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Original Article

LEARNING TECHNOLOGIES USE IN NIGERIAN SCHOOLS IN 21ST CENTURY: CHALLENGES AND PROSPECTS

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Abstract

The objective of this paper is to investigate the improvement of technology and how it affect teaching and learning of teachers and teaching in Nigerian schools. It explored the technological changes that have happened in the school which have redefined literacy and how learning occurs. The paper identified inadequate funding, shortage of technological facilities, unstable power supply, poor internet services, shortage of computer teachers, poor implementation of ICT policies, poor ICT literacy of learners, high cost of ICT facilities, lack of technical support for repairs and maintenance of ICT facilities, corruption and insecurity as problems hindering usage of e-learning in education in Nigeria. The paper, among other things, recommended that the federal and state governments should increase the funding of education for the development of information and communication technology in the education sector

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Introduction

Today's 21st Century world is progressing, change is not only important but also so fast that there is need to stay at alert if one must keep pace with development in the world of technology. These changes have affected the schools and the conceptualization of education, teaching and learning. According to (Esate and Edimeh, 2024) "Our learners have changed completely. Today's learners are no longer the people our educational system was designed to teach". Apart from the difference of the school system with the present day learners who are described as ***digital natives***, teaching them has become very challenging to teachers who themselves are ***digital immigrants***. The teachers do not believe that the present generation of learners can learn from digital technologies, because they did not learn by that means. It will not be appropriate to expect the 21st Century learners to operate effectively in this era adorning the thinking caps of the previous generation. It becomes completely important that teachers keep pace with modern learning technologies available so as to help the learners find, select and access necessary information and knowledge using technological or digital tools.

Digital and Technological Literacy

Technology literacy is the ability to use, comprehend, manage, and analyze technology safely, effectively, and responsibly. This literacy includes using technology to evaluate, create and integrate information. But technology literacy is not limited to just computers and the Internet; it can be applied to any technological device. The definition of technology is any device, system, or methodology created to solve a problem or help carry out a task[3].

In this digital time, which has been referred to as **information age** and the **age of technology**, information is available. It is however only individuals that possess the right skills and knowledge about the tools to unlock the information that can access, analyze, interpret, and utilize information. Digital information requires digital literacy for access and use. A digitally literate person will possess a range of digital skills, knowledge of the basic principles of computing devices, skills in using computer networks, ability to engage in online communities and social networks while abiding to behavioural protocols, be able to find, capture and evaluate information, understanding of the societal issues raised by digital technologies, and possess critical

thinking skills[4]. Digital and technological literacy is much more than just using the computers or possessing computing skills. It is about digital competence.

Learning Technologies for the Classroom in 21st Century

The introduction of the mobile technology has put learning in the palm of both teachers and their learners. Mobile technology refers to mobile devices that include Personal Digital Assistance (PDA), tablets, digital cell phones, etc. They are easy to learn enough that they have useful in implementing different learning techniques and pedagogies[6]. Mobile technology learning, also called M-learning is learning that can be gotten through wireless technology devices that can be pocketed and utilized wherever the learner's device can receive unhindered transmission signals (Esate and Edimeh, 2024). Though to[6,7] cautioned against the adverse effect of one sided relationship between education and technology in which devices originally intended for the corporate environment is deliberately transferred into education on the basis of its instructional efficiency, it will be improper and wrong to ignore the effect of mobile devices on learning [6,7,8] Mobile technologies have helped to re-conceptualize what actually constitutes the classroom or learning space by engendering a dimension of learning that is free from the constraints of fixed time, space and place. The use of technology in education has provided students and teachers with an unlimited number of options for classroom learning.

Apart from its innovativeness, its portability and ease of use has made it more versatile than desktops and laptop computers. It has become a technological tool of choice in the classroom. Teachers could help students re-focus the use of their mobile phones for more rewarding functional use. The popularity of these devices with the students warns the teachers that if they are not exploited for teaching and learning, they will become sources of distraction to students and to their ability to learn in the classroom. Keeping pace with this technology for classroom use is not only important to teachers and educators but also absolutely unavoidable. Students and teachers can use mobile technologies anywhere the classroom is located such as in the school field, the garden, in the school farm, in the gym, during field trips, etc. They do not need to wait to get to the computer laboratory to do an assignment, to answer a question or to access important information[9].

