

Adoption of E-Learning as Instructional Media in Secondary Schools: Challenges and Prospects

Onovo, Joseph Sunday PhD

Department of educational foundation, Enugu state university of science and technology (ESUT)

Okorie, Mercy N

Student of department of computer science, Ebonyi state university, Ebonyi and staff of
Institute of Management and Technology, Enugu

Abstract

That the standard of Education has fallen; that the teachers no longer possess sufficient requisite knowledge, moral integrity nor required teaching ethics and attitude; that the government do not adequately fund the educational system in which the major stakeholders do not allow their children to participate in but prefers to send them abroad to study where there is better standard; that the children of the present age no longer study the way and manner their parents did; and many more, are the criticisms or rather condemnations against the Nigerian Educational system. The extent to which these criticisms hold water may not be clear but that notwithstanding they suggest one thing; there is an immense need for a hard look and a radical review of the Nigerian educational system. The review will naturally analyze the prevalent practice and identify the shortfalls as well as sources of improvement. Currently, there is a craze for ICT and its facilities—the computer systems; tablets, laptops, palm tops, and others. This is with particular reference to the children and youth of the student age. One of the sources of improving the standard of our educational systems, thus could be the adoption of E-Learning as a major instructional media at all levels of the educational system. Thus this paper considers the impacts, challenges and prospects of adopting E-Learning as a major instructional media as a contribution towards the improvement of secondary school education in Enugu State.

Keywords: E-learning, Information and communication technology, Instructional media, Secondary schools.

Introduction:

In this technological age, a functional educational system enabled by information and communication technology would be a veritable tool for improving performance and the overall standard of an education system. Integration of information and communication technology (ICT) into the education system and with particular reference to adoption of E-Learning as instructional delivery media is the current craze in the Nigerian education sector and indeed all over the world.

The paradigm shift from the traditional educational system to ICT based teaching and learning is rapidly becoming one of the most widely discussed issues in the contemporary education policies (Theorer 2000). According to Groff, Howells and Grammar (2012) most experts in the education industry agreed that when properly used, information and communication technology holds great promise to the improvement of teaching and learning. Through the use of Audio, text, multicolor images, graphics, motions and others, ICT gives ample and exceptional opportunities to students to develop capabilities for high quality learning and increased innovative abilities (Rangsway and couples, 2006). It offers some powerful tools for the improvement of the existing traditional learning environment and systems or structure without necessarily altering the curriculum element.

Globally, the essence of ICT in teaching and learning had been recognized. There has been continued strong desire to equip schools with computer facilities and qualified personnel in both the developed and the developing countries of the world. Nations have identified the need for investment and integration of ICT in the implementation of the curriculum in order to improve teaching and learning in schools and the overall standard of education. In realization of the huge potentials of ICT in education, Government have heavily invested in developing their respective ICT in education plans and bring various ICT equipment and resources into school (UNESCO, 2008). Within 2008-09, the United Kingdom government spent on £2.5bn on educational ICT (Nut, 2010). A similar case has been reported in United States which expenditure on K-12 schools and higher education institutions was \$4.7 billion respectively in 2009 (NUT, 2010), and in New Zealand, the government spends over \$410 million every year on schools ICT infrastructure (Johnson, Clavert and Raggert 2009).

In Nigeria, the adoption of ICT in the educational system and with particular reference to secondary schools has been sluggish, or in fact near to nothing. According to Gulbahar (2007), huge educational investments in this regard have produced little evidence of ICT adoption and used in teaching and learning. This is in spite of the immense potentials of ICT in education. What factors are responsible, and what prospect does the adoption of ICT, with particular reference to E-Learning hold for the improvement of the education system. The topic is discussed under the following sub-heads;

- ❖ The concept of E-Learning as an aspect of ICT
- ❖ Adoption of E-Learning is instructional delivery media in secondary schools
- ❖ Impact of adoption of E-Learning in instructional delivery in secondary Schools into Enugu State.
- ❖ Challenges to the adoption of E-Learning in instructional delivery in secondary schools in Enugu State.
- ❖ Prospects of adoption of E-Learning in instructional delivery in secondary schools in Enugu State
- ❖ Recommendations, and
- ❖ Conclusions

The Concept Of E-Learning:

E-Learning comprises of all educational activities that are carried out by individuals or groups working online, or off line, and synchronously where all the participants engage in exchange of ideas and information at the same time or asynchronously where participants engage in exchange of ideas and information without dependence on other participants involvement at the same time through Networked or stand alone computer and other electronic device.

