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"Digitalisation Of Education in Nigerian Secondary Schools: Benefits and Challenges"

Isiaka Adeniran Akinyemi[1], Lilian Ijeoma Amaechi[2], Lawrencia Chinyeaka Etoh[3]

[1]Lagos State University, Ojo, Lagos2
[2]Lagos State University, Ojo, Lagos2
[3]Lagos State University, Ojo, Lagos2

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ABSTRACT

Digitalisation of education is a concept adopted to ensure the innovative incorporation of modern technology and digital tools to assist the progress of teaching and learning, and to create more rooms for remote learning. In attempt to unveil its benefits and challenges, this paper examined the digitalisation of education in Nigerian secondary schools. In this paper, the concepts of education and secondary education as embedded, digitalisation and digitalisation of education were examined. Looking at the empowerment brought by digital education system through its benefits and/or advantages, the paper x-rayed the importance and challenges facing digitalisation of education in Nigerian secondary schools which could hindered Nigerian students to be more innovative globally. This paper made recommendations among which are that, schools should implement blended and remote learning to allow students learn both online and offline on their own, and teachers, parents and school Guidance and counselors should be more vigilant in monitoring the students when they have access to computers or internet to avoid going to pornographic sites or other sites that may be harmful to their learning. Government should also collaborate with internet, digital, and telecommunications service providers to ensure that ICT infrastructure, such as internet broad bands and network devices, is available and in good working order to support the digitalisation of teaching and learning at all levels and not only at secondary school level.

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Introduction

Globally, teaching-learning process is no longer taking place within the four walls of a classroom as a result of breakout of the pandemic known as COVID-19, leading to digital learning in which Nigeria is no exception. Today's students are called "digital-age learners" (Collier, Burkholder & Branum, n.d), expressing their technological know-how and learning independence. Beyond traditional school structures and practices, these digital-age students have access to resources and expertise. Hence, the importance of digitization in education cannot be overstated, since it opens up new areas of learning in this new normal. However, there is virtually nothing in people's life that does not include some type of digitization, as evidenced by the COVID-19 epidemic, which demonstrated that more can be done online. As a result, the significance of digital education has never been greater than it is now. In this age of Information and Communication Technology (ICT), there is a growing concern about how ICT resources like the computer, scanner, intranet, internet, e-mail, videophone systems, teleconferencing devices, wireless application protocols (WAP), radio and micro waves, and so on can be presented online to students in both their immediate locations (classroom model of e-learning) and at various geographical distances (Nwana, 2012). Zoom meetings, for instance, have been swiftly embraced by other industries and the possibilities for remote work are ever – growing and the prospect for future is intriguing in terms of what is conceivable. The education industry has not been left behind in terms of innovation over the last decade, and there has been a lot of digital learning that is likely to continue. Nigeria's educational system requires significant digitalisation to increase abilities and strengthen students' cognitive domain. According to McNulty (2021), curricula that are delivered in digitalized environment improve learning and innovation skills, information, media and technology skills, and life and career skills. Whereas, curricula taught in non-digitized contexts cover cognitive skills such as critical thinking, problem solving and creativity, because it is possible to teach and learn these skills without having access to digital tools and environments. As a result, digitisation of education provides a chance for learners to establish a cognitive resource-based mechanism and enhance their abilities, as well as to engage in lifetime learning and continuous education (Abdullahi & Tijani, 2019). In today's digitalized environment, modern instructional materials are critical and desirable. Technology is used in modern schooling to impart knowledge. Education becomes a collaborative and self-driven business in which instructors, students, and other stakeholders are involved as a result of digitalisation, which provides information that may be transmitted in a variety of ways (for instance, teacher-directed, joint teacher-and-learner-directed, and learner-directed).

However, for a start, this paper proposes that the concepts of education and digitalisation of education must be examined from the point of view of applicability and functionality to make it meaningful and achieve the purpose of education in technological age. The main question that the paper then addresses is the importance and/or benefits of digitalisation of education in Nigerian secondary schools so that its challenges can be ameliorated.