Some mobile technologies that are revolutionizing classrooms and learning in this century include but are not limited to:

E-Readers: These are portable easy- to- update and cost effective devices that can hold a lot of books and the content of which can be read on netbook, e-readers, laptops etc. (Ray, C. Claibone, 2021). Students and teachers can therefore carry all their books wherever they go but in a small electronic device. The Apple's ipad offers users the e-reader as well as wireless internet function, office applications, educational apps such as interactive periodic table, Alphabet fun which teaches handwriting, number and letter recognition, and the "Beautiful planet HD" which enables learners have a photographic tour of 160 different countries[10]. With the use of cell phones (mobile) technologies students can assess various web sites, blogs, connect to digital libraries, digital classrooms away from their own, collaborate with groups and individuals as well as communicate through the social media.

Blogging: These are personal internet journals which allow both students and teachers to post their thoughts, ideas and comments on the website for others to comment on, open discussion or seek opinions. Blogging allows students and teachers to share their thoughts and comments on the thoughts of others thus creating an interactive learning environment (Courts and Tucker, 2012) on-line even when separated by distance.

According to India Berry, 2021, some other learning technologies are as follows:

Virtual Reality: Virtual reality can be used within all parts of education. Virtual reality is an artificial environment which is viewed through the use of a headset, allowing you to explore in a way closest to real life. This technology is being used to allow students to explore different parts of the world from the classroom. Museum tours are also available in virtual realities which are beneficial for students studying subjects such as art, science and history.

Digital Pads: Digital pads are plug-in or wireless devices that allow students and artists to create digital drawing and work. These devices also teach students digital design which is a growing industry. In addition, the use of the pads takes the need of paper away and reduces waste as students can use an unlimited amount of digital paper and materials. Some of the most popular digital drawing devices are the IPad Pro with Apple_Pencil, the Wacom_Intuos and the Huion_H420.

Game Learning: Over 90% of children in the United States play video games on a regular basis, the gaming industry is now one of the biggest within entertainment. Using gaming within the classroom engages students more than any other method of teaching, as well as using games to teach the curriculum, it also improves children's memory and hand eye coordination. Teaching students how to create and code games is also a valuable skill, especially with the continued growth of the gaming industry, more and more jobs in this field will become available.

3D Printing: 3D printing is an important technology within the education industry. It is especially useful within design based courses, students studying architecture, resistant materials, and engineering can use 3D printing to create prototypes and models for their projects. Also students studying science can use the technology to print molecules and models to then study from.

Ozobot Robots: Ozobot is a company which teaches young children about coding; it offers a range of products and devices that can be used at home or within the classroom. Students can use the Ozobot robot with a tablet application or with paper and markers. The purpose of this product is to get children interested in coding and teach them the basics.

Tablets: Tablets are now commonly used within our daily lives and within the workplace. These are now being introduced into the education industry. Tablets have many uses in schools the most common being a replacement for notebooks and textbooks, this allows students to store all their work on one device and schools are able to cut down on their paper use. Students are also more engaged when using technology and tablets are more easily usable compared to computer rooms and laptop trolleys. The most common tablet brands being used in the classroom are the IPad_Mini, the Amazon_Fire_Tablet and the Samsung_Galaxy Tab.

Smart boards: Smart_boards are large interactive projector screens. They work with a projector which creates an up scaled version of the computer screen; this can then be drawn on and controlled via the screen itself. This is beneficial for schools and classrooms as students are able to fully interact with the work on the board without using the computer. Unlike regular whiteboards, these are not drawn on with real pens and do not need to be constantly cleaned.

E-Books: E-Books are publications available in a digital form. There are two types of E-Books - applications for digital products like phones and tablets or E-Reader devices which are similar to a tablet but are solely for E-Books. Books available on ebook devices and platforms are commonly cheaper, as multiple books can be stored on one device. These are especially useful in the education industry as students are required to read a large amount of books. Once books are no longer in the curriculum or become damaged, they are disposed of which creates a vast amount of waste, E-Books prevent this from happening due to their capabilities and extended lifetime.

