

Challenges of Online Learning in Secondary Education in Nigeria in The 21st Century

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Abstract

In Nigeria scholars have noted that utilization of online learning in secondary schools is slow, despite the attention on the utilization of technology for human and national development. This paper therefore identified the factors affecting online learning which includes knowledge of how to use the device and internet, network coverage then examined the challenges of online learning in secondary schools in Nigeria- irregular power supply, inadequate e-learning facilities, teacher's poor knowledge of the use of technology and lack of skill of computer applications, online distractions, poor funding and more were identified. Reforms and innovations in the school system in the utilisation of technology in teaching and learning is necessary, if educational system in Nigeria is to meet up with global standard through the use of online facilities within and without physical classrooms. Trainings on the use of technology and software applications must be regularly embarked upon for all stake holders too. Secondary school teachers must embrace change and a positive attitude towards online teaching and learning.

Keywords: Online Learning, Secondary School, Information and Communication Technology, Device, Browser, Application Soft-Wares, 21st Century

INTRODUCTION

Globally the utilization of Information, Communication Technology for teaching and learning is up surging and there is a strong zeal to equip schools with computer facilities in developed and developing nations. Many nations are shifting their educational goals to respond to emerging educational needs of the 21st Century which include technological innovations in teaching and

learning. Online learning which is an aspect of Information and communication technology from all indications in this 21st century is thriving as a platform for instruction and learning. With the innovative and technological changes prevalent in the sphere of human activities, many nations have taken steps to develop and advance their educational system to meet up global change. Through online learning teachers and students can explore the rich learning environment that the platform offers, and build their creative, critical thinking skills which are part of 21 century skills for problem solving in humans' activities. The various accessible tools enable teacher and student interaction, enhance teaching, and promotes learning. Teachers must be determined to assuage the pressure that comes with this change in teaching as well as possess adequate knowledge, with experience to navigate the instructional tools.

The federal government of Nigeria captures the relevance of acquisition of technological skills in the advancement of education by introducing Information and Communication Technology into the National policy of education for the secondary school curriculum, (NPE 2014). In 2004 through the Ministry of Education it launched an ICT driven school net to equip all schools with computer and communication technologies. At the African Summit in 2003, New Partnership for Africa's development (NEPAD) launched e-school initiative to equip all African high schools with computers, radio, televisions, fax machines, digital camera, for the purpose of connecting African students to the internet. A mobile internet unit was commissioned to take the internet to schools. Adomi, (2010) as cited in Onovo & Okorie, (2017). The government no doubt has made laudable efforts to set schools in Nigeria on the pedestal to explore the process of learning through explorations and collaborations facilitated by technology.

Online learning in our secondary schools is yet to gain general acceptance, despite the measures by the federal government to advance educational system. Hence the paper title. "Challenges of Online learning in Secondary Education in Nigeria in the 21st century.

CONCEPTUAL CLARIFICATIONS

Online Learning

Online learning is the learning that takes place on the computer, android phone, ipad etc through the internet. The use of technology to enable access to teaching, learning and resources through the internet. There are several definitions given by scholars for online learning. Stem (n.d) defines it as learning that takes place over the internet, an aspect of electronic learning- e-learning. It is acquisition of learning which takes place through electronic technologies and media, learning that is enabled electronically and not in a traditional class.

It takes place without a physical classroom, but allows online communication between teacher and student. Online learning is a shift away from passive student to a more interactive, collaborative approach in which students and educator co-create the learning process.

Obunadike, (2019) submits that online learning or computer based training is applied via the internet technologies and involves educational activities, which do not require teacher and learner at the same time and place.

On line learning is creative oriented, student centred, designed to be interactive, self-paced, and flexible. It is web based training, internet based training, virtual education, digital learning with several other names.

Online Instructional Environment and Approaches

Fordham University www.fordham.edu noted the following online environment and approaches for teaching and learning.

Asynchronous learning: This do not take place at a designated time. Teacher provides content, instructions, and assignment are given, and a time frame for submission. Interaction takes place through discussion boards, there is no class time meeting. The learner visits platform at their own time to learn and access information.

Synchronous learning: This require the teacher and student to interact online simultaneously. Interactions take place through texts, videos, or audio chat, pictures. In crises situations synchronous and asynchronous learning still take place in online learning environment.