The Concept of Education in Perspective

In context, education is the most important tool for empowering individuals in every community, and basic education is the basis

Corresponding Author's Email Address: isiaka.akinyemi@lasu.edu.ng

for lifelong learning and human growth (Federal Republic of Nigeria, 2013). Education is as essential to existence as oxygen is to life (Lawal, Akinyemi, & Gbenu, 2021), and it is also one of the most significant components of human assets since it provides knowledge and skills that enable individuals to be responsible and self-sufficient. The process of assisting learning, or the acquisition of information, skills, values, morals, beliefs, habits, and personal growth, is known as education.

Secondary education in Nigeria, the subject of this research, is organized around curriculum goals and objectives, and learning is primarily supervised by instructors. Secondary education lasts six years and is divided into two phases of three years each, according to the Federal Republic of Nigeria's National Policy on Education (2013). Junior Secondary education completes the fundamental education program that began in elementary school and lays the groundwork for lifetime learning and growth. Senior Secondary education provides school graduates (products) with the opportunity for higher quality education by offering more subjects or skill-oriented instruction; equipping students to live effectively in this modern age of science and technology; and inspiring students with the desire for achievement and self-improvement both at school and later in life. From the aforementioned definitions, which introduce students to the current age of science and technology, digital learning employs new tools and methods to assist students in learning in new ways. This new kind of teaching is quickly displacing more traditional face-to-face instruction, i.e. chalk-and-talk method.

However, incorporating digital learning into the classroom may be as easy as using tablets or iPads instead of traditional notebooks and paper. Teachers may employ digital technology to provide compelling learning opportunities in the areas they teach, which might take the form of hybrid or entirely online courses and programs. A combination of technological teaching and digital content is required for digital learning. Incorporating digital learning into the classroom can range from utilizing tablets instead of paper to employing complex software and equipment instead of a basic pen. In today's environment, digital learning is becoming increasingly common. As a result, the Nigerian educational system must modernize the traditional chalk-and-board learning method in order to make teaching mobile, interactive, engaging, and motivational for students to take an interest in and retain digital learning. Nigerian education would not progress toward cutting-edge innovation unless secondary schools are digitalized.

According to United Nations Children's Fund (2022), every child, regardless of where they live or their circumstances, has the right to a good education. The education system in Nigeria has not kept up with the country's fast rising school-age population. Basic education which precedes secondary education in the country is of inadequate quality, resulting in low demand and unacceptable academic achievement (United States Agency for International Development, USAID, 2021). Up to 10 million of the country's 30 million primary school-aged children are anticipated to be enrolled in fully recognized schools. Less than a third of primary school students will go on to junior high school, and even fewer will go on to senior secondary school. While education metrics are bad across the board, the northern states have the worst (USAID, 2021), and this could be due to non-digitalized system of education in all states of the country. Through the new Learning Passport, 12 million Nigerian students would have greater access to education. Digital technologies are being used to change

Corresponding Author's Email Address: isiaka.akinyemi@lasu.edu.ng

how children learn, even in distant areas and during catastrophes (UNCF, 2022).

The Digitalisation of Education Concept

In secondary schools, digitalisation promotes effective teaching by allowing them to function more effectively and proactively in terms of proper student monitoring and regular assessment of their classroom activities. The transfer of data from analog to digital is viewed as a crucial driver of innovation in teaching and learning (Gillpatrick, 2020). "The translation of all information kinds, such as text, audio, pictures, video, and other data from multiple sources into digital language," Machekhina (2017) defines digitalisation. Meanwhile, in education, digitalisation refers to the conversion of text, pictures, video, and music into digital format utilizing technologies such as a laptop computer, the internet, mobile devices, a scanner, a digital camera, a projector, and a printer, among others, that may be played by a computer (Bejinaru, 2019). Furthermore, digitalization in education refers to a variety of approaches for transitioning conventional modes of teaching and learning into the virtual world, such as online courses, online assessments, and web-seminars/conferences or workshops, among other things, using electronic platforms (Borisenkov, Gukalenko & Pustovoitov. 2021). According to Daniel (2020) and Ray (2020), these electronic platforms include, but are not limited to, Zoom, WhatsApp, Google Meets, Google Hangouts, Skype, Microsoft Teams, or FaceTime, where learning may be done synchronously or asynchronously online.

