

**TOWARDS EFFECTIVE E-LEARNING
IMPLEMENTATION IN NIGERIAN TERTIARY
INSTITUTIONS**

**SHITU ABDULLAHI LAME¹, FATIMA MAIKUDI ABUBAKAR²,
ALHAJI ADAMU ABDULLAHI³**

*^{1,2&3} Department of Computer Science, School of Comm. & Info. Sciences, A.D
Rufa'i College of Education, Legal & General Studies - Misau, Bauchi State,
Nigeria.*

ABSTRACT

The advent of new technology is playing the role of catalyst between learning and teaching. E-learning is an electronic way of transferring lessons on digital devices. It has potentials to increase the accessibility of quality education and supports constructivist approach. E-learning is becoming an adoptable technology for educational institutions of its benefits and advantages of on demand services, flexibility, Scalability, low cost and world-wide learning society. Despite of all these benefits and advantages e-learning brought to education sector, in Nigerian institutions of higher learning the issue of utilizing and proper implementation of e-learning technology is marred with some challenges such as; low funding to education in annual budgets and poor electricity

Introduction:

Nigeria with a population of over 200 million is the most populated country in Africa and is the largest growing market in Africa's Information and Communication Technology (ICT) market as far as the internet usage and mobile/fixed line subscriptions is concerned.

Nowadays where computer has touches our ways of life, it is evident that majority of the Nigerian tertiary institutions do not adapt the recent technology, especially in most of these

supply from the government, like of awareness and training of staff on the use of ICTS, with motivation attached from the school administrators. This paper looks at the meaning or definitions of e-learning as given by different researchers and the role that e-learning plays in higher educational institutions in relation to teaching and learning processes, and the benefits and the advantages of its adoption and implementation. Also highlighted in this paper are challenges of e-learning in the tertiary institutions and the ways to reduce the challenges and problems toward effective e-learning implementation in Nigerian tertiary institutions.

Keywords: *E-learning; ICT, Nigerian Tertiary Institutions; Implementation, Internet*

Schools daily operation are done manually, recently there is a rapid increase on the number of student enrolment but still some of these schools practice the use of manual method of managing data for the student, taking lecture and exam, marking and compilation of result etc. Nigerian higher institutions of learning are of different categories ranging from the Universities, Polytechnics, Colleges of Education and Monotechnics. Each category has its regulatory body as in NUC for the Universities, NBTE for the Polytechnics and NCCE for the Colleges of Education respectively. Nigerian higher education system currently has over 100 universities, and about 200 other tertiary institutions Colleges of education, Polytechnics, Monotechnics. Every year, about a million students apply to enroll into these universities but barely 10% of them are enrolled [12].

The Information and Communication industry is a valuable sector that has become a great value to the Nigerian economy. This sector has gradually improved over the recent years and information technology in Nigeria has brought about many changes in many sectors of the country. These include Telecommunication and IT firms, Health, Agriculture, Banking and Education particularly in the higher institutions of learning to name but a few.

Communications and information technology has changed our life in one way or another. With the development of information and communications technology, the term E-learning, which is the acquisition, use, distribution, and facilitation of knowledge in the first place by electronic means, has emerged. This type of learning depends on the Internet and computers. [16].

The adoption of E-learning in education, especially in the higher institutions of learning, has many benefits when it comes to its flexibility with time and space for the learners and institutions at the time of conducting meetings. This gives a greater chance to access enormous amount of information with less time and effort.

E-learning is also a cost-effective method as the students do not need to travel and move every day, at the same time, the higher institutions of learning are less required to offer huge buildings and a large number of faculty members to keep on the progress of the educational process. [6].

On the other hand, E-learning may cause a decrease in the institutions and teachers' roles; also, it may affect the values, the educational process and the social life of students negatively. In addition, unacceptable disciplinary actions of the students such as cheating could be hardly controlled, and the educational system is also likely to be not protected and may be a victim to piracy or plagiarism. Moreover, by using E-learning methods, it is not possible to study some scientific fields which require physical presence, for instance conducting experiments in laboratories or doing close training. [6].

