kong, LACA, B.S.
- Reuchard, C.E. (2008). New Technologies for Teaching and Learning: challenges for Higher Learning Institutions in Developing Countries: *International Journal of Education and Development* 4 (7).
- Ringstall, D., and Kelly, A.C. (2002). Distance Education and Engaged Learning Habits. *Adult Education and Development*, 90, 28-34
- Robinson, A.A. and Letchem, S.A. (2003). Education in Sub-Saharan Africa: Perspective for Change: *new Direction for Institutional Research*, 119, 22-40

- Robinson, L. (2009). A Summary of Diffusion of Innovations. Retrieved August 12, 2012 from <http://enablingcarge.posterous.com>.
- Rumble, P.S. (2010). Integration of Technology in West African Schools: *Journal of Teacher Education*, UNESCO.
- Salisu, J.F. (2015). *Teaching with Audiovisual Materials*. Ibadan: Olalomi Publishing Company.
- Shavinina, L.V. (2001). A New Generation of Educational Multimedia: High Intellectual and Creative Educational Multimedia Technologies. *Cyber Education: The Future of Distance Learning*. Larchmont, Ny: Mary Ann Liebert, Inc, 63-82.
- Shuaibu, M.C. (2013). *Producing Audiovisual Materials for Instruction*. Zaria: Ahmadu Bello University Press.
- Slih, J.A. (2005). Overview of E-learning Technology, *Management Science* 39(10) 982 – 790.
- Taiwo, B.A. (2010). *Fundamentals of Educational Technology*. Ibadan: International Publishers Ltd.
- Technologies (ICTs) in Social Change Programmes". In Yahaya, M.K. (ed) *Communication for Social Change in Developing Countries*. Ibadan: Kraft Books Ltd.
- Thomas, S.O. (1487). Critical Inquiry in a Text-Based Environment. *South Africa Journal of Higher Education*, 22(5), 700 – 719.
- Thompton, J.O. (2012). Multi-Classification of Social Media. *Information and Management*. 36 204-220.
- Ukadike, S.P. (2012). *Mass Media and Democratic Stability in Nigeria*. Ibadan: Olulomi Publishing Company.
- Ukeje, J.F. (2012). *Issues in Instructional Design and Technology*, Lagos: Jon-Lad Publishers Ltd.

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Ojo, Ph.D , Boniface K Nande .Ph.D , Christopher Igwe, Ph.D, and Suobere T. Puyate,
Ph.D*

UNESCO, (2002). Section for Social Science Education Support for Revitalizing Social Science Education in Nigeria. Retrieved June 5, 2001 from <http://www.unesco.org/education>.

Waghid, T.S. (2005), ICT and Methodologies of Application in East African Schools. *Review of Educational and Technology Research*, 29 (4), 105 – 128.

Webb, E., Jones, A., Barker, P. and Schaik, P. (2004). Using E-learning Dialogues in Higher Education. *Innovations in Education and Teaching International*, 41(1), 93 – 103.

Wilson, K.A. (2006). Developing E-Learning Strategies for Instruction. *Open Learning*, 8(3), 14 – 22.

Yusuf, M.O. (1999). Instructional Media: An Assessment of the Availability, Utilization and Production by Technical College Teacher. *Nigeria Association for Educational Media and Technology*. 164 – 170.

Zhang, Z.P. (2009). *Computer Game Strategies* New York. McGraw Hill Books Company.