Document Camera: The Document Camera is a new technology product that allows teachers to project paper documents onto new projectors and smart boards. These cameras are being used in the education industry to show classes, objects and images. The Document Camera is predominantly used in science classes to showcase experiments so that students do not have to gather in an area.

Remote Learning: Remote learning has taken over education; this is mainly due to the global pandemic. When students were unable to go into the classroom, the education industry innovated and began using video conference platforms as an alternative. Platforms such as Zoom, Teams and Google_meet all allowed student education during the lockdown period. This use of technology meant that students did not miss out and were about to continue their education.

Challenges of Learning Technological use in Nigeria

The peculiar situation of Nigeria today makes adopting innovations difficult. Even with the awareness of the revolutionary effects of technologies in today's world, integrating these technologies into the classroom for learning purposes by students is hindered by such factors as:

1. Corruption

Corruption is another big challenge to the effective deployment of e-learning facilities in Nigerian schools. Corruption has penetrated the administration of education in Nigeria. The high rate of corruption in the administration of public schools in Nigeria is responsible for the poor utilization of ICT by students learning in their schools. Funds released for such capital programs are sometimes diverted into private pockets and mismanaged. Some ICT facilities installed in schools are sometimes removed by the various school heads and converted for family use at their houses. According to

Ogunode, & Adah (2020), institutional corruption is another problem preventing the full implementation of educational policies in Nigeria. Esate (2024) noted that funds allocated for implementing educational policies and programmes are been diverted by some of the officials in the ministries of education into their private pockets.

2. Shortage of Computer Teachers

The shortage of Computer teachers in Nigerian educational institutions especially the public schools is affecting the effective use of e-learning applications in the schools. Many public schools in the country do not have a trained computer instructor and this is limiting the learning programme of ICT and its applications in the schools. Olatunde-Aiyedun (2021) submitted that the shortage of professional ICT skilled teachers is another problem hindering the effective use of ICT by students for learning. (Esate and Edimeh, 2024) lamented that about 90 percent of our public schools do not have computer teachers. Therefore, the government needs to redefine our educational system. One cannot depend on an analogue age. As the world is changing, individuals need to change too. Ogunode & Abiola (2021), and to (Esate and Edimeh, 2024) stated that inadequate funding, limited teacher education institutions, corruption, lack of manpower planning, brain drain and poor motivation are the factors responsible for the shortage of professional teachers in the Nigerian educational institutions.

3. Unstable Power Supply

Unstable power is a challenge to the usage of e-learning packages in schools in Nigeria. (Esate and Edimeh, 2024) stated that many cities and communities today in Nigeria do not have access to a power or electricity talk less of stable power supply. Punch (2022) reported that Nigeria has the lowest access to electricity globally, with about 92 million persons out of the total population of over 200 million people in Nigeria are lacking access to power. The inability of educational institutions to access stable power supply is affecting the utilization of ICT for administrative functions in those institutions[11.]

4. High Cost of ICT Facilities

E-learning facilities are very expensive and this is making it impossible for many schools in Nigeria to adopt it for the process of teaching and learning. Many Nigerian are poor and this is affecting their purchasing power. Ogunode, et al., (2021) reviewed that the high cost of ICT facilities in Nigeria is a major reason many students are not using ICT to support their learning programs. The e-learning facilities are very expensive due to the problem of the

unstable Dollar in the market. Many school administrators and parents cannot afford to buy such facilities for their schools and children. (Esate and Edimeh, 2024) noted that the high cost of digital devices and access to the internet creates another barrier for vulnerable children.

5. Inadequate Technological Facilities

Inadequate technological facilities that will support the e-learning programme to work and function in schools is another major problem facing the e-learning programme. (Attah 2021). ICT facilities like Computer hard and soft wares consisting of: Laptops, Scanners, Printers, Fax machines, GSM Phones, Memory chips, Hard disks, Flash drives, Internet connectivity, DVD, Compact disks, Cables (power and data), etc. are not in many schools across the country. (Esate and Edimeh, 2024) noted that a quite number of schools in Nigeria do not have adequate ICT facilities in their computer laboratories to support the student learning program and this is affecting the students.

