



Exploiting E-Learning Technologies for Sustainable Development

Aboho D. Moses^{1*}, Awuhe T. Richard², Vakaa, I. T.³, Usu, S. Simon²

¹Department of Mathematics, Statistics and Computer Science, Federal University of Agriculture, Makurdi

²Department of Computer Science and Statistics, Akperan Orshi College of Agriculture, Yandev

³Department of Engineering Technology, Akperan Orshi College of Agriculture, Yandev

Abstract This paper examines the current use and prospects of e-learning technologies in Nigeria. In the 21st century, e-learning is one of the most efficient tools for advancing knowledge, skills and development in any nation. E-learning technologies offer numerous benefits to individuals such as increased access to information, better content delivery, personalized instruction, interactivity, confidence and increased convenience, but it is also coupled with some impediments. The paper also reviews e-learning tools and challenges facing e-learning technologies adoption in Nigeria. The paper recommends that Government should work with the private sector and civil society to ensure affordable and sustainable access to ICT infrastructure.

Keywords E-learning, Development, Promote, Improve, Nigeria

Introduction

Throughout humankind's history, technology has been the driving force of development. Within the ambient of civilized society, the positive impacts of technological innovations have far outweighed the negative impacts. The 21st century has altered conceptions of time and distance. It has created a wealth of information that is available at the stroke of a key. *To be effective in this century, citizens and workers must be able to exhibit a range of functional and critical thinking skills related to information, media and technology.* The use of modern technologies and the Internet in learning is seen as a means to improve accessibility, efficiency and quality of learning by facilitating access to resources and services as well as remote exchanges and collaboration

E-learning as opposed to distance learning is a term that is used to refer to all ICTs, networks, internet and other forms of electronic media that can be used to enhance teaching and learning so as to transfer knowledge and skills[1]. It is the use of ICTs to enhance and support teaching and learning activities. It allows for efficient transfer of knowledge anywhere and anytime, regardless of subject matter, and opens up a world of learning unavailable in most corners of the world[2]. At the same time e-learning empowers learners with the information technology awareness and skills crucial to succeed in today's global knowledge economy. E-learning can be conducted through numerous types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning.

E-learning technologies offer numerous benefits to individuals such as increased access to information, better content delivery, personalized instruction, interactivity, confidence and increased convenience. Due to its convenience and flexibility, resources are available from anywhere and at anytime. The video instructions that are provided for audio and video learning can be rewound and seen and heard again and again. Learners and teachers do not need to travel to any location thus saving indirect costs.

However, this promising technology is faced with some challenges in Nigeria. The main issues hindering the full adoption of e-learning technologies in the country are poverty and lack of ICT infrastructure [3]. One of the most urgent areas of highly needed infrastructural development in Nigeria is the area of Information



Communication Technology (ICT). Kozma [4] observed that ICT is now perceived as a principal driver of economic development and social change, worldwide. It offers the potential to restructure organizations, promotes collaboration, increases democratic participation of citizens, improves transparency and responsiveness of governmental agencies. It also makes education and health care more widely available, fosters cultural creativity, and enhances the social integration of individuals with people of different abilities and cultural backgrounds.

This paper examines the current use and prospects of e-learning technologies in Nigeria. In addition, it reviews the e-learning tools, benefits and challenges facing e-learning technologies adoption in Nigeria. Finally, it presents summary recommendations on what is required to promote and improve the development of e-learning technologies in Nigeria for sustainable development

E-Learning Technologies

The predominant technology being used for e-learning in the world is the World Wide Web, which in turn relies on the Internet [5]. The World Wide Web, abbreviated as WWW and commonly known as The Web, is a system of interlinked hypertext documents contained on the Internet. With a web browser, one can view web pages that may contain text, images, videos, and other multimedia and navigate between them by using hyperlinks. The Web can be transmitted both through already-existing infrastructure, such as analogue telecommunications networks, as well as through high-speed digital networks, giving it a wide range of technical flexibility [5].

Another technology that is being used extensively in education is video conferencing. According to [6] video conferencing is a system where two or more participants, based in different physical locations, can see and hear each other in real time (i.e. live) using special equipment. It is a method of performing interactive video communications over a regular high-speed Internet connection. A videoconference can be either two-way (point-to-point) or multipoint, linking three or more sites with sound and video. It can also include data sharing such as an electronic whiteboard where participants can draw on, or text based real time 'chat'.

Other e-learning applications used in online education include television and radio; Compact Discs (CDs) and Digital Versatile Discs (DVDs); and mobile technologies [6].