Fundamentally, E-learning all refers to the education process that utilize ICT to mediate synchronously as well as asynchronously in Learning and teaching activities (Som,2006). E-Learning involves all forms of Electronically assisted teaching and learning activities. The information and communication systems, whether Networked or not serves as a specific media to implement the learning process (Tavanagerian, Leyphold, Nolting and Roser, 2004). E-Learning is essentially the computer and Network-enabled transfer of skills and knowledge.

Thus E-Learning is a medium of sharing educational information and knowledge through the Internet or other communication systems. Computer based learning (CBL) Computer based training (CBT) computer supported collaborative learning (CSCL), Technology Enhanced learning (TEL) etc. are all electronic learning (E-learning). They all refer to intentional or deliberate used of Networked information and communication technology (ICT) in teaching and learning. The E-learning mode of instruction is also normally described as online learning, virtual learning, distributed learning, networked learning and web-based learning (Ugwuanyi 2012) and other such names.

Adoption of E-Learning in Secondary Schools

Adoption of E-Learning as a mode of instruction in educational institutions and with particular reference to secondary schools would be of immense influence and assistance in the desire and efforts towards the improvement of the standard of the Nigerian education.

The importance of ICT is quite evidenced from the educational perspective. Though the chalkboard, textbooks, radio/television and films have been used for educational purposes over the years, none has quite impacted on the educational process like the computer. While television and films impact only on the audiovisual faculties of users, the computer is capable of activating the senses of sight, hearing and touch of the users. ICT has the capacity to provide higher interactive potentials and enable users to developed their individual intellectual and creative abilities (Groff, 2009).

The main purpose of ICT in the development of human mental resources is to allow people to both successfully apply the existing knowledge and produce new knowledge (Shavinina, 2001). E-learning as a mode of instructional delivery will natural enhance the production of a high-lech' work force with strong back ground in sciences, engineering and information technology. This in turn will be of immense economic benefit.

According to Onyelaran Onyeyinka and Larl (2005), generally, the application of technology contributes to economic growth in three ways;

- 1. Technology creates new types of goods to be produced.** This means that the actual act of producing technology goods and services is an increase in GDP, in much the same way that producing any good or service affects GDP. This, thus means creating greater employment, generating greater economic output to satisfy the consumers and enhancing business demand for technology equipment compared to other types of production.
- 2. Technology goods and services are more efficient substitutes for other types of goods and services.** a classic example is market discovery mechanism using mobile technologies. If a Tanzanian herder can use the mobile phone to discover which regional market places are offering the best prices, he would be saving the labor and time of personally visiting several markets to gather information. Further more since the herder may drive the cattle from market to market, the IT solution may reduce strain on the cattle. Hence, the technology becomes a substitute for the labor intensive process, making the system more efficient and freeing the herder to focused on more economically efficient activities.
- 3. Technology is a special capital input producing economic spillovers (UNCTAD, 2007).** Information technology in particular exhibits properties of non-excludability, where knowledge learned by one individual or firm can create benefit for non participating third parties. For example, the herder described above in item No2 could tell a fellow herder about the economic benefit of using mobile phones to find the best prices for cattle. The herder is essentially no worse off from teaching other herders about this technology, but the other herders become better off. In fact, these knowledge spillovers have been

identified as the primary driver of economic growth in Paul Romer's Nobel Prize winning research (Romer, 1986).