6. Inadequate Funding

Poor funding of education is affecting the e-learning programme of schools in Nigeria. Inadequate funding of ICT programs in Nigerian schools is one of the major challenges militating the effective utilization and integration of ICT into student learning programs. The allocation for the administration and management of schools in Nigeria is inadequate. The education sector in Nigeria has not been encouraged by the three tiers of government. The annual allocation for the administration of education is below the recommendation of UNESCO 26% for developing countries like Nigeria. Therefore, Nigeria is performing below the UNESCO recommendation for budgetary allocation to educational development for the past six years. Punch (2021) disclosed that in 2016, the education budget was N369.6bn which amounted to 6.7 percent of the national budget of N6.06tn while in 2017, N550.5bn; 7.38 percent of the N7.29tn budget was allocated to the sector. In 2018, N605.8bn, out of N9.12tn budget, representing 7.04 percent was allocated to education; while it was N620.5bn, representing 7.05 percent of the N 8.92tn budget in 2019. In 2020, N671.07bn of N10.33tn which amounted to 6.7 percent was allocated to the sector; while in 2021, the sector got N742.5bn of the N13.6tn budget, representing 5.6 percent. The budgetary allocation to education follows the same trend in 2022 and 2023 with a mere 7% and 5% of the total budget allocated respectively. The 2024 budget indicates that the education sector

got N1. 54 trillion, representing 6.39 per cent of the total budget. (Esate and Edimeh, 2024) noted that inadequate funding is a major challenge that has affected the deployment of ICT in schools in Nigeria. The areas that poor funding has affected ICT deployment include funding of training, and retraining of ICT teachers, ICT projects, development of infrastructural facilities, development and maintenance of ICT software packages and energy. (Esate and Edimeh, 2024) noted that the poor funding of schools are responsible for poor usage of ICT facilities by students for learning in their respective schools.

7. Poor Internet Services

Poor internet services are a major problem preventing effective usage of e-learning packages in some schools in Nigeria. The Internet service in Nigeria has limited coverage across the federation. Many rural areas are still not connected to internet services. Datareport (2022) disclosed that there were 109.2 million internet users in Nigeria as of January 2022. Nigeria's internet penetration rate stood at 51.0 percent of the total population. Kepios analysis indicates that internet users in Nigeria increased by 4.8 million (+4.6 percent) between 2021 and 2022. For perspective, these user figures reveal that 104.9 million people in Nigeria did not use the internet at the start of 2022, meaning that 49.0 percent of the population remained offline at the beginning of the year. (Esate and Edimeh, 2024) stated that another problem hindering the effective usage of ICT facilities by Nigerian students for learning in their schools is the problem of poor internet services. Many schools are in rural areas where there are no internet facilities and many schools cannot afford to provide internet services for the students due to high costs and charges. Internet services are still very expensive in the country. Accessing the services in the schools by school administrators is on the high side in terms of cost implication. (Esate and Edimeh, 2024) expressed regret that access to technology has remained a major challenge facing Nigeria, noting that Internet penetration stands at 42.06 percent in Nigeria where most of the population lives in rural areas.

8. Poor Implementation of ICT Policies

(Ogunode & Jegede, 2020) claimed that to ensure full integration and usability of ICT in Nigerian public schools, the government should designed ICT policies and programs for all educational institutions. National Policy on Education FRN (2013) recognized the prominent role of Information Technology (IT) in advancing knowledge and skills necessary

for effective functioning in a knowledge-driven world. According to it, the government shall provide adequate infrastructure and develop capacity for effective utilization of Information Technology (IT) to enhance the delivery of Basic Education in Nigeria. Ogunode & Jegede, (2020) observed that the poor implementation of these ICT policies in public schools across the country is another factor responsible for the poor usage of e-learning packages by Nigerian public school students. (Esate, 2024) observed that the change in government in Nigeria usually result in policy modification and poor implementation