E-learning has about ten types: Physical presence of the students and the teachers away of the electronic communication (face to face contact), e-learning without attendance or electronic communication (self-learning), e-learning without the presence and with electronic communication (asynchronous), e-learning through the virtual presence and electronic communication (synchronous), e-learning with occasional presence and electronic communication etc.

However, with all the advantages and benefits of E-learning strategy there is no proper education on the use of E-learning strategies in Nigerian

tertiary institutions. Therefore, this paper will specifically highlight and present issues that should be addressed towards effective E-learning implementation in Nigerian tertiary institutions.

ICT and the Nigerian Educational processes

ICT is one of the means that supports the educational process and its transformation from the stage of indoctrination to the stage of creativity, interaction and skill development, and collects all electronic forms of teaching and learning, where the latest methods are used in the fields of teaching, publishing and entertainment by adopting computers, storage media and networks. E-learning mainly relies on computers and networks for transferring knowledge and skills. Its applications include online learning, computer learning, virtual classrooms and digital collaboration. Online tutorial content, audio tapes, videos and discs are offered.

The development of e-learning in Nigeria could be traced back to the development of telecommunication which began in 1886 when e-cable connections was established by the colonial masters between Lagos and the colonial office in London to transmit information and receive feedback. By 1893 all government offices in Lagos were provided with telephone services for easy communication and later, other parts of the country were provided with telephone services [2]. In Nigerian schools, the commonest type of e-learning adopted was in form of lecture notes on CD-ROM which can be played when the learners desire. The challenge of this method is that number of students per computer was unattractive as compared to when lectures are being received in the classrooms.

As part of the FME's commitment to enhance creation and delivery through the application of ICT, and also to meet up with the national, regional and global developmental goals in line with the Roadmap as approved by the Federal Executive Council, constituted an exploratory Committee to look at the possibility of deploying e-learning across the Nigerian education sector through Public-Private Partnership.

The FME has produced policy on E-Learning. This has been approved by the National Council on Education but up till now it is yet to be officially

launched. It is hoped that the policy will be widely publicized once it is launched sine advocacy strategies will be employed to enhance public participation. [5], [12]

What is e-Learning?

The term e-learning usually refers to the use of different kind of information and communication technologies (ICT) and electronic devices in education. It is a broad term for teaching and learning activity that uses any electronic devices or network completely or only partially. E-learning may also be referred to as distance learning, virtual education, digital education, web-based training (WBT), Internet based training (IBT), computer-based training (CBT) or technologically enhanced learning depending on the emphasis of the delivery method or the components.

E-learning systems aggregate various tools, such as writing technologies, communication technologies, visualization, and storage.

E-learning refers to the use of information and communication technologies to enable the access to online learning/teaching resources. In its broadest sense, E-learning was defined to mean any learning that is enabled electronically. They however narrowed this definition down to mean learning that is empowered by the use of digital technologies. This definition is further narrowed by some researchers as any learning that is internet-enabled or web-based. [1] [10]

E-Learning is an interactive learning system that provides the learner with the use of communication and information technologies and depends on an integrated digital electronic environment that displays courses across electronic networks, provides guidance and guidance, and organizes tests as well as managing and evaluating resources and processes. The importance of e-learning lies in solving the problem of the knowledge explosion and the increasing demand for education and expanding opportunities for admission to education, in addition to enabling training and education of workers without leaving their jobs and contributing to breaking psychological barriers between the teacher and the learner as

well as satisfying the needs and characteristics of the learner while raising the return on investment by reducing the cost of education.

Types of E-learning

Some educational scientists have chosen to classify e-learning types more simply. They identify just two primary types of e-learning: computer-based e-learning and internet-based e-learning. This method of classification could be seen as more accurate because it differentiates e-learning from online learning, the two of which are often incorrectly used interchangeably. Some forms of e-learning such as CML and CAL are not required to take place online, but they are considered types of e-learning nonetheless.