ICT as tool for higher technological development:

In today's world not only are we surrounded by technology, but our primary means of reaching others in far and near places are mediated by technology. According to Elluh (1989), "technology is progressively effacing the two previous environment: nature and society" the environment according to Elluh, is that which enables us to live, sets us in danger and which is immediate to us. He asserts that modern man cannot live without gadgets. This is what makes human subservient to technology rather than technology being subservient to humanity.

There is no doubt that one of today's realities is an extremely fast development of high-technology. This has resulted in a huge change of the individuals life in business and private settings. There is strong need to know and use modern technology in our social life; economic, business and education. New and sophisticated break through in high technology encourage companies to introduce technological innovations rapidly into their business practices.

The United States space programme has benefited immensely from rapid development in high level technology and today's information and communication technology. In many parts of the developed world, cellular, Satellite, and wireless technologies combined with innovative business practices have made up for the shortcomings of traditional wire line technologies. The cellular technologies introduced in the country for some years back have revolutionized the communication industry in the country.

ICT as course of study

The most challenging aspect of the post industrial era is how to meet the demands of the information society that modern man is trying to build. The role of education in that regard and in developing modern society cannot be overemphasized. In fact, society and education are highly interdependent. As society changes, the educational system has to change accordingly (Westera and Sloep, 2001). Today employers of labor are in search of graduates with requisite knowledge, skill and training that will help to solve problems that do not exist today.

Modern companies, especially those operated by the new foreign investors need skilled workers with basic knowledge in algorithm, flow chart design, complex programming, and web design. Nigeria also needs computer technicians and engineers. These new fields of study are already being introduced as areas of study in the Nigerian higher institutions. There is an immense need to provide enabling background for such studies at the secondary school level.

Government support of ICT adoption and practice in the education

According to Adomi (2010), there are developments in the Nigerian education sector which indicate some level of ICT application in the secondary schools. The federal government of Nigeria, in the national policy on Education, recognizes the prominent role of ICTs in the modern world, and has integrated ICTs into Education in Nigeria. To actualize this goal, the document 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 a vocational elective at the senior secondary school. It is also the intention of government to provide necessary infrastructure and training for the integration of ICTs in the secondary school system. Adomi (2010) submitted that in 1988, a similar policy was enacted. The plan was to establish pilot schools and introduce computer studies first to all secondary schools, and then to primary schools. However, it was sad to note that the project did not take off beyond the distribution and installation of personal computers (Okebukola, 1997).

Adomi (2010) further noted that the federal ministry of Education launched an ICT-Driven project known as school net, which was intended to equip all schools in Nigeria with computers and communications technologies. In June 2003, at the African summit of world economic forum held in Durban, South Africa, the new partnership for African development (NEPAD) Lunched the e-schools initiative, which was intended to equip all African high schools with ICT equipment including computers, radio and television sets, phones and fax machines, communication equipment, scanners, digital cameras, and copiers, among other things. The initiative was also meant to connect African students to the internet.

The Nigerian Federal Government had also commissioned a mobile internet unit (MIU) operated by the Nigerian National Information Technology Development Agency (NITDA). The MIU is a locally-made bus that was converted into a mobile training and cyber centre. Its interior has ten workstations, all networked and connected to the internet. The MIU is also equipped with a 1.2m dish mounted on the roof of the bus. It is also equipped with a small electric generator to ensure regular power supply. Ajayi (2003) pointed out that the MUI takes the internet to various primary and high schools.

In a bid to ensure ICT applications in schools, Agyeman (2007) noted that the country's energy problem made the government to embrace the US\$100 XO laptop computer project for Nigeria's 24 million public primary school children. The government ordered one million of these laptops, which can be cranked and do not need external power supply, for the primary school children. The laptop has in built wireless networking, uses a 512 MB flash memory without a hard disk, and has two USB ports to which more memory or devices could be

attached. It has a new user interface known as sugar, and comes with a web browser and a web processor. With the support of the federal government ministries given to school Net the company was able to contribute in addressing the challenges of ICT application in Nigeria. School Net creates learning opportunity for communities of educators and learners to use ICTs to enhance education by implementing, supporting, and Co-ordinating ICT development projects in education; provides and supports lower-cost, scalable technology solutions and internet for schools; and provides support mechanisms for schools for technical infrastructure and connectivity (Agyman,2007).