Television (TV) refers to a receiver that displays visual images of stationary or moving objects both live or pre-recorded and mostly accompanied by sound which is electronically captured, processed and re-displayed. Likewise, this applies to the term radio; both live generated sound as well as pre-recorded sound. Both TV and radio can improve teaching and learning process in different ways such as by showing processes and activities that may not otherwise be available to the learner.

Compact Discs (CDs) and Digital Versatile Discs (DVDs) are based upon laser technologies for writing and reading data. They provide a way in which a large amount of multimedia training material can be stored and made available to end-users: CD-ROM can store up to 1GB while DVD can store up to 17 GB. CD-ROM and DVD-based products can be linked with online information sources. This hybrid approach provides the user with access to media-rich up-to-date information.

Mobile e-Learning (sometimes called 'm-Learning') is a new way to learn using small, portable computers such as personal digital assistants (PDAs), handheld computers, two-way messaging pagers, Internet-enabled cell phones, as well as hybrid devices that combine two or more of these devices into one. These technologies have enormous potential as learning tools.

E-Learning Adoption in Nigeria

In Nigeria today, e-learning platforms are not new to many as even the leaders are more like the pioneers of such innovations. Many who were not opportune to learn back then due to lack of time or finances can now do so with ease and get certified.

In Nigeria one of the universities adopting e-learning is National Open University of Nigeria (NOUN). As a faithful trustee of the Nigerian people, NOUN leverages on Information and Computer Technologies to deliver an education tailored towards the globalised economy. The University offers exceptional academic programmes that meet the specific needs of all sectors of the global economy, in the Arts; Health; Law; Physical, Social, Agricultural and Management Sciences [16]. NOUN is an online Tertiary Institution



recognized by the Federal Government of Nigeria, this platform boasts of thousands of graduates yearly. This platform has grown to be the first among others to be recognized in the country and happens to have tutored a former President of the Federal Republic of Nigeria in the person of Dr. Olusegun Obasanjo [7].

Another e-learning platform provider in Nigeria is Skills for Success (S4S). This is also an online platform for learning that helps to equip employees with necessary skills that are needed in enhancing success in the workplace. The platform provides necessary training by helping employees realize how to create a business strategy that involves a business marketing plan, and by making learning much simplified and have packages that are modified to individual or organizational desires to enhance familiarity [7]. S4S E-learning helps you to study using any device that has Internet connectivity. With their high quality e-learning modules, you get the advantage of access to courses in various fields including Branding and Advertising, Business Development, Project Management, Personal Development, Marketing and Sales etc [8].

Another web-based service as observed by [9] available in English and designed to make education accessible for Nigerians and to promote the sharing of knowledge across borders is Tutor.ng. Tutor.ng also enables individual tutors to create courses and engage learners remotely, connecting them all over the world. Tutors may themselves be advanced learners, test preparation companies or university affiliates. A wide range of course topics includes business and entrepreneurship and information technology in addition to languages, history, science and mathematics. The platform also offers examination preparation, tuition in basic academic skills such as reading and spelling as well as non-academic skills including make-up tutorials, cooking, creative arts or health and lifestyle.

A relatively new e-learning service based in Lagos that aims to provide an innovative, interactive and cost-effective educational experience is Kotivu. It was launched in May 2016 to provide affordable and innovative technology based ideas, education and support to individuals, businesses, corporations and institutions (universities and government agencies) in Nigeria and across West Africa [10]. Courses are designed to provide a good professional grounding via the user-friendly Kotivu portal. Topics include commerce and purchasing, marketing, project management, human resources and personal assistant training. Other subjects include quality control, safety at work, financial management, innovation and leadership [9].

Also located in Lagos, Prepclass was hosted in 2013 with the aim of addressing the issues caused by the generally poor performance of Nigerian students in examinations, especially those taken at national level [9]. The platform provides content relevant to local examinations and is available as an app in English. Targeted at Nigerian students, prices and payment plans depend on various factors and are agreed individually between tutors and students. Prepclass provides clients with varieties of engaging learning processes, through one-on-one tutorial sessions, children group tutorial sessions, and adult group tutorial sessions. Prepclass equally has an App called 'Prep-test' which was developed to provide tutors with a platform where they can upload contents created by them as text, image, audio-visual. Learners are able to download the app, which is available on Android google play store, sign up by registering and use the contents provided to learn and study. Prepclass' app has created a huge archive of locally relevant content for students across Nigeria and Africa [11].