[3] [9]

Computer Managed Learning (CML)

In the case of computer-managed learning (CML), also known as Computer Managed Instruction (CMI), computers are used to manage and assess learning processes. Computer managed learning systems operate through information databases. These databases contain bits of information which the student has to learn, together with a number of ranking parameters which enables the system to be individualized according to the preferences of each student.

As a result of two-way communication between the student and the computer, determinations can be made as to whether the student achieved their learning goals on a satisfactory level. If not, then the processes can be repeated until the student has achieved their desired learning goals. Additionally, educational institutions use computer-managed learning systems for storing and retrieving information which aids in educational management. This could mean information such as lecture information, training materials, grades, curriculum information, and enrolment information among others.

Computer Assisted Instruction (CAI)

Computer Assisted Instruction (CAI), also sometimes referred to as computer-assisted learning (CAL), is another type of e-learning which uses

computers together with traditional teaching. This could mean interactive software for the students or the kinds of training software used by Patrick Suppes of Stanford University in 1966. Computer-assisted training methods use a combination of multimedia such as text, graphics, sound, and video in order to enhance learning. The primary value of CAI is interactivity – it allows students to become active learners instead of passive learners, by utilizing various methods such as quizzes and other computer-assisted teaching and testing mechanisms. Most schools nowadays, both online and traditional, use different variations of computer-assisted learning to facilitate the development of skills and knowledge in their students.

Synchronous Online Learning

Synchronous online learning enables groups of students to participate in a learning activity together at the same time, from any place in the world. Real-time synchronous online learning often involves online chats and videoconferencing, as these tools allow training participants and instructors to ask and answer questions instantly while being able to communicate with the other participants. This kind of community-oriented online learning has been made possible with the rapid development of online learning technologies.

Before the invention of computer networks in the 1960s, truly synchronous e-learning was practically impossible to implement. Nowadays, synchronous e-learning is considered to be highly advantageous as it eliminates many of the common disadvantages of e-learning, such as social isolation and poor teacher-to-student and student-to-student relationships. Synchronous e-learning is currently one of the most popular and quickest growing types of e-learning.

Asynchronous Online Learning

In the case of asynchronous online learning, groups of students study independently at different times and locations from each other, without real-time communication taking place. Asynchronous e-learning methods

are often considered to be more student-centered than their synchronous counterparts, as they give students more flexibility. For these reasons, asynchronous e-learning is often preferred by students who do not have flexible schedules, because it allows them to utilize self-paced learning. They can set their own timeframes for learning, and they are not required to learn at specific time intervals together with other students. Before the invention of the PLATO computer system, all e-learning was considered to be asynchronous, as there were no methods of computer networking available. However, nowadays, with the availability of computers and the World Wide Web, deciding between synchronous and asynchronous e-learning becomes a more difficult task, as each has their pros and cons.

Fixed E-Learning

Fixed e-learning is a fancy name for something you are likely already familiar with. “Fixed” in this context means that the content used during the learning process does not change from its original state and all the participating students receive the same information as all the others. The materials are predetermined by the teachers and don’t adapt to the student’s preferences. This type of learning has been the standard in traditional classrooms for thousands of years, but it’s not ideal in e-learning environments. That is because fixed e-learning does not utilize the valuable real-time data gained from student inputs. Analyzing each student individually through their data and making changes to the materials according to this data leads to better learning outcomes for all students

Adaptive E-Learning

Adaptive e-learning is a new and innovative type of e-learning, which makes it possible to adapt and redesign learning materials for each individual learner. Taking a number of parameters such as student performance, goals, abilities, skills, and characteristics into consideration, adaptive e-learning tools allow education to become more individualized and student-centered than ever before. We are now at a point in time where laboratory-based adaptive instructional techniques can be used for

mathematical sequencing of student data. When done correctly, this could mean a new era for educational science. While this type of e-learning can be more difficult to plan and accomplish than traditional teaching methods, its potential value and effectiveness is often understated.

