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Prof. Tessy Okoli
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EDITORIAL COMMENT

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In this 28th Edition of the JOWICE with the theme: **DIGITAL LEARNING INNOVATION IN TEACHER EDUCATION IN NIGERIA** well researched Academic Articles that are either empirical or opinion papers which cover a wide range of issues relating to DIGITAL LEARNING, it's implications to every facet of life, how sustainable national development can be achieved. The articles in this edition are products of the 27th Annual National Conference of the WICE held at the Alvan Ikoku Federal College of Education, Owerri, Imo State, Nigeria in Nigeria in October 2023. Our conferences are open to both members and non-members of WICE and papers are also welcome provided the papers are in line with the conference theme and properly researched to be accepted for publication. The Association of Women in Colleges of Education (WICE) does not assume responsibility for point of views or opinions expressed by the contributors. This implies that the views and opinions are purely that of the contributors and the Association cannot be held liable.

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THE IMPACT OF ICT IN ENHANCING QUALITY EDUCATION IN NIGERIA TERTIARY INSTITUTIONS

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Abstract

Information and Communication Technology (ICT) has made the world to become a global village. Human life has become inseparable from ICT because it covers every aspect including education. In Nigerian tertiary institutions, ICT has registered its presence but the impact has not been fully exhausted. The transition of the world to digital media and information has increased the importance of ICT in education, and this importance will continue to grow and develop in the twenty-first century. ICT an essential component of today's world; it has transformed the educational system by replacing traditional ways of teaching and learning with modern, computer-based processes. This paper highlights the impact of ICT in enhancing quality education in Nigeria tertiary institutions. ICT has undoubtedly impacted the quality and quantity of teaching, learning, and research in Nigeria tertiary institutions. The paper further discussed the benefits of having ICT infrastructure such as e-learning/virtual library, access to quality education for learners with special needs in Nigeria tertiary institutions. The various constraints to ICT utilization should receive prominent attention. The study concludes that government funding of ICT infrastructure, effective policy legislation, and execution and acquisition of appropriate skills are most important for ICT to continue playing its lofty role as a change agent to bring about quality education in Nigerian tertiary institute

Keywords: Education, Electronic learning, ICT, Tertiary institutions, Quality control

Introduction

Quality education refers to education that serves each individual pedagogically and developmentally; an education that is inclusive and is structured to realize the potential of each individual regardless of location or economic status (Adu, Emunenu and Oshati 2014). Arnhold (2021) asserts that quality education is an important and unique goal. The Sustainable Development Goals number four of the United Nations Development Programme, focused purely on education, to ensure inclusive and equitable quality education and promote lifelong learning. Education is defined as the process of acquiring knowledge, skills, values, morals, beliefs, habits, and personal development or facilitating learning (Bello and Johnson, 2011). It is a potent tool for social, economic, and political progress, without which neither an individual nor a society can achieve professional development. It is generally the basis for human development and civilization. Tertiary education is defined by the Federal Republic of Nigeria (2014) as education provided after secondary school in universities, colleges of education, polytechnics, mono technics, and institutions offering correspondence courses. Tertiary education is instrumental in fostering growth, reducing poverty, and boosting shared prosperity. It benefits not just the individual, but the society as a whole and so it is very important. Opportunities are provided for learners to access more advanced and wider areas of learning and develop analytical skills through the adoption of ICT into higher education (Jameel and Ahmad, 2020). ICT is an indispensable part of the contemporary world. It is a force that has changed many aspects of people's ways of life.

The impact of ICT in the past two or three decades in all fields has been enormous. The use of ICT in education as a means of enhancing skills and building capacity for the promotion of

economic development is critical to bringing about viable changes within the education system (Lorente, Arrabal and Pulido-Montes, 2020). Professionals in the fields of education have submitted that ICT holds great promise to improve teaching and learning when properly used, thus bringing about desired quality education.

Education

Education is a crucial national development investment. It is the process of acquiring knowledge, which encompasses all of the processes through which an individual develops talents, attitudes, and other types of behavior that are beneficial to the society in which he or she lives (Adeoye, Oluwole, and Loto2013). It is the transmission of culture in terms of continuity and expansion, or the dissemination of information to ensure the logical direction of society, or both" (Adu, Emunemu, & Oshati, 2014). The importance of education in development cannot be overstated, since it provides the drive for development to harness human resource development and material resources (World Bank, 2005). Education is compatible with national growth in this way. Sustainable education's revolutionary potential boosts national development. This just supports the argument that education is critical to national growth.