Hybrid learning: It is synchronous lessons taught simultaneously in person to person and online interaction. It is a type of blended learning that focuses on bridging the physical classroom and virtual learning closer together in a more complete education. Hybrid learning is a form of synchronous learning that happens physically and online. Another definition states that Hybrid learning allows for both in person ad online interaction.

Proactive communication: Communication is a vital aspect of online learning as students must access information, directing them to teachers' expectations, and instructions including feedbacks. Student should know when there is an update, or when to receive an update. Accessibility and flexibility must be given a thought. When there is an interruption teacher must communicate regularly to keep students on track with teacher. It is necessary to decide whether communication should be asynchronous or synchronous. Students should know where to find an information, either e-mail, use of links for videos or page, creation of folders etc.

Online synchronous communication: This could be managed through various web conferencing, you tube, skype, wiki, blog spot and others. Technical aspect of the tool should be considered before adoption because it should be accessible for student's participation and interaction. Student will need internet access with sufficient band width, their technical capability, and network coverage must also be considered. Obunadike, (2019) contributed that synchronous activities use online technologies such as chats, instant messenger, video conferencing and other kinds of virtual meetings for real time; live interaction.

Students' communication/ feedback: To avoid communication gaps between teacher and student due to response delay, automatic reply is necessary. Students should know that their mail, assignment or feedbacks are receiving teachers' attention. Student to student interactions and discussions must be guided by rules in order for good management and accepted communication.

Technical expertise: Technical experts should be consulted for advice set ups and trainings for prompt and easy navigation.

Tools: Online learning cannot be successful without tools. In considering tools for teacher and student depending on the type of instruction. User friendly tools are appropriate so students can use tools to achieve learning.

- **Accessibility:** Tools that are easy to use, easily manipulated to navigate teaching and learning, adaptable and suitable for curriculum to support multiple learning approaches and engagement of all students.

- ICT facility: ICT gadgets, facility or device must be suitable for instructional purpose.

Online learning in the event of interruption

Interruption may be short or long as a result of crises in school or crises as a result of state, national, or global issues. The following use of online learning platform during crises situation were adapted from Fordham University online learning platform. www.fordham.edu/

- School system must be proactive considering crises times, principal, teachers students and must be involved and parents must be carried along and involved. Decisions made on this should be communicated before the event occurs.
- In the event of interruptions teacher has to prepare plan for assignments content and due date for submission.
- Establish clear communication procedures and pathways to send updated materials and mails.
- Student should be informed of where, when and how to access materials
- Emails could be used to send updated materials as attachment or links to online resources like videos, websites or podcasts or uploaded on notice section.
- Folder could be created on google drive and shared that way.
- In crises situations many might only have access to phones so it is best to convert word document to power point and excel spread sheet to pdf format which can be read on a mobile device.
- It should be ensured that interruptions does not distort existing interactions, collaborations and learning.
- It must also be decided whether collaborations will be synchronous or asynchronous

Online learning helps for continuity in education sector during cases of state or national crises, keeping students busy with academic work and active even as it builds collaborations and interactions in respect to school academic goals and achievement of learning.

Secondary Education in Nigeria

Secondary education is the education that is before the tertiary institution and it is immediately after the primary education. Secondary education is for six years. It is to prepare the individual for useful living, and for higher education.

Such education is provided in secondary school, which can be owned by federal or state government, individuals, communities. Under listed for clarity of purpose are the provisions for secondary education in Nigeria.

- a) Provide a higher level education
- b) Diversified curriculum to cater for differences in talents, opportunity and future.
- c) Provide trained manpower in applied science, technology and commerce at sub-professional grades.
- d) Inspire students for self-improvement and achievement of excellence.
- e) Raise a generation of people who can think themselves, respect others' feelings, respect the dignity of labour, appreciate those values specified in our broad national goals and live as good citizens.
- f) Provide technical knowledge and vocational skills necessary for agriculture, industrial, commercial and economic development. (NPE 2014).

Secondary education shall offer quality and broad curriculum education that will set the student apart for higher education and national development, raise critical thinkers, who will excel in all endeavours and live issues.