Agyeman,(2007) submitted that Zinox 11 computers, a private computer company, in collaboration with Microsoft, was set to revolutionize ICT usage in education from the primary to the university level. Zinox's strategy is targeted at students, lecturers, and the institutions themselves. The company provides the computers at highly discounted prices and hoped on government support to achieve 75% ICT application in Nigerian schools.

The National Open University of Nigeria (NOUN), established in 2002 by the Federal Government is a welcome development. As at 2007, NOUN has created 27 study centres across the country. NOUN's dream is to establish study centre's not only in each of the 36 states of the federation but also at local government areas in order to make tertiary education available to all citizens. Each NOUN's study centre is a computer laboratory/cyber café equipped with minimum of 25 computers in a local area network (LAN) configuration, the centre are yet to be connected to NOUN's REPRODAHq (repository, reproduction, distribution and administration headquarters) through a wide area network (WAN) to facilitate the following activities: training and learning, assessment and testing, interactive sessions, communications (e-mail, chat, forums), internet access, access to virtual library and others. NOUN uses the WAN to deliver distance learning courses to all the study centers. Each study centre has facilitators (instructional and tutorial) and student counselors responsible for guidance and counseling services to the learners (Agyeman,2007).

In 1995, the Nigerian Government through the National Universities Commission made proposals for connecting all Nigerian universities to the internet through Nigerian Universities Network (NuNet). The concept of NuNet according to Idowu & Esere (2013) is to provide connections to all Nigerian Universities and university centre's in one national computer network (internet) with a gateway at NUC. However, there is no Internet gateway in Nigeria yet, so the internet service providers (ISPs) in Nigeria make use of external gateways.

Thus, the Nigerian Government has actually made some efforts towards the adoption and practice of ICT in the education sector, however, these efforts are yet to be sufficient.

Factors that Influence Adoption and practice of E-learning as Instructional Media

A number of factors influence the use of E-learning as a mode of instructional delivery, positively and or negatively. These include; cost, infrastructure, skills, relevant software's, access to the internet etc.

On a general note, several researchers have identified factors that influence the adoption and integration of ICT into the educational system. E-learning as an ICT based model shares in those factors. Rogers (2003) identified five technological characteristics or attributes that influence the decision to adopt an innovation. Stock dill and Morehouse (1992) also identified user characteristics, content characteristics, technological considerations, and organizational capacity as factors influencing ICT adoption and integration into teaching. Balanskat, Blamire &Kefella (2007) identified the factors as teacher-Level, school-Level and System-Level. Teachers' integration of ICT into teaching is also influenced by organizational factors, attitudes towards technology and other factors (chen, 2008, Tondeur; Van Braak & Valcke, 2008; Lim & Chai, 2008; Clausen, 2007). Sherry & Gibson (2002) Claim that technological, individual, organizational, and instructional factors should be considered when examining ICT adoption and integration. Neyland (2011) noted that factors such as institutional support as well as micro factors such as teacher capability influences the use of online learning in high schools in Sydney. Specifically some of the factors include:

Personal Characteristics/ Attitudes:

Personal characteristics, educational level, age, gender, educational experience, knowledge of the use computer for educational purposes and attitude towards computer can influence the adoption of the technology (Schiller, 2003). Teachers are implored to adopt and integrate ICT into teaching and learning activities, but teachers' preparedness to integrate ICT into teaching determines the effectiveness of the technology and not by its sheer existence in the classroom (Jones, 2001). The attitudes of teachers towards technology greatly influence their adoption and integration of computers into their teaching. According to Russell & Bradley (1997), anxiety, lack of confidence, competence and fear often relegate the use of ICT to conventional learning mechanisms. Therefore, an understanding of personal characteristics that influence teachers' adoption and integration of ICT into teaching is relevant.