Tertiary Education in Nigeria

The federal, state, and local governments in Nigeria are in charge of education. Nigeria's education system is divided into three tiers: basic education, post-basic/senior secondary education, and post-secondary/tertiary education. The Federal Ministry of Education is in charge of general policy formation and quality supervision. The National University Commission (NUC) is a government-run body that governs higher education administration in Nigeria (Arnhold 2021). Tertiary education encompasses all forms of official post-secondary education, including public and private universities, colleges, technical training institutions, and vocational schools. The development of applicable high-level personnel, the growth of individual intellectual potential, and the learning of physical and intellectual skills are all purposes of higher education. These aims are pursued by tertiary educational institutions through teaching, research, knowledge development, and dissemination, which they do through a range of programs such as certificate, diploma, undergraduate, and postgraduate courses (Oyebade & Dike, 2013).

University education, in particular, helps to produce high-level workers in a variety of professional fields, as determined by national development needs. University education also focuses on building a sense of community among students through projects and action research. Tertiary education is in high demand, owing to a growing awareness of its value for a country's economic and socio-cultural growth, among other factors. Tertiary education enriches society as a whole, not just the individual. It helps to promote growth, reduce poverty, and increase shared wealth.

In any civilization, a highly trained workforce with lifetime access to a quality tertiary education is required for innovation and progress. Graduates with higher education are more ecologically concerned, have better habits, and participate in civic activities at a higher rate. Increased tax revenues from greater salaries, healthier children, and smaller families all contribute to nations being stronger (Terlun Mark Ijov and Wombu Ruth Nguzan, 2019). In short, higher education institutions equip people to be active citizens of their communities and societies in addition to providing them with necessary and relevant employment skills (Arnhold, 2021).

Quality Education

The term "quality education" refers to a form of education that is concerned with its quality. In education, quality implies "fitness for purpose," which means that the quality of education in any community must be measured against what that culture views to be the aim of education (Anikweze 2011). The clarified objectives of section 20 of the 1979 Nigeria constitution state that the educational system shall be of the type that motivates and stimulates creativity and draws heavily on our traditions of moral principles that include honesty for positive Nigerian moral and religious values, ensure consistency of traditional family values and their progressive upgrading to meet modern concept, produce professional competence and decided to order society, and so on. This means that the educational system should assist students in developing the habits, skills, opinions, tastes, and virtues required for the maintenance of our cultural norms and the thriving of moral principles (Adeoye, Oluwole, and Loto2013).

The capacity of a school to offer the essential facilities to enhance teaching and learning that can lead to the attainment of educational goals in accordance with mandated accepted worldwide standards is referred to as quality education (Pius and Aii, 2019). It is an investment in individuals with significant societal benefits. One of the United Nations Development Programme's (UNDP) Sustainable Development Goals (SDG 4) agreed in 2015 is quality education. By 2030, it aims to offer universal access to high-quality education and encourage lifelong learning across the world (Slade, 2017). In a statement in support of the SDGs and the pursuit of quality education for all, the Association for Supervision and Curriculum Development (ASCD) and Education International (EI) defined quality education as education based on the child benefit of the entire, that is, the social, mental, emotional, physiological, and cognitive development of each student irrespective of gender, race, ethnicity, economic status, or geographical area. It not only prepares the youngster for testing or examination, but also for life.

Quality education provides resources and directs policy to ensure that each child enters school healthy and learns about and practices a healthy lifestyle; learns in an environment that is physically and emotionally safe for students and adults; is actively engaged in learning and is connected to the school and broader community; has access to personalized learning and is supported by qualified, caring adults; and is challenged academically and prepared for success in college or further study and employment and participation in a global environment. Quality education provides the outcomes needed for individuals, communities, and societies to prosper. It allows schools to align and integrate fully with their communities and access a range of services across sectors designed to support the educational development of their students. Each child enters school healthy and learns about and practices a healthy lifestyle; learns in a physically and emotionally safe environment for students and adults; is actively engaged in learning and related to the school and broader society; has access to essential learning and is substantiated by qualified, responsible adults; and is challenged scholastically and equipped for success in co-curricular activities. Individuals, communities, and society prosper when they have access to high-quality education. It helps schools to align and integrate fully with their communities, as well as access a variety of resources from many sectors that promote their kids' educational growth.