Information and Communication Technology (ICT)

ICT are electronic machines and gadgets used to process, retrieve and store information. Information and communication technologies are electronic technologies used for information storage and retrieval, Adomi, & Kpangban (2010). This is the age of innovations and technology and the skills in ICT are relevant to access information and also communicate. "ICT is an umbrella term that includes any communication device or application, radio, television, cellular phones, computer and network, hardware and soft-ware, satellite systems as well as various services and application associated with them. Khan, (2012). It includes diverse set of resources and set of tools Pilli, (2008) as cited in Okorieocha et al., (2019).

ICTs teaching tools include simulation- digital videos, modelling, CD Roms, teacher web publishing, word processing, spread sheets, data base, e-mail, interactive white boards and internet browsing. All these could be used for teaching in secondary schools.

The use of ICT enables the user to develop their innate potentials, their intellectual and creative abilities. The use of ICT in various processes of education support and enhance learning in institutions and used as a complement to traditional classroom and online learning. Integration of ICT into the school curriculum has a great value in student's performance especially in the sphere of acquisition of skills such as coordination, multi-tasking and open opportunities to acquire knowledge and spread information.

Blurton, (2000) as cited in Chigozie- Okwum, (2018) assured that Information and Communication Technology impacts student's learning when teachers are technology savvy and can integrate it into the curriculum. ICT have been aligned into the school curriculum for teaching and learning through the utilization of white boards, smart boards, projectors, CD Roms, DVDs and also the flipped classroom model that enable students to view lessons at home with their gadgets. The innovation in teaching and learning necessitated by the use of ICT has brought about growth and advancement in education.

Device

Device is an object or machine, electronic device, invented for particular purpose. It also means gadgets such as phone or computer that can be used to connect to the internet. "A piece of portable electronic equipment that can connect to the internet, such as smart phone, mobile phones, tablet, laptop." Groff, (2009), as cited in Onovo & Okorie (2017). ICT facilities include computer systems tablets, laptops android phones, Ipads which are able to activate the sense of sight, hearing and touch. All the above mentioned devices, also known as gadgets, or facilities are used for learning online.

Browser

The browser or internet browser is a software program to present and explore content on a world wide web such as pictures, videos and web pages which are connected by hyperlinks and classified with URIs Uniform Resource Identifiers. Example, is a web page viewed using a Browser. Listed are some of the browsers online. The first was named World Wide Web, NCSA Mosaic. Current internet browsers are Google Chrome, Microsoft Edge, Micro Soft Internet Explorer, Mozilla Firefox, Opera, Apple Safari, Amazon Silk.

Application Softwares: Application software are computer programmes that are used to perform specific personal, educational and business functions. Each programme is designed to assist the user to perform specific tasks. Examples of application soft wares are:

Data Base Package- MS access used to store and retrieve information.

Spread Sheet Packages: MS excel, lotus 123 used for calculation or to produce graphs and charts

Word Processing Packages: MS Word, Word perfect used to produce text based documents, letters, reports and memos.

Desktop Publishing Packages: Page maker, page plus, MS publisher, used to produce potters, newspapers, books, magazines

Computer Aided Design Packages (CAD):2D Design, AutoCAD, Turbo CAD, used to produce engineering designs and architectural plans.

Communication Software: Such as Internet explorer, Chrome, Netscape communicator, used to access the internet, send and receive mails.

Graphics Packages: Paint, paint brush, Corel Draw, Serif Draw used to produce and manipulate art works.

Presentation Graphics Packages: Power-point, lotus freelance used to create slide shows, which can be viewed on screen or projector.

Web Page Editors: MS front page, Macromedia Dreamweaver used to create Web pages
Revision world.com

21st Century Information and Communication Technology

As defined by Wikipedia, 21st Century is the current century of the Anno Domini era or the common era in accordance with the Gregorian calendar. It began 1st January, 2001, (MMI) and will end on December, 31, 2001, (MMC). It is the first century of the 3rd millennium. The use of ICT in the 21 century teaching and learning has improved teachers' engagement with students by equipping teachers and supporting them in their activities with students in learning.

A 21st Century Education: A 21st century education responds to the economical, technological, and societal shifts that are happening at an ever increasing rate. It is an education that sets children up to succeed in a world where more than half of desired jobs do not exist, but education is responding through ICT.