Furthermore, digitization of education is the transformation of conventional teaching techniques, such as paper documents, into a digital format that students can understand in order to fulfill educational aims and objectives (Falasteen, 2018). Digitizing is the primary method for producing digital representations of geographic characteristics, powerful pictures, electronic charts, and graphs from traditional paper documents (Clooms & Sanertt, 2005). Digital education, also known as Technology Enhanced Learning (TEL) or e-learning, is the creative use of digital tools and technology in teaching and learning. As previously said, online teaching cannot be overlooked as part of the digitization of education. Web-based learning, computer based learning, and virtual classroom are all terms used to describe the use of electronic devices to impart knowledge and acquire skills via the internet, intranet/extranet, audio or video tape, satellite TV, and CD-Rom. Mohammed (2020) defines online instruction as "teaching and experiences in synchronous or asynchronous environments using various devices (mobile phones, laptops, etc.) and application software with internet access." Technology facilitates digital learning by giving students some control over their location, time, speed, and direction (Ajay, 2020). Thus, the benefits of digitalisation of education are said to include the ability to study from anywhere, at any time; the potential to save significant amounts of money; the elimination of commuting on crowded buses or local trains; the flexibility to choose; and the ability to save time, among others (Brown, 2017; Nagrale, 2013; Bijeesh, 2017).

The Benefits of Digital Education in Nigerian Secondary Schools

Secondary school instructors in both developed and developing nations like Nigeria used to have to explain subjects on a chalkboard while learners took notes. Recent technological advancements have resulted in more active and engaging learning experiences. With the advent of digital techniques, classroom instruction has taken on a new look and become more engaging. However, many schools and organizations are turning to digital education as a solution to the current situation. As a result, everyone must understand and appreciate the significance of the digital education system.

Benefits or advantages of digitalisation of education according to Jain International Residential School (2021), include the following:

i. **One-on-one learning:** The main advantage of the digital education system is that it allows students to learn at their own pace. Learners progress at an individual pace (Mcnulty, 2021), and when students are unable to keep up with the rest of the class, it causes them to lose interest. Teachers in digital education can tailor the curriculum to

Corresponding Author's Email Address: isiaka.akinyemi@lasu.edu.ng

the learning speed and abilities of their students. Digital education enables teachers to pace learning according to individual needs (Jain International Residential School, 2021).

ii. **Develops smart learners:** Using learning tools and technology, students will be able to study more effectively. Students will be able to assess their requirements. They learn to hunt for solutions using internet resources (Jain International Residential School, 2021). Students' efficiency and productivity are boosted through digital learning. Furthermore, digital learning tools and technology improve critical thinking abilities, which are the foundation for reasoning skill development. Students gain good sensations as well as the confidence to try new things (Ajay, 2020).

iii. **Students become self-motivated:** Students who use digital tools and technology to learn become more involved and interested. When compared to conventional learning, digital learning is more participatory and remembered. Students can create a stronger connection to the learning material through digital learning (Ajay, 2020).

iv. **Expansive learning opportunities:** Additional learning options outside of the traditional classroom teaching and learning environment are referred to as expanded learning (McNulty, 2021). Learners of all abilities can benefit from digital education since it allows them to either extend their knowledge and skills by accessing extension materials, or consolidate and/or enhance their knowledge and skills by undertaking support activities and practicing similar tasks. This digital learning method provides students with more learning options. The digital education system expands educational options (McNulty, 2021), and the children may fully comprehend the topics. The learning may be done at any time and from any location.