Information Communication Technologies (ICT)

ICTs are technologies that employ electronic methods to transmit, alter, and store data. E-mail, SMS, text messaging, and video chat (e.g., cellphones, desktops, and laptops) are examples of communication and information technologies (Mathevula & Uwizeyimana, 2014).

Computers, software, networks, satellite linkages, and associated systems are referred to as ICT. They allow individuals to access, analyze, create, share, and use data, information,

and knowledge in previously inconceivable ways (Barakabitze et al, 2019). It refers to telecommunications-based technologies that give information access. The internet, wireless networks, cell phones, and other forms of communication are all examples of this. ICT is cutting-edge and active. It has transformed society into a global village over the previous few decades by providing a huge array of communication options. It has handled information effectively and efficiently using a variety of technical tools and resources, and it is quietly contributing to society's general growth and development. ICT has been identified as a worldwide driver for change. In current day of globalization, it is a necessary component of the growth of every aspect of any nation. In the twenty-first century, it is acting as a catalyst for change in the manner and quality of learning in academic institutions across the globe. It has quickly become one of the fundamental building blocks of modern society.

ICT and Education

The use of ICT in education as a way of improving skills and increasing capacity for economic growth is crucial to bringing about sustainable improvements in the educational system (Aduwa-Ogiegbaen & Iyamu, 2005). Computers and their peripherals such as printers, software, scanners, and projectors are used in education to teach and learn. Indeed, ICT represents a paradigm change in how humans use computers and the internet to interpret information. It has changed the model of information sharing from static to dynamic. The integration of ICT into higher education allows students to access more sophisticated and broad fields of study in order to improve their analytical skills. Because of its dynamic interactive and interesting content, ICT improves teaching and learning. It has the ability to stimulate, enrich, and strengthen skills, engage and motivate students' learning, aid to link school knowledge to work procedure, and help to develop economic potential for today's workers; it adds to the tertiary institution's developmental process; it enhances student learning; and it creates opportunities for correlation between the higher education institution and the rest of the world (Dave and Tearle, 2010). Through a range of technologies to enhance and facilitate instructors' professional activities, ICT may help tertiary institutions become more efficient and productive (Adeoye, Oluwole, and Loto, 2013). It allows students to contact with each other via e-mail, mailing lists, chat rooms, and other means. It allows for faster and more convenient access to more comprehensive and up-to-date information. ICT may also be utilized to complete more difficult jobs since it offers researchers with a consistent means of disseminating research papers and conclusions (Owoyale-Abdulganiy and Olaniyi, 2021). Ghavifekr, Kunjappan, Ramasamy, and Anthony (2016) described th three important motivations for ICT in education, as follows:

- i. As a tool for resolving issues in effectively teaching: ICT provides the capabilities for effective teaching and learning delivery, management, and support.
- ii. ICT can change the content, methods, and overall quality and quantity of teaching and learning, reducing teachers' workload and ensuring constructivist inquiry-oriented classrooms; and
- iii. As a central force throughout economic competitiveness:
- iii. As a crucial component in economic and social shift patterns that have technological skills important to today's students' employment prospects.

Role of ICT in Quality Education in Nigeria Tertiary Institutions

In Nigeria, the integration of ICT into higher education institutions is progressively taking shape, with some institutions recognizing its potential to improve, enrich, and support both professors and students in their teaching and learning processes (Murgor, 2015). Recognizing the significance of ICT in the development of skills, talents, and competencies for successful development, the Federal Republic of Nigeria's National Policy on Education (the

Federal Republic of Nigeria, 2018) recommends that it be incorporated into education in Nigeria at all levels. Computers, the internet, television, radio, video conferencing, and mobile learning are all used to integrate (Lubega, 2017). Government and non-governmental organizations, such as banks, as well as individuals, have contributed to the deployment of ICT in Nigerian Tertiary Schools. Firms such as the Nigeria Communications Commission (NCC), Education Trust Funds (ETF), MTN Nigeria, and Zinox Computers, for example, have shared laptops and other ICT gear with instructors and students at higher institutions at various intervals and at different periods. In Nigerian higher institutions, the use of ICT for excellent education is pervasive and ubiquitous.