Importance of Online Learning in Teaching and Learning

Online learning which is facilitated through technological devices and tools enables the teacher and student to contribute optimally. Technology plays an important role in student's improved educational success and assessment of their pedagogical thinking. Asuru & Chiweike (2020). Digital learning initiates innovation and enhances the quality of teaching and learning. Ndukwe, (2016) as cited in Nwakwoala, (2020). The numerous tools and the learning environment of online learning

engages the students and the teacher and subsequently inspires teachers' creative potentials for apt lesson delivery.

An e-learning system is an important support structure for delivery of modern, productive pedagogy. Vitta and Keane, (2005) as cited by (Tunmibi et al., 2015). "E-learning aids interaction, participation and cooperation, and as interaction increases, learning increases." Mahdy, (2015), as cited in Omobolanle (2020)." The internet is the largest library, bookstore, auction house, and art gallery in the world." Ndukwe, (2016) as cited by Nwankwoala, (2020).

The resources available on the internet to be used by teachers and learners are numerous, the various tools in online learning platform motivates active participation and concentration in the learner because the learning environment is self -involving, attractive and absorbs the mind of the learner different from the traditional class. Conceicao & Drummond, (2005), confirms that e-learning resources available electronically creates rich and interactive online experience with class activities. In a research carried out on the impact of digitization of e-learning in primary and secondary schools 93.75% of students agreed that e learning further develops students comprehension skills, 90.6% says e-learning encourages a student's way of learning. 85.7% teachers opined that e-learning help teachers to teach more effectively while 85.7 % says that e- learning makes teaching easier and efficient. (Tunmibi, et al., 2015). Stem, (n. d) asserts that online learning helps for innovative teaching, using student centred approaches, includes various learning activities, and addresses different learning styles. Nwana (2012) opines" Online encyclopaedia, and other online resources enhances teachers' use of curriculum through specific applications such as drills and practices, virtual laboratories etc."

Online learning in secondary schools in Nigeria is necessary in this era of advancement in the utilization of Information and Communication Technology around the globe in educational system. Its approaches is a paradigm shift from teacher centred task based education to collaborative, creative, critical thinking that leads to problem solving and interaction based learning which improves students pedagogy thinking, teachers effectiveness and efficiency within a connected electronic classroom. The tremendous tools together with teaching and learning resources in an online classroom enables active participation and acquisition of live skills relevant for human activities. Online teaching and learning undoubtedly will equip students with technological skills for economic development, intensify the advancement and growth of our educational system, even as it gives them an edge to compete excellently in the ever changing world.

Factors that Affects Online Learning in Developing Countries

Factors that could affect the efficiency of On-line learning are:

Cost of the Device: To have a good device is important. Without this it is impossible to be a part of online learning.

How to Use the Device: Learners and educators who do not have the knowledge of the devices, gadgets or tools cannot manipulate and navigate them for teaching and learning.

Knowledge of Network: The internet is a broad network, a global computer network that provides variety of information and communication facilities, consisting of interconnected network. It is a vast computer network linking to small computer networks worldwide. Individuals who want to access these networks must be acquainted with the use of the internet.

Knowledge of Browsers/ Application Soft-wares: There are various tools, browsers and soft-wares. To use them effectively and efficiently for instruction and learning, one would need an adequate and proper knowledge of the differences between the browsers, and different application soft-wares. User friendly applications are necessary for online learning.

Cost of Data: Data plans in developing nations are high. To access the internet data plan is needed. So many times data plans get exhausted faster than normal. This affects online learning.

Network Coverage: A lot of places in Nigeria do not have network coverage, including rural areas, this will deter online teaching and learning.

Power supply: All the devices used for online learning require constant and a steady power supply to function. (Neyland 2011, Balanskat, et.al.2007 & Okebukola, 1997) as cited in Onovo & okorie, 2017 notes that factors that affect online learning are; institutional support and teacher's capability, furthermore, teacher level, school level and system level, and the latter, skilled manpower such as teacher's lack of knowledge respectively. For online learning to flourish as a mode of instruction in secondary schools all the variables that function as a component for its success must be considered.