v. **Individualized learning experience:** One of the fundamental flaws of the old educational system is that many students lose interest when they can't keep up with the rest of the class. Teachers can personalize study materials based on a student's learning pace and aptitude thanks to the modern digital format. With the digitization of the school system, instructional program are having a greater influence (Ajay, 2020).

vi. **Endless information:** The internet is enormous and full of information, the majority of which is freely available. Students may now explore and apply this wealth of knowledge thanks to the advent of digital schooling. Students used to rely on restricted sources of information, but thanks to the rising popularity of the digital education system, the lack of essential information is no longer a barrier to knowledge acquisition (Jain International Residential School, 2021).

vii. **Smart classrooms:** The chalk-and-talk technique is no longer in use, and teachers are turning to more tech-savvy methods to show students that learning can be creative and enjoyable. Modern classrooms are outfitted with a TV or projector, making it simple to go from a traditional classroom to an interactive digital session. Because they are so familiar with the digital environment, this may cause students to pay greater attention (Jain International Residential School, 2021).

viii. **Digitally updated:** In a world where technology is always growing, methods and knowledge may readily become outdated as new developments occur. It is no longer optional to provide students with current knowledge and other subject-related issues; it is now a requirement. Because students spend the majority of their time on their phones and laptops, they must be tech-savvy (Jain International Residential School, 2021).

Corresponding Author's Email Address: isiaka.akinyemi@lasu.edu.ng

ix. **High-engagement learning:** The conventional education system limits engagement since its forces at work include restricted elements such as textbooks, an instructor, and handwritten notes, but the digital education system gives a wide range of learning options. Every session is incredibly unique and entertaining due to the endless availability of materials (Jain International Residential School, 2021). According to Ajay (2020), students are more engaged in interactive and game-based learning sessions. In addition, the author posited that access to varied and current content online allows learners to not only enhance their knowledge, but also to develop their ability to engage critically with information.

x. **Ease of sharing:** In the past, students relied largely on heavy notebooks of handwritten notes containing material supplied by teachers in the classroom or gained via long library study, but the new digital education system has changed everything. Students may now save time and effort by conserving and sharing knowledge with just a few clicks (Jain International Residential School, 2021).

xi. **Student accountability:** The digital education system includes real-time evaluation and system-generated performance reports, which improves assessment openness (Ajay, 2020). It allows students to independently examine their performance and come up with the necessary remedies. Students emerge from their shells as autonomous thinkers who know what to study, when to study, and how to study thanks to the digital education system. They are no longer reliant on their instructors and parents to spoon-feed knowledge to them (Jain International Residential School, 2021).

The Challenges of Education Digitalization in Nigerian Secondary Schools

The following are the issues that have hampered the digitization of education in Nigerian secondary schools according to Edsembli (2021), include the following:

Employees are overwhelmed: Teachers frequently struggle to adjust to new digital solutions. Learning new digital platforms, where to find papers, and who to seek for assistance all contribute to lower student involvement and can even cause confusion. All of this can lead to an overworked employee and a poor learning experience.

Instructors who use non-supported Apps: Not all technology is created equal, and teachers may want to employ unapproved solutions in some circumstances. This is a serious concern since it may fracture the user base and encourage employees to utilize illegitimate apps, causing IT teams headaches and a tangled technical ecosystem.

Devices fail too frequently: To save money, schools may make the error of retaining a fleet of devices that vary in age, manufacture, and model. However, as these devices get older, device failure becomes more common. Because remote and digital learning rely on gadgets, equipment failure might be a major source of frustration for teachers.

Self-control: Students typically battle with self-control, and online learning can make it much more difficult. Students who struggle with procrastination may find it difficult to sit down and complete their work without being forced to do so. Because attendance is seldom enforced in digital learning, it is simple to overlook an assignment or even a whole class (Edsembli, 2021). If there is no obvious distinction between home and school, life gets even more confusing. Unlike face-to-face learning, where school and family life have obvious boundaries, the two frequently overlap (Courses, 2019).