Among the factors that influence successful integration of ICT into teaching are teachers' attitudes and beliefs towards technology (Hew & Brush, 2007; Keengwe & Onchwari, 2008). If teachers' attitudes are positive towards the use of educational technology then they can easily provide useful insight about the adoption and integration of ICT into teaching and learning processes. It is believed that if teachers perceived technology programs as neither fulfilling their needs nor their students' needs, it is likely that they will not integrate the

technology into their teaching and learning.

ICT Competence:

Computer competence is defined as being able to handle a wide range of varying computer applications for various purposes (Van braak, Tondeur & Valcke, 2004). According to Berner (2003), Na (1993) and Summers (1990) as cited in Bordbar (2010), teachers' computer competence is a major predictor of integrating ICT in teaching. Evidence suggests that majority of teachers who reported negative or neutral attitude towards the integration of ICT into teaching and learning processes lack knowledge and skills that would allow them make "Informed decision" (AIOteawi, 2002, as cited in Bordbar, 2010).

Computer Self-efficacy:

Studyrch has been conducted on teacher's self-efficacy and reported to have greater effect on their use of ICT. Self-efficacy is defined as a belief in one's own abilities to perform an action or activity necessary to achieve a goal or task (Bandura, 1997). In real meaning, self-efficacy is the confidence that an individual has in his/her ability to do the things that he strives to do. Thus teachers' confidence refers both to the teachers' perceived likelihood of success on using ICT for educational purposes and on how far the teacher perceives success as being under his control (Peralta & Costa, 2007).

Teaching Experience:

Though some research reported that teachers' experience in teaching did not influence their use of computer technology in teaching (Niederhauser & Stoddart, 2001), most research showed that teaching experience influence the successful use of ICT in class rooms (Wond & Li, 2008; Giordano, 2007; Hernandez-Ramos, 2005). Gorder (2008) reported that teachers' experience is significantly correlated with the actual use of technology. In her study, she revealed that effective use of computer was related to technological comfort levels and liberty to shape instruction to teacher-perceived student needs.

Cost:

The price of computer hardware and software continues to drop in most developed countries, but in developing countries, such as Nigeria, the cost of computers is several times more expensive. Majority of the secondary schools in Nigeria are short of books, paper and pencils. Many of the schools lack adequate infrastructure such as class rooms and only few are equipped with television and radio. Apart from the basic computers themselves, other costs associated with peripherals such as printers, monitors, paper, modem, extra disk drive are beyong the reach of most secondary schools in Nigeria. The schools can not afford exorbitant internet connection fees too.

Weak Infrastructure:

In Nigeria, a formidable obstacle to the use of information and communication technology is infrastructure deficiencies. Computer equipment was made to function with other infrastructures such as electricity under "controlled conditions". Over the years, Nigeria has been having difficulties in providing stable and reliable electricity supply to every nook and cranny of the country without success. Currently, there is no part of the country, which can boast of electricity supply for 24 hours a day except probably areas where government officials live.

Lack of Skills:

Nigeria does not only lack information infrastructure, it also lacks the human skills and knowledge to fully integrate ICT into secondary education. To use information and communication technology (ICT) in secondary schools in Nigeria, the need for locally trained workers to install, maintain and support these systems cannot be over emphasized. There is acute shortage of trained personnel in application software, operating systems, network administration and local technicians to service and repair computer facilities. Those who are designated to use computers in Nigeria do not receive adequate training, in some cases they do not receive any training at all (Okebukola, 1997).

In Nigeria also, most secondary school teachers do not posses the skills required to fully utilize technology in curriculum implementation hence the traditional chalk and duster approach still dominates the secondary school pedagogy.