Another recognized e-learning platform in Nigeria that provides services using SMS to give learners access to materials and coaching they listen to outside their respective study hall is Sterio [7]. Tutors pre-record quizzes, questions, and lectures and send them for free by using a precise SMS code. Educators are debriefed when scholars are through with their lessons and received their students' respective performance. It saves them time, and they can provide instant feedback to the students. In the year 2014, Sterio announced a strategic, premeditated joint venture with Tutor.ng in launching a full mobile learning experience across Nigeria [7]. It includes the SMS and voice-based mobile education services of Sterio and e-learning via the internet mobile web, Tutor platform.

Challenges Facing E-Learning Adoption in Nigeria

In spite of the bright prospect of e-learning in the country, it is also coupled with some impediments militating against the effective use of the technology. Some of these challenges are:



i. Internet Connectivity

The cost of accessing the internet in Nigeria is still on the high side. Hence, some people find it a challenge to afford. The result of a research conducted by Oladimeji and Folayan [12] on ICT and Its Impact on National Development In Nigeria: An Overview shows that only 6.5% households in Nigeria have access to the internet. This statistics manifested, when the Executive Vice Chairman, Nigerian Communications Commission (NCC), Prof. Umar Danbatta, noted that although there are about 90 million Internet users in Nigeria, a gap of over 53 per cent still exist in terms of nationwide connectivity [13]. The high cost of internet data and tariff set by internet providers, mostly international companies doing business in the country with the main aim of making profit is a major factor hindering e-learning adoption[14]. Although the government is supposed to regulate the internet distribution cost and tariff charges of these internet providers, most often the agencies in charge of such regulations are more interested in tax and the welfare of their organisation that they overlook the quality of services the companies they regulate offer to the people.

ii. Lack of Power Supply

There is limited and unsteady power supply in the country when compared to the rate of supply in other parts of the world. This has served as one of the major problems hindering e-learning growth in the country. This is a huge setback to the progress of Nigeria, as it is difficult to boast of one full day without electricity interruption not to talk of a week or one Month [14]. Meanwhile, most countries of the world are beginning to celebrate 100 years and still counting of no electricity interruption. Also, neighbouring countries Nigeria supply electricity manage to have better and improved electricity supply than Nigeria. The Nigerian Association of Energy Economists (NAEE) reviewed that, despite statistics indicating that 45% of the Nigeria's population is currently connected to the national grid, regular supply is still restricted to just about 25% of the population [15]. To access the e-learning platforms fully and steadily, a steady power supply is a criterion, which unfortunately has not been tackled, and this has led to a limited use of the technology by many who desire to use it.

iii. Low Access to Personal Computers

Low access to personal computers is another challenge facing the development of e-learning in Nigeria. In a country with high rate of inflation, majority of the individuals and schools cannot afford to buy a computer and considers it as a luxury item, more expensive than a TV [17]. The result of a research conducted by Oladimeji and Folayan [12] on Access to Information communication technology by Nigerians show that only 4.5% households in Nigeria have access to computers. Shuaibu [18] observed that, there is high cost of feeding, education, and health in the land and the poor ones will rather not waste their little income to access the internet when they have their priority as food, clothing and shelter. This apparently affects the deployment and full utilization of e-learning technologies in the country.

iv. High Level of ICT Illiteracy

The high rate of illiteracy in the country is another ugly trend that is hindering the growth of e-learning use in Nigeria and this has contributed to the decline in the use of this super technology. People are ignorant of what the e-learning is all about, its uses, applications and benefits in solving their problems. According to Shuaibu [18] most people have not seen a computer before, not to talk of understanding e-learning concepts. Although it must be said that ICT knowledge in Nigeria is growing and being embraced, yet there remain a large majority of rural population that has not seen direct extensive benefits of the technology. Nigeria has over 63 million persons who cannot read and write and the number contributes 6 per cent the world population of non literate persons [19].

Conclusion

There is no doubt that e-learning has come to stay in Nigeria. The need to apply it in our daily lives is imperative to sustainable development. The impact of e-learning in teaching and learning process cannot be overestimated, especially in Nigeria where emphasis is being placed on technological development. E-learning is a powerful tool that can be used to enhance and encourage teaching and learning process in the country.



Through e-learning classes, students will be able to work independently and acquire more knowledge in their disciplines. E-learning technologies offer numerous benefits to individuals and is one of the most efficient tools for advancing knowledge, skills and development in any nation. This promising technology in the 21st century can be a realizable goal for anyone anywhere and it requires major commitments of resources, strong cooperation and partnerships among all stakeholders.