ICT has been determined to have had a significant impact in upgrading and modernizing the procedures and methods utilized in the management and administration of higher institutions. The majority of administrative and clerical tasks, such as admissions processing, course registration, fee payment, and academic material procurement, have been computerized and are now completed remotely. Most postsecondary schools offer websites where students may accomplish a variety of tasks on their own and submit them to the university remotely. In Nigeria, the majority of tertiary education institutions are currently using ICTs to handle the majority of their administrative concerns as well as deliver qualitative and quantitative guidance. Previously paid in cash or by bank draft, tuition, lodging, and other charges are now primarily paid online. This means that when ICT is applied at tertiary institutions, administrative services are delivered faster and more effectively, increasing the efficiency and efficacy of the institutions' service delivery.

Researchers efficiently use ICT at tertiary institutions as a source of knowledge and a reliable way of acquiring research materials, which benefits students in their studies by expanding the frontiers of learning beyond traditional classroom studies. ICT has made it possible to collaborate with researchers from various higher institutions throughout the world (Barakabitze et al, 2019). As researchers can readily connect for interaction and comparison of their findings with specialists, ICT has created greater options for research cooperation and networking among scholars all over the world. As a result, national and worldwide dimensions of research topics are being examined. Researchers are consequently confronted with an abundance of data rather than a scarcity of data. As e-mail services, web-based files, data sharing, weblogs, and collaborative workplaces have become the standard, data sharing, peer review, and creating a network of contacts are no longer bound by distance. As a result, information and communication technology has made academic research considerably easier and more engaging among researchers.

ICT has largely replaced old, out-of-date, traditional teaching and learning techniques that do not represent modern reality in university teaching and learning processes. In higher institutions, ICT has revolutionized how education is delivered (Hamilton- Ekeke and Mbachu, 2015). It has prepared the way for a new educational approach in which students are expected to play more active roles in the learning process than previously, i.e., students are more involved and active participants in knowledge generation rather than merely recipients. ICT has also led to the internationalization of higher education by increasing chances for quick information interchange, which has facilitated teaching, research, and lifelong learning. ICT reduces stress and inspires students and teachers by simplifying complex topics for kids (Barakabitze, et al 2019).

Web-based conferencing, video conferencing, audio conferencing, and open and distance learning are the four ICT media through which learning and teaching activities can take place (Ratheeswari 2018). The live or real-time exchange of audio or voice communications via a network is known as audio conferencing. The telephone and WhatsApp platforms are examples of technologies employed. Pictures or images can be delivered and

received over the network using a more advanced version of this media. Audio-graphic is the name given to this sophisticated media. In addition to voice communications and audio conferencing, video conferencing allows users to exchange films or moving pictures. A video conferencing tool like Zoom is a good example. Web-based Conferencing differs in that it lets two or more people to communicate voice messages, images, and videos over the internet using a computer and browser (Bakare, Orji, Wogu and Ogbonna, 2018). During the learning and teaching process, open and distance learning allows for more contact and engagement among individuals. Performing activities based on the tutor's directions, solving issues, and studying at one's own speed can also help with learning.

This study discovered that postsecondary school students now have easy access to learning thanks to the introduction of ICT. For people who are unable to attend school or college due to financial or cultural constraints, distant learning education programs are now widely available. Nigeria, like many other nations, now offers Open Universities that provide students with education via the internet and other forms of communications. Students at open universities have the option of studying with or without teacher supervision. In contrast to traditional teaching approaches, ICT-based learning boosted student involvement (both young and elderly) (Murgor 2015). E-learning and virtual learning were born as a result of ICT. E-Learning is a technique of learning that uses an information technology network, such as the internet, or an intranet (LAN) or extranet (WAN), in whole or in part, for the delivery, interaction, and or facilitation of a study course. Participants can gain information by cooperating in a virtual learning environment. A course curriculum, pre-requisites registration, teacher, and distance learning apps are all part of the ecosystem (Deka & Jena, 2017). Interdisciplinary courses allow students to obtain information and improve their educational quality at a lower cost (Mikre, 2011). Individual students throughout the world benefit from e-learning systems since they assist in educating and offering training chances on a variety of topics (Mahlangu, 2018). Computer-based learning, virtual classrooms, video conferencing, and digital collaboration are examples of e-learning applications where information is given via the internet, intranet/extranet, audio/videotape, satellite TV, and CD-ROM (Oluasanya and Oluwasanya 2014). As a result, pupils have enough learning aids, which improves their access to knowledge resources.