Challenges of Online Learning in Secondary Education in Nigeria

Secondary schools in Nigeria are confronted with challenges learning online. There is a growing demand for the use of online facilities, for teaching and learning especially now, with the emphasis for the utilization of technology in Nigeria's educational system. Having studied the trend of online learning in our secondary schools the following challenges are prevalent.

Poor Power Supply

This is characterized by incessant power outages in several communities in Nigeria, inadequate power, frequent electric interruption. This is a major problem against the use of ICT facilities for online learning in secondary schools. Electronic equipment functions with availability of power from electricity. Poor power supply hinders the use of ICT facilities in schools that have them. Poor electricity supply impedes the use of ICT tools for online learning

Teachers' Poor Knowledge and Poor Skill in Computer Applications

Though technology have been in use for long now in Nigeria, many teachers are yet to grasp the techniques of using the computer and the skills of navigating the soft-wares for teaching; this also applies to the utilization of other ICT facilities like the use of scanner, printer and some other online tools of manipulation for teaching available. This causes poor/ non-utilisation of electronic learning sites and the soft-wares available. In some cases, the facilities are not optimally and efficiently utilized for teaching and learning. Nwana, (2012) identified that percentage of Nigerian secondary school teachers with basic computer skills was low compared to their counterparts in developed countries.

Change Mentality

As humans there is undue resistance to change due to comfortability of doing it the old way. Irrespective of the innovative and creative resources prevalent for online teaching and learning, most teachers find it difficult to adapt and adopt the use of online facilities and tools for teaching. To some it is time wasting and non – practicable.

Insufficient E-Learning Facilities such as Computer, Projectors and Other ICT Facilities in Schools

It includes quality and quantity hardware and software available and accessible for online learning. The number of students surpasses the numbers of facilities, components, and operating systems for learning. Students' inability to access and use facilities on time to carry out their tasks within a stipulated period affects achievement of educational goals, as this continues, boredom sets in and subsequently learning will be affected in the entire system.

Online Distractions

This takes various forms, unsolicited adverts, seductive pictorials, and videos that obstruct online learning. Secondary school learners who are in exploratory stages of their lives will access these sources of online noises of distractions and thereby hamper their pedagogical flow and thinking, breaking focus, and continuity in teaching and learning interactions as well as lesson delivery during online lessons. Even adult learners are not exempted from these undue open windows of distractions.

Poor Funding

Funding of educational projects within the educational system like some other sectors has long been an issue in educational advancement through worthy projects. Facilities cannot be maintained or repaired when due, neither will soft-wares for specific lessons be acquired. Secondary schools in Nigeria suffer from limited school budget/ fund so there is lack of fund to sustain online learning culture in the few secondary schools where ICT facilities for online learning are available. Okere. (2001) as cited in Amaechina, et al. (2020) asserts that inadequate funding is a major impediment to implementation of educational policies, especially in secondary schools in Nigeria.

Dearth of/Inadequate Technical Engineers

Technology fosters in an atmosphere of manpower and technical support. Use of technology for online learning is still evolving, deficiency of technicians to repair, fix ICT crashed and/or faulty hard-wares. This points to preparedness of management staff, school principals and government for functional online learning in secondary schools in Nigeria.

Policy Implementation

Federal government's efforts at enforcing /advancing technology in the educational sector, through laudable projects such as commissioning of mobile internet unit (MIU) operated by Nigeria National Information Technology Development Agency (NITDA) to take the internet to schools. Adomi, (2010), as cited in Onovo & Okorie (2017) School Net Nigeria in collaboration with MTN have set the pace to revolutionize education system by setting up cyber café and ICT laboratories in few states in Nigeria secondary schools using local ISPs. Also School Net Nigeria, in conjunction with Busy Net have set up laboratories in few schools. Chigozie-Okwum, (2018). Many public secondary schools are yet to experience technological innovations in teaching and learning, so accessibility of online learning is still a mirage.