Lack of communication: One of the most difficult aspects of digital learning is the lack of engagement with professors. Many students struggle to communicate with and connect with their lecturers through digital learning. When a teacher isn't there, it's

Corresponding Author's Email Address: isiaka.akinyemi@lasu.edu.ng

difficult to keep children engaged. Similarly, subjects that require students to be physically present, such as science, make it harder to understand information.

Adapting online courses for deaf students: Unfortunately, deaf students are twice as likely as the normal kid to fall behind in school. When Deaf students lost access to their interpreters, they suffered a substantial delay in their studies. Because technology might lag, it can be difficult to keep track of and comprehend online lessons.

Students are just disengaged: Learning necessitates the development of a relationship between the instructor and the students. Teachers must find new approaches to engage students as a result of the shift to digital learning. Keeping students engaged and motivated, on the other hand, has become increasingly important. When students are learning online or visiting pornographic websites, it is simple for them to become sidetracked, making it harder for professors to keep control. How can teachers keep kids interested in learning new things?

Social connection with peers is also problematic. Students do not form friends as easily as adults and are unable to collaborate on tasks in person. Students are unable to participate in classroom activities such as spirited debates, class comedy, and group work.

According to Imogie (2002), further issues with digitization in Nigerian secondary schools include:

i. Inadequate financing and allocation for digital technology at secondary schools, resulting in an insufficient supply of facilities, equipment, and materials. Funding is a critical component in education for lowering the cost of operating educational institutions, paying teachers' salaries, allowances, and pensions, and purchasing teaching and learning equipment such as textbooks, laboratories, multimedia, and computer equipment, among other things (Orunaboka & Nwachukwu, 2012; Abdullah, Harun, Razani & Jali, 2017). As a result, government education spending is primarily reliant on federal account allocation, making its educational aims vulnerable to national mobilization and expenditure management issues (Okwuosa & Modibbo, 2021)

ii. In Nigerian secondary schools, there is a lack of space and instructional resources since most classrooms are not equipped or converted to accept audio-visual technologies. According to Ololube, Ubogu, and Egbezor (2007), ICT infrastructure and facilities are not available for instructional delivery in Nigerian institutions.

iii. Bureaucratic bottlenecks and restrictive organizational structures that discourage innovation and insist on the *status quo*.

iv. Insufficient power supply. Another issue that has hampered Nigeria's efforts to digitalize education is a lack of reliable electricity. According to a report by Thisday (2016) cited in Legg-Jack (2021), investment in electric power supply is insufficient to match the megawatts generated for use, and it cannot go round. Oyediran and Dick (2018) backed this up by stating that the public's power supply is dwindling and increasing worse. According to Ogbnuogwo, Ugwoegbu, Obunna, Apiti, and Okunna (2019), the shortage of electric power has the impact of inhibiting efficient use of information and computer technologies (ICT) among Nigerian students.

v. The bulk of topic areas lack relevant instructional material. This is rationale behind the assertion of Global Information Technology Report (2005), cited in Nwana (2012), that in developing countries like Nigeria, material devices such as computers, computer laboratories, internet and e-mail facilities, videophone systems and teleconferencing devices, fax and wireless applications, digital library, digital classrooms, multimedia systems, and the problem of developing multimedia courseware are all issues that e-learning faces. In line with this, Adebisi, Agboola and Okereke (2020)

Corresponding Author's Email Address: isiaka.akinyemi@lasu.edu.ng

remarked that "the needed infrastructure to embark on online learning in Nigeria remains a major challenge".

vi. In Nigeria, there is a lack of professionalism in digital education. This is in line with the opinion of Ikemenjima (2005); Jegede and Owolabi (2008), quoted in Nwana (2012) that "there is dearth of trained teachers for e-learning, lack of facilities, infrastructures and equipment".

vii. The Nigerian educational system emphasizes testing and certification, restricting the extent to which digitalization may be used in the classroom. Teachers' training and professional development must evolve to fully understand the potential of these resources to enhance student learning as digital learning and technology become more prevalent in the classroom. This includes employing data-driven instructional strategies to guide training as well as measure, evaluate, and comprehend student learning. In addition to this shift in duty, many teachers are technologically inept (Collier, Burkholder & Branum, n.d).