Additionally, the use of ICT in education has enabled online examinations. Exams can now be administered to students online using computers, the internet, and other ICT tools (Dabas, 2018). This strategy has been shown to save time and money while also increasing security and promoting impartiality and justice. In Nigeria, for example, most postsecondary institutions were forced to use online tests during the Covid-19 pandemic and subsequent shutdown. Teachers can now conduct lectures in the classroom through audio or DVD. This also allows students to access these notes whenever they choose, from the comfort of their own homes. With the use of devices like webcams and videoconferencing, ICT has fostered cooperation and partnership between professors and students from all over the world. ICT has also shown to be an effective library tool. Unlike conventional libraries, where actual books are stored and students attend to seek knowledge, ICT has enabled students and even teachers to use libraries from anywhere in the globe at any time.

ICT has aided in the future planning process. Advanced degrees like M.Sc. and Ph.D., necessitate extensive study (both offline and online), and most employment now demand ICT. For example, in the field of accounting, the usage of manual data processing and financial report preparation has become outdated. Financial statements are now prepared with the push of a button using ICT resources such as Sage, Peachtree, and Manager Accounting software. Accountants nowadays, regardless of their degrees, do not have a chance in the employment market unless they are adept in at least one of these tools. Other fields have experienced

something similar. Learners are better equipped to accomplish future activities requiring the use of computers when they study using computers and other ICT tools. With the introduction of ICT, hard copy textbooks have become obsolete, whereas digital copy resources have been widely accepted. E-libraries are available online and may be accessed at any time by anybody from anywhere in the globe. This eliminates all of the rigors and stress of conducting research in a traditional library, which may be intimidating and restrictive. ICT has revolutionized the job of librarians and the purposes of libraries. Given the abundance of learning materials accessible on the Internet, the majority of which are free, librarians are becoming into information managers or cybrarians. Computer professionals and information brokers will be among the cybrarians. (Fomunyan, 2019).

ICT has also been critical in promoting high-quality postsecondary education for students with impairments (Martinez, 2011). Learners with special needs and impairments, who were formerly disenfranchised owing to a lack of adequate learning resources, are now fully assisted by ICT. Customized application packages and tutorials have been developed and made available. ICT allowed an atmosphere in which these individuals found it simpler to overcome obstacles in their academic studies and attain their particular educational objectives and ambitions.

ICT has evolved into a useful and vital instrument for educational modernization. It empowers students, professors, and specialists to engage and collaborate regardless of their location. Apart from simulating real-world interactions, ICT-supported learning has allowed pupils to collaborate with students from various cultures, hence improving communication skills (Fomunyan, 2019).

Impediments to the role of ICT for Quality Education in Nigeria Tertiary Institutions

Despite the progress made in Nigeria on the impact of ICT on quality education, some factors identified as impediments (Rivers, et al, 2015) include a lack of infrastructure that supports ICT, which has made it nearly impossible to implement these technologies and improve education institutions; limited financial resources, making the establishment and even maintenance of ICT infrastructures difficult; a lack of human and physical resources to support ICT; irregular power supply; high cohesion; and high cohesion.

Advantages of ICT Role in Quality Education Nigeria tertiary Institutions (Talebian et al. (2014):

1. Students can gain 21st-century skills and improve their ICT literacy and competency.
2. Both students and instructors increase their academic performance.
3. Students and instructors are well-prepared for the future, which will be dominated by ICT innovations in an interconnected society.
4. Students can acclimate to the idea of utilizing ICT as a tool for continuous learning and accept it.
5. Flexibility in terms of time and location: Students can attend lectures at their own speed and from any location.
6. Equality: students have equal access to study materials. In terms of the teacher's competency, they have the same access as everyone else.
7. Improved Group Cooperation: It has been demonstrated that online or electronic learning increases student engagement and collaboration.
8. Easy access to extra learning resources: Students have direct access to supplementary content.
9. The increased international character of education: ICT allows students to connect with and share information with students all over the world.

10. Course advancement rates are simple to calculate: The usage of ICT considerably reduces anxiety caused by a fear of failure.

Disadvantages of ICT Role in Quality Education Nigeria tertiary Institutions

Talebian et al. (2014) identified the following as main drawbacks of ICT in the educational system:

1. Unlike traditional face-to-face schooling, there are no teachers.
2. Access to an abundance of information, the majority of which may be false, unproven, or unsupported.
3. Students' assessment, evaluation, and feedback are limited.
4. Inapplicability in practical subjects like engineering, agriculture, and medicine.