9. Insecurity

The high rate of insecurity in the country is another fundamental problem hindering public school students from using ICT facilities for learning in their schools. Due to insecurity and attacks by insurgents and Boko Haram members, many public schools are closed down for months and years, especially in the northern part of Nigeria. (Esate,2024) observed that the insecurity problem has affected their academic calendar, and learning program and even led to the destruction of infrastructural facilities in many public schools

Conclusion

The E-learning programme for educational institutions was launched by the Federal government to deliver educational service to Nigerians in all forms of education. This paper examines the problems hindering the usage of e-learning packages in schools in Nigeria and the article identified inadequate funding, shortage of technological facilities, unstable power supply, poor internet services, shortage of computer teachers, poor implementation of ICT policies, poor ICT literacy of students, high cost of ICT facilities, lack of technical support for repairs and maintenance of ICT facilities, corruption and insecurity as problems hindering usage of e-learning in education in Nigeria.

The world today is powered by technology. Education of any nation is to empower the citizens to fit successfully into their society. The 21st century world is ruled by information. Only individuals with the ability and skills to utilize modern digital tools to access and generate information and knowledge can perform in the global work space and platform. The technologies of today have completely changed the platform for learning. Students now learn from different sources. Teachers need to key into the modern learning modes by utilizing the tools offered by the digital revolution to prepare learners who are globally

empowered. The idea of a fixed classroom where students learn only in the presence of their teachers and from what the teacher provides for them has gone. Learners can now learn with the teacher directing even when they are separated by time and distance. This type of learning, apart from its efficacy in promoting self-paced learning, motivates learners to engage in research and dissemination of knowledge which are connected to networking and collaboration. To remain relevant therefore, teachers and students should keep pace with the learning technologies of the time through re-engineering and innovating in system structure, perceptual change, instructional, administrative and assessment practices that are compliant with the 21st Century literacy skills

Recommendations

To address these problems, the following were suggested recommendation, which may help or go a long way:

1. The federal and state government should increase the funding of the ICT programmes in all the schools in the Nigeria.
2. The government should provide adequate e-learning facilities in all schools. This will provide opportunities for students to use ICT for learning in their schools.
3. The government should ensure that internet service providers are providing quality internet services across the Nigeria.
4. The government should ensure that the power supply is stable and available to all educational institutions, especially schools.
5. The government should subsidize the high cost of e-learning facilities for students and educational institutions.
6. The government should employ more computer teachers and deploy them to schools across Nigeria.
7. The government should develop the political will to implement all ICT policies in all primary schools across the country.
8. The government should fight all forms of corruption in the administration of education in the country. ICT facilities installed in schools should be properly monitored and supervised.

References

1. Attah. 60% of Nigerians lack access to smartphones, digital devices. Retrieved June
2. "Digital Literacy". Welcome to ALA's Literacy Clearinghouse. 2017-01-19. Retrieved 2020-10-22.
3. Gillis, Alexander S. “What Is Digital Native?” WhatIs.com, TechTarget, 9 June 2020.

4. "What Is a Digital Immigrant?" Techopedia.com, 29 Dec. 2011.
5. Reddy, P., Sharma, B., & Chaudhary, K. (2020). Digital literacy: A review of literature.
6. By India Berry "Top 10 Technologies For The Classroom"(November 05, 2021)
7. Idoko, C. (Dec 21, 2021). F.G. launches e-learning platform to boost Open Education. https://tribuneonlineng.com/fg-launches-e-learning-platform-to-boost-open-education/
8. Ogunode, N.J. & Abiola, P.S. (2021) Shortage of professional teachers in Nigerian educational institutions and the way forward. Journal of Ethics and Diversity in International Communication, 1(4), 9-15
9. Jones, A. A Review of the Research Literature on Barriers to the Uptake of ICT by Teachers. 2004.
10. Prendky M. Digital Natives, Digital Immigrant on the Horizon 9(5/1-6),2001
11. Ogunode, N.J., Iyabode, A.E. & Olatunde-Aiyedun, T.G. Community service programme of Nigerian public tertiary institutions: problems and the way forward. Spanish Journal of Innovation and Integrity, 5, 1-9, 2022 http://sjii.indexedresearch.org/index.php/sjii/article/view/64