Connectivity/Network Inconsistency

Millions of people around the globe are experiencing technical hitches because of high usage rate of online learning systems, video streaming, soft-wares and other digital tools. Platforms are overloaded, this brings about poor quality video and audio. Internet connections are either unstable or

current data plan is not enough to cover progressive online learning needs. In Nigeria many people are within low-band width, low internet coverage so in those environs accessibility of the internet becomes impossible. With constant problems of network failure/epileptic network at the time of teaching and learning, download of documents, accessing a web page takes time and many ending unsuccessfully. Teachers and students are frustrated trying to manage bad internet connection during online lessons. To sum it up Eya & Eya (2013), as cited in Fiokedu (2019), identified poor network as major problem of on line transactions in Nigeria.

High Cost of Equipment /Band Width

Many teachers share laptops, and computers with fellow teachers, students also juggle the use of laptops and smart phones with their parents, some students do not even have access to them because their parents cannot afford them. Cost of recharge cards are high, coupled with expiry time frame, and speed of data exhaustion therefore continuity and reinforcement of pedagogy is impossible, interaction and collaboration between students is obstructed, and feedback between the learner and educator halts.

Parents Unawareness/Unpreparedness: Parents and a lot of people are struggling to identify with how education online will achieve purposeful result. They are stuck with traditional approach to teaching as a result of this, there isn't enough support to their wards, or the schools, this definitely causes discouragement. The situation worsens because many of them have little or no knowledge of navigating the gadgets for/with their wards.

Poor Maintenance Culture: ICT facilities used to empower learning must be refurbished and maintained regularly. Generally, there is improper or poor maintenance culture of infrastructures in Nigeria. When electronic facilities are not maintained, their level of functionality reduces or remain non accessible for teaching and learning, unusable, abandoned and wasted.

Curriculum Alignment: No doubt online learning is rich and resourceful for academic achievements but it should be used to embellish the curriculum and not to extinguish or erase the curriculum. Teachers' capability in using tools that are relevant to achieving curriculum content and objectives demands creativity, good knowledge and proper coordination, and this is lacking.

Student's Alienation: The traditional classroom teaching and learning enable student's physical interaction with students and teachers. Reasonable interaction, conversation, discussion and physically seeing fellow student and teacher make learning interesting. When they study online they miss out on physical talking and learning processes. Human beings naturally enjoy others presence.

CONCLUSION

With all these in place online learning in secondary schools in Nigeria will have a good spread all over the country. All stake holders must take responsibility to do the needful for a sustained effective and efficient online learning in our secondary schools. Teachers, principals and students must have the mind shift in adapting new approaches to learning. However online learning is not a substitute for traditional classroom learning, but must be used to complement teaching and learning as its rich resources and learning environment add undeniable benefits, support and enhance teaching and learning even as it equips teachers and learners with live skills relevant for the pursuit of other human activities.

SUGGESTIONS

The government should do the following.

- The government should speed up and equip all secondary schools in Nigeria with ICT facilities, and also increase ICT infrastructures in schools.
- Involve more private companies, non-governmental agencies, civil societies and private individuals to support equipping our secondary schools with quality and adequate ICT facilities.
- Set up monitoring teams who are not biased or corruption prone for monitoring to ensure that the facilities are utilized optimally and efficiently for teaching and learning.
- Work at improving power supply as this will improve online teaching and learning.
- Discuss with network/data plan providers for advice and also upgrade the internet plan.
- Train personnels who would empower teachers constantly on the use of the ICT tools and online training gadgets to enable them acquire and update their knowledge, and also improve their competencies in their use of technology to achieving learning.
- Also a technical support team for repairs and maintenance, should be made accessible to teachers and principals for speedy response.

Teachers in public schools on their part must be provided with smart phones or computers at subsidized rates which they could pay up in instalments, while students be given free internet enabled computers.

Teachers must have the mindset to adapt and adopt online learning, which is a mode of instruction in the 21st century globally and make themselves technologically relevant to meet the changing innovations in Nigeria's educational system and around the globe, as the future belongs to those who take advantage of learning and improvement especially in technology.

Educational planners and policy makers must device means for continuous advancement in the growth and use of technologies in our secondary schools.

School principals should not sit on the fence, they must show their commitment by being tech savvy in optimizing their roles as change agents and thereby motivate the teachers to learn, unlearn and relearn their use of technology for online teaching and learning.

Students must brace up the courage to adapt to learning online and embrace the innovative changes in the educational sector.

Tele-communication companies should find ways to spread their network around the country. This will allow secondary schools in rural and all urban communities to have stable network.

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