Linear E-Learning

When referring to human-computer interaction, linear communication means that information passes from sender to receiver, without exception. In the case of e-learning, this becomes a very limiting factor, as it does not allow two-way communication between teachers and students.

This type of e-learning does have its place in education, although it's becoming less relevant with time. Sending training materials to students through television and radio programs are classic examples of linear e-learning.

Interactive Online Learning

Interactive e-learning allows senders to become receivers and vice versa, effectively enabling a two-way communication channel between the parties involved. From the messages sent and received, the teachers and students can make changes to their teaching and learning methods. For this reason, interactive e-learning is considerably more popular than linear, as it allows teachers and students to communicate more freely with each other.

Individual Online Learning

Individual learning in this context refers to the number of students participating in achieving the learning goals, rather than the student-centeredness of the material. This type of learning has been the norm in traditional classrooms for thousands of years. When practicing individual learning, the students study the learning materials on their own (individually), and they are expected to meet their learning goals on their own. This type of learning is not ideal for developing communicational skills and teamwork abilities in students, as it largely focuses on students

learning independently, without communication with other students. Therefore, a more modern approach is necessary to supplant the communicational of skills and abilities.

Collaborative Online Learning

Collaborative e-learning is a modern type of learning method, through which multiple students learn and achieve their learning objectives together as a group. Students have to work together and practice teamwork in order to achieve their common learning objectives. This is done through the formation of effective groups; where each individual student has to take into account the strengths and weaknesses of each other student. This boosts the communicational skills team working abilities of the students. Collaborative e-learning expands on the idea that knowledge is best developed inside a group of individuals where they can interact and learn from each other. While this type of learning is more often used in traditional classrooms than in online courses, it's still a valid type of e-learning which can be highly effective if done correctly.

Benefits and Advantages of E-Learning to Higher Institutions of Learning

The adoption of E-learning in education, especially for higher educational institutions has

Several benefits, and given its several advantages and benefits, e-learning is considered among the best methods of education.

Some of the advantages that the adoption of e-learning in education, obtained from review of literature includes the following:

1. Convenient for students

E-learning materials are self-placed and can be accessed any time the learner wants. They do not require the learner to be physically present in a classroom.

Students can also download and save the learning materials for future purposes from the system. [4] [7]

2. Lower cost

E-learning is usually a cost-efficient way of learning for most students as they can choose from a large range of courses and make the selection depending on their needs. It can also be cost-efficient for many institutions because once the learning platforms are set up, they can be reused for many sessions.

3. Up-to-date learning materials

The study materials in e-learning systems can be updated more frequently than in the classroom-based education systems. Once the study materials are placed in the system, they can be updated without changing the whole materials and the materials can be available and reused for longer times.

4. Flexible way of learning

E-learning is a flexible way of learning for many students. Most of the study materials are stored for the students to access whenever they want. Students can also choose between an instructor-led and a self-learning system. In e-learning systems it is also possible for students to skip over the study materials they already know and choose the ones they want to learn. [15] [12]

5. World-wide learning society

E-learning systems help in creating a worldwide learning society as anyone can access the study materials regardless of the geographical location. In the systems available now learners can also contribute to the study materials, which help to keep the materials updated. [17]

6. Scalable e-learning systems

The number of students in virtual classes or e-learning systems can be very few or really high without causing any significant difference in the total cost.

7. Higher degree of freedom for students

One may find it difficult at times to learn new ideas. E-learning systems provide the possibility for students to learn the same material repeatedly until they are satisfied.

8. Better retention

The video and audio materials used in e-learning make the whole learning process more fun. This will help students to remember the things they

learn for a long period of time. E-learning materials can also be accessed whenever wanted, thus the repetition makes the retention easier.