The Way Forward

i. Creating change champions inside schools is one of the simplest methods to give sufficient assistance to stressed personnel. Find team members who have a proven track record of successfully implementing new technologies and place them in a position to assist others who are having difficulty.

ii. Provide a unified experience for instructors and students, based on standardized technical solutions and excellent training. Teachers may also contribute to and grow together by creating a strong educational library. This would ensure that instructors and students could always submit feedback.

iii. Schools should make every effort to facilitate digital learning by ensuring that all devices have a consistent and dependable refresh cycle. Replace obsolete technology with new standardized devices so that schools may increase production while lowering repair and maintenance costs.

iv. Tools to help students prevent procrastinating should be supplied. Give students (and parents, if required) a clear syllabus so they know what to anticipate in class and may mark off assignments as they finish it. Calendars that include scheduled reminders for when chores and assignments are due might aid with communication.

v. During class, students should be encouraged to speak up and identify themselves. Create an online group for students to communicate and discuss topics other than school. Create places where students may engage in intellectual debate and voice their thoughts. Make careful to establish ground rules so that debates do not spiral out of control. Encourage students to collaborate on projects to mimic the social contact they would have in a traditional classroom. Multiple individuals can collaborate on tasks using writing tools like Google Docs.

vi. Students should be given a class script to follow along with. The script should be ready to keep the class on track, with copies for deaf students and subtitles turned on so that students can read what the professors are saying. When video lags, this is a fantastic solution for all students. Another alternative is transcription. Students with hearing difficulties will be able to catch up on whatever they may have missed if they pay someone to transcribe the lecture.

vii. Teachers may employ digital learning in a variety of ways to keep students engaged:

(a.) **Design a customised course plan:** With so little face-to-face interaction, it's more crucial than ever to create a personalized plan

Corresponding Author's Email Address: isiaka.akinyemi@lasu.edu.ng

that grabs students' attention. Allowing students to write on digital readings or developing a robust reporting system are just a few examples.

(b.) **Establish a constant timetable:** It is simple to keep to a schedule while students are in the classroom. In the digital learning environment, the same structure must be maintained. To keep learners interested, keep them on a scheduled curriculum.

(c.) **Measure student involvement:** Teachers may now track student participation in new ways, such as when they log into systems and how they interact with them. Teachers should keep track of their students' engagement throughout time (Edsembli, 2021).

Conclusion

The goal of digitization in Nigerian secondary schools is to assure the inventive use of new technology and digital tools to help teachers and students improve, as well as to provide more rooms for remote learning. In order to compete with world-class schools, secondary schools must become digitalized. Learning principles centered on students are aided by technology, digital literacy, and secure surroundings. Digital education is viewed as a viable alternative to the traditional chalk-and-talk method of teaching. Furthermore, digitization has been proved to significantly improve the country's educational system.

Recommendations

Hence, the following recommendations are put forth:

i. Schools should implement blended and remote learning to allow students learn both online and offline on their own.

ii. Government should invest more funds in education and increase access to ICT infrastructure by providing the necessary facilities for complete digitalisation of the teaching and learning process at all levels of education. This will bridge the gap emanating from varied access to digital skills acquisition by ensuring that the cost of technology adoption is low. That is, to ensure that the cost of various teaching and learning technology is decreased and affordable for both students and instructors.

iii. Government should collaborate with internet, digital, and telecommunications service providers to ensure that ICT infrastructure, such as internet broadbands and network devices, is available and in good working order to support the digitalisation of teaching and learning at all levels.

iv. Build learning pathways through apps and platforms.

v. School management through their proprietorship should train teachers on how to deliver online lessons. This will make the teachers to be more effective and efficient in teaching online classes.

vi. teachers, parents and school Guidance and counselors should be more vigilant in monitoring the students when they have access to computers or internet to avoid going to pornographic sites or other sites that may be harmful to their learning.

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