Lack of Relevant Software:

Although software developers and publishers in the developed countries have been trying for long to develop software and multimedia that have universal application, due to the differences in education standards and requirements, these products do not integrate into curriculum across countries. Software that are appropriate and culturally suitable to the Nigerian education system is in short supply. There is a great discrepancy between relevant software supply and demand in developing countries like Nigeria. According to Salomon (1989), there are clear indications from many countries that the supply of relevant and appropriate software is a major bottleneck obstructing wider application of the computer.

Limited Access to The internet:

In Nigeria there are few internet providers that provide internet gateway services to Nigerians. Many of these companies provide poor service to customers and often exploit and defraud them. The few reputable companies,

which render reliable services, charge high fees thus limiting access to the use of the internet. The greatest technological challenge in Nigeria is how to establish reliable cost effective internet connectivity.

Secondary schools in Nigeria are not given adequate funds to provide furniture, requisite books, laboratories and adequate classrooms let alone being given adequate funds for higher-tech equipment (computers) and internet connectivity. Again, due to the lack of adequate electricity supply, especially in rural areas secondary schools located in those areas have no access to the internet and are perpetually isolated and estranged from the world's information superhighway.

Prospects of the Adoption of E-Learning as a Model of Instructional Delivery in Secondary Schools:

The adoption of E-learning as a mode of instructional delivery in secondary schools has very high prospects. According to Guff, (2009), the ranges of applications which computers and the internet can serve are numerous.

First computer can enhance educational efficiency. The efficiency in teaching various subjects could be improved. For example, many secondary school teachers are already teaching large classes of students. In this situation, students no longer receive the much desired individual assistance. Furthermore, English language is taught and learned as a second language in Nigeria and many teachers of English are weak. It is possible to use carefully prepared computer programs to ensure that learners are accurately and systematically instructed.

Secondly Computers can serve administrative functions. They can replace the laborious exercise of filling papers in filling cabinets and shelves where records accumulate dust over a long period of time. Another administrative application of the computers is their use for budget planning, accounting for expenditure, writing correspondences and reports, assigning students to classes, reporting students' progress and testing students and scoring tests which help to reduce paper work. Computers can be used for individualized learning style and pace, microcomputers will enable students to progress at his or her own pace and receive continual evaluation feedback and corrections for errors made.

Conclusion and Recommendations:

The adoption of E-learning in secondary schools in Enugu state will no doubt add value and foster greater academic success among students. A good mastery of ICT skills in schools would bridge the gap created as a result of our ill equipped graduates seeking for job placements in various multinational firms across the country.

Nigeria is lagging behind other African countries who are already helping secondary school students in those countries to become better information users.

In the light of the discovery made by this work, the researchers therefore recommend that; Government should see it as a duty to ensure that Nigeria become part of the developed world in the near future. It must embrace technology and discard some of the old habits and perspectives. There is need for the country to re-strategize and expand its vision so as to cope with the challenges of a technological society. This can be achieved by insisting that all applicants who wish to occupy a teaching position in Nigerian schools be a good user of ICT services.

References

- Adomi, E.E. & Gbangban, E. (2010). Application of ICTs in Nigerian Secondary Schools. Retrieved from <http://www.webpages.uidaho.edu/~mbolin/adomi-kpangban.htm> on 10/10/2017
- Agyeman, O.T. (2007). ICT Education for Nigeria. Survey of ICT and Education in Africa: Nigeria Country Report: 1-12. Retrieved from <https://www.infodevfiles/resource/infodevDocuments422.pdf> on 10/10/2017
- Alayi, G.O.(2003). NITDA and ICT in Nigeria. Retrieved from <http://ejds.org/>
- Idowu, A.I & Mary Esere, M. (2013). ICT and higher educational system in Nigeria. *Educational Research and Reviews* 8(21):2021-202. Doi: 10.5897/ERR09.044
- Okebukola, P. (1997). Old, new, and current technology in education. *UNESCO Africa* 14(15): 7-18.
- van Break, J., Tondeur, J. & Valcke, M. (2004). Explaining different types of computer use among primary school teachers. *European Journal of psychology of Education* 19(4): 407-422.