E-Learning Platforms

The e-learning platform is the system that provides the access to the databases of e-learning materials or the online courses. The platforms are generally web-based. It enables the user to access the study materials, take tests, and track their progress whenever or wherever they want. There are many such platforms available in the market.

Companies can either use such platforms or develop their own. Developing such platforms may be expensive, so companies generally use already available platforms.

The platforms can be free (open source) or commercial. The commercial platforms will let the companies to modify them to fit the needs of the users. While choosing the platform it is necessary for the companies to understand what they want. It depends on a number of factors such as needs of students and technical skills of instructors. [11]

Some of the popular or best open-source e-learning platforms with their web addresses are listed in the table below by Nischal Guragain.

S/No.	Platforms	Web address
1	Efront learning	www.efrontlearning.net
2	Ilias	www.ilias.uni-freiburg.de/en
3	Sakai	www.sakaiproject.org
4	Atutor	www.atutor.ca
5	Colloquia	www.colloquia.net
6	Moodle	www.moodle.org
7	Dokeos	www.dokeos.com
8	Claroline	www.claroline.net
9	OLAT	www.olat.org
10	edX	www.edX.org

Challenges of E-learning system in Nigerian tertiary institutions

E-learning in Nigerian tertiary institutions is still a dream because of poor ICT infrastructure and other socio-economic reasons. Due to very high primary cost of infrastructural development and to increase public access to internet and other ICTs, the developing countries are still far behind from getting benefit from the e-learning. The major problems facing the proper implementation of e-learning in Nigerian tertiary institutions according to [11] in general are as follows:

- Inequality of access to the technology itself by all the students.

The cost of a personal computer (PC) and Laptop are still very high in Nigeria considering the income level of an average worker in the country. Few students that are privileged to have a PC/Laptop are not connected to the internet as this does attract extra cost which they cannot afford.

- Technophobia: Most of the students have no computer education background, hence they are afraid of operating one, some go to the extent of hiring expert at a cost to fill their admission, registration and other documents meant for them to fill online. However, the very few who have access to the computer do not know how to use it and maximize its usage.

- School Curriculum: Most of the students admitted have no information technology/computer education knowledge because it was not entrenched in the curriculum at their elementary and secondary education level. Not until recently when computer education is been introduced at elementary level and it is not yet a compulsory subject at the secondary level of our education.

- Attitude of Students: ICT give room to independent learning and most students are reluctant to take responsibility for their own learning, but they preferred to be spoon-fed at all times.

- Software and License cost: It is very expensive to get some of the soft wares because they are not developed locally, they are developed in Europe and other developed countries to suit their own system and make their own living. The cost and even the interpretation some of the software's put off some of the students who showed interest.

- Maintenance and Technical Support: There are few technical staffs to maintain the system. This makes it very expensive for students that have PCs to maintain when a technical problem is noticed
- Electricity: The perennial problem in Nigeria is the problem of electricity instability which has been a major setback for our technological development. Some of the students that reside in cities and towns are faced with the problem of epileptic supply of electricity, while majority of them live in rural areas that are not connected to the national grid.

Conclusion and Recommendation

What Nigerian Tertiary institutions can learn from the experience of developed countries on e-learning can be summarized into four items. They are funding, electricity, awareness/training and motivation. More fingers are pointing to the Federal Government of Nigeria on these issues. Therefore the government policies and programs of e-learning in Nigerian Tertiary education should be financially supported by substantial public funding. On the issue of funding, the Federal Government should take a bold step to yield to the recommendation of the UNESCO which prescribe 26% of the annual budget for education. Other recommendations needed for effective e-learning education in Nigerian tertiary institutions are:

- The tertiary institutions administration through their liaison offices should liaise with multinational agencies such as the USAID, to help provide the Digital Opportunity. By bringing in private sectors, the tertiary institutions can meet their e-learning objectives, through the provision of cost-effective means of increasing access equity, and quality in both formal and vocational education.
- The tertiary institution administration in conjunction with the government should put in place modalities to enable undergraduate students acquire their personal computers.
- The Federal Government should improve electricity supply as they have been promised.
- -Individuals that are well to do should continue to support this crusade by donating generously to tertiary education in Nigeria.