To promote and improve the deployment of e-learning technologies in Nigeria for sustainable development, it is recommended that:

- i. At the national level, policies should be put in place to support and facilitate the fast development of e-learning, as well as eliminate the barriers and challenges.
- ii. The government should provide adequate power supply to tackle the problem of epileptic or inconsistent power supply in order to support the use of electronic equipment for e-learning.
- iii. Government should work with the private sector and civil society to ensure affordable and sustainable access to ICT infrastructure.
- iv. There should be more training, awareness, exposure or workshops on the use of e-learning tools.
- v. For e-learning to be effective, appropriate measure should be given to maintenance, provision of stable internet to support easy and fast learning and teaching.

References

- [1]. Kasse, J.P. and Blunywa, W. (2013). An Assessment of E-learning Utilization by a Section of Ugandan Universities Challenges, Success Factors and Way Forward. International Conference of ICT for Africa; Harare, Zimbabwe.
- [2]. Olukayode, S. A. (2015). Challenges and Prospects of E-learning at National Open University of Nigeria. *Journal of Education and Learning*. 9(3), 207-216.
- [3]. Olutola, A. T. and Olatoye, O. O. (2015). Challenges of E-Learning Technologies in Nigerian University Education. *Journal of Educational and Social Research*, 5(1), 301-306
- [4]. Kozma, R. B. (2005). National Policies that Connect ICT-Based Education Reform to Economic and Social Development. *Interdisciplinary Journal on Humans in ICT Environments*, 1(2), 117-156.
- [5]. Martin, K. G. (2007). E-Learning Technologies and Its Application in Higher Education: A Descriptive Comparison of Germany, United Kingdom and United States. Accessed 1/10/2018 from https://edoc.ub.uni-muenchen.de/7358/1/Gyambrah_Martin_K.pdf
- [6]. Sife, A. S., Lwoga, E.T. and Sanga, C. (2007). New technologies for teaching and learning: Challenges for higher learning institutions in developing countries. *International Journal of Education and Development using Information and Communication Technology*, 3(2), 57-67.
- [7]. Godwin, P. (2017). Top E-Learning Platforms in Nigeria. Retrieved 06/10/2018 from <http://blog.smartlecturer.com/top-e-learning-platforms-in-nigeria/>
- [8]. Skills for Success (n.d.). "Corporate Training". Retrieved from <https://skills4success.org/corporate-training/>
- [9]. Techcity " e-Learning in Nigeria: the challenges and prospects". (2017, January 26) Retrieved from <https://www.techcityng.com/e-learning-in-nigeria-the-challenges-and-prospects/>
- [10]. Kotivu (n.d.) "Who are we?". Retrieved from <https://kotivu.org/about.php>
- [11]. Prepclass (n.d.). "About Prepclass". Retrieved from <https://prepclass.com.ng/about>
- [12]. Oladimeji, T. and Folayan, G. (2018) ICT and its Impact on National Development in Nigeria: An Overview. *Research & Reviews: Journal of Engineering and Technology*, 7(1), 5-10
- [13]. Adeyemi, A. (2017). 53% of Nigerians lack Internet access. Retrieved 06/10/2018 from <https://guardian.ng/technology/53-of-nigerians-lack-internet-access/>
- [14]. Babatunde, B. O. and Paschal, I. A. (2016). Challenges and Barriers to ICT Deployment in Nigerian Universities. Retrieved 06/10/2018 from https://www.researchgate.net/profile/Babatunde_Olofin2/publication/303810498_Challenges_and_Barriers_to_ICT_Deployment_in_Nigerian_Universities/links/5754671708ae17e65ecc9e2/Challenges-and-Barriers-to-ICT-Deployment-in-Nigerian-Universities.pdf



- [15]. Information Nigeria (n.d.) "Only 25% Nigerians have access to regular power supply". Retrieved from <http://www.informationng.com/2015/11/only-25-nigerians-have-access-to-regular-power-supply.html>
- [16]. National Open University of Nigeria (n.d.) "The University for You". Retrieved from <http://nouedu.net/page/university-you-0>
- [17]. Torruam, J. T. (2012). Application of E-teaching and E-learning in Nigerian Educational System. *Academic Research International*, 3(1), 30-36
- [18]. Shuaibu, M. A. (2016). The Challenges Affecting Internet Growth in Nigeria. Accessed 06/10/2018 from https://s3.amazonaws.com/academia.edu.documents/49578648/Some_Problems_affecting_Internet_Growth_In_nigeria.docx
- [19]. Vanguard " How ICT can curb illiteracy in Nigeria". (2017, September 27) Retrieved from <https://dailynigerian.com/inec-introduces-tracking-device-for-monitoring-election-materials/>