- -The tertiary institution administrators on their part should embark on awareness and training of staff on the use of ICTs in teaching and learning with motivation attached.

We want to submit that if these were properly implemented, the challenges of e-learning in Nigerian tertiary institutions will be reduced to minimum.

References

- Abbad, M. M., Morris, D., & de Nahlik, C. (2009). Looking under the Bonnet: Factors Affecting Student Adoption of E-Learning Systems in Jordan. *The International Review of Research in Open and Distance Learning*.
- Ajadi, TO, Salawu, IO and Adeoye, FA (2008). E-learning and Distance Education in Nigeria. *The Turkish Online Journal of Educational Technology*, 7(4), Article 7.
- Akram, JA, and Bushra, SA (2020). E- learning in Teaching. <https://www.researchgate.net/publication/331684491pdf>
- Amer, T. (2007). *E-learning and Education*, Cairo: Dar Alshehab publication.
- Arikpo I I, Osofisan, A and Usoro, A (2009). Bridging the digital divide: The Nigerian journey so far. *International Journal of Global Business*, 2 (1), 181-204.
- Arkarful, V., and Abaidoo, N. (2014). The role of e-learning, the advantages, and disadvantages of its adoption in higher education *International Journal of Education and Research*, 2 (12), 397 - 410. [https://www.ijern.com/journal/2014/December 2014/34.pdf](https://www.ijern.com/journal/2014/December%202014/34.pdf)
- Benefits of E-learning, WorldWideLearn
URL:<http://www.worldwidelearn.com/elearning-essentials/elearningbenefits.htm>
Accessed 19th February, 2022
- Dalsgaard C. Social Software: E-learning beyond Learning Management system.[http://www.eurodl.org/materials/contrib/2006/Christian Dalsgaard.htm](http://www.eurodl.org/materials/contrib/2006/Christian_Dalsgaard.htm).
Accessed 19th February, 2022
- HEFCE (2005). *HEFCE strategy for e-learning*, March 2005, available at http://www.hefce.ac.uk/pubs/hefce/2005/05_12/
- LaRose, R., Gregg, J., & Eastin, M. (1998). Audio graphic tele-courses for the Web: An experiment. *Journal of Computer Mediated Communications*, 4(2).
- Nischal, G. (2016). E-learning benefits and applications. Helsinki metropolia University of applied sciences. <https://www.researchgate.net/publication/341111111> pdf
- Optimus Solutions. The Advantages and Disadvantages of eLearning <http://www.optimussourcing.com/learninghintsandtips/the-advantages-anddisadvantages-of-elearning> Accessed 19th February, 2022
- Oye, D., Iahad, N., Madar, J., and Rahim, N. (2012). The impact of e-learning on students' performance in tertiary institutions. *International Journal of Computer Networks and Wireless Communications*, 2(2), 121-130.
- Salawudeen, O.S. (2010) *E-learning Technology. The Nigerian Experience*, Roger Printing and Publishing limited, Abuja.

- Smedley, J.K. (2010). Modelling the impact of knowledge management using technology. *OR Insight* (2010) 23, 233–250.
- Tossy, T. (2017). Measuring the impacts of e- learning on students' achievement in learning process: An experience from Tanzanian public universities. *International Journal of Engineering and Applied Computer Science*, 2(2), 39- 46. <https://doi.org/10.24032/IJEACS/0202/01>
- Wagner, N., Hassanein, K. & Head, M. (2008). Who is responsible for E-learning in Higher Education? A Stakeholders' Analysis. *Educational Technology & Society*, 11 (3), 26-36.