Conclusion

Nigeria is progressively adopting and enacting national ICT policy. It is impossible to overestimate the advantages of incorporating ICT into Nigeria's educational system. In this extremely competitive period of globalization, ICT has been recognized to enhance access to current learning methodologies, which improves knowledge. By providing virtual services, ICT plays an important role in Nigerian Tertiary Education, bringing learning closer to students. ICT provides a wealth of learning options for children who may not have access to a classroom. Nigeria's tertiary education system is incorporating ICT. Due to various roadblocks, this is progressing slowly. If the government implements ICT policy and provides appropriate financing for ICT infrastructure, ICT in tertiary education in Nigeria is a possibility. Students will be able to participate significantly to innovation and ground-breaking research thanks to government financing. Finally, national governments must keep an eye on ICT infrastructure at various tertiary institutions to ensure that it is not unused. ICT might become a potent stimulant of excellent education in Nigerian higher institutions with appropriate policy legislation and implementation.

Recommendations:

1. Students and staff in higher education institutions should be encouraged to learn how to operate and use ICT equipment and facilities in teaching and learning.
2. The government and players in the Nigerian ICT industry should address the disparities in the distribution of ICT devices in the wider community.
3. The management of Nigerian tertiary institutions should make every effort to provide students with access to accessible internet networks on campus. This will encourage students to use online e-materials to accomplish their tasks.
4. Outdated ICT equipment and facilities should be replaced with contemporary technology and facilities.
5. The government should make an effort to provide money for the procurement of ICT equipment by tertiary institutions. In addition, the management of Nigerian tertiary institutions should work to collect funding from within the country and dedicate a portion of that revenue to ICT education.
6. Management of tertiary institutions should instill a maintenance culture to guarantee that the existing ICT facilities and equipment are always in excellent working order.
7. Staff and students should be regularly educated on how to use the digital library and other ICT tools for research and study.

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THE UPTURN AND WIDESPREAD APPLICATION OF AUTOMATED TELLER MACHINES (ATMS) IN SOME TOP-RANKING BANKS IN NIGERIA

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Abstract

This paper examines the upturn and widespread application of automated teller machines (ATMs) in some top-ranking banks in Nigeria. It symbolizes the wind of change blowing across the financial services sector (FSS) and allied strategic institutions, with characteristic, acceptability, accessibility and multi-functionality. It is however imperative that inherent technology risks be effectively contained so that sustainable optimal economies could be attained to the utmost satisfaction of concerned stakeholders.

Keywords: *Upturn, widespread application, automated teller machine and banks.*

Introduction

An ATM (Automated Teller Machine) is an electronic machine used for financial transactions. As the term implies, it is an 'automated' banking platform that does not require any banking representative/teller or a human cashier. The Automated Teller Machine which is a self-service banking outlet which one can withdraw money, check balance, or even transfer funds at an ATM (Kanwal & Zafar, 2007). Different banks provide their ATM services by installing cash machines in different parts of the country. One can withdraw money from any of these machines irrespective of whether or not an account holder in the same bank. ATM transactions are either free or bear a nominal charge depending upon the bank. Banks usually do not charge for the first 3-5 ATM transactions in a month. Once you cross the limit of free transactions, you may have to pay a nominal charge. Also, some banks levy charges if you withdraw money from the ATM of another bank of which you are not an account holder (Kurita *et al.*, 2012). ATM, or automated teller machine, is a machine that lets one get cash from the bank without visiting a teller. ATMs allow a bank customer to make cash withdrawals, make deposits and check their account balances at anytime without a conventional teller (Ozuru and Kalu, 2020). The ATM card is a dedicated payment card issued by a financial institution (i.e a bank) which enables a customer to access their financial accounts via its and other automated teller machines (ATMs) and, in some countries, to make approved point of purchase retail transactions. Many financial institutions and other retail institutions (like petrol filling stations and department stores) now offer customers credit cards in order to turn them into more loyal clients. The experience of some leading banks in the introduction and operations of ATMs are quite revealing in this regard. They are chronicled in the next segment relative to selected top-ranking commercial banks like First Bank of Nigeria (FBN) Plc and Diamond Bank of Nigeria (DBN) Plc.

For several decades, Nigeria as a predominant on consuming society was not disposed to buying goods on credit or with credit cards. The norm has been to operate exclusively with cash. This approach seemed to be more conservative and members tend to think more carefully before spending their money. Today, the tide has changed as many banks now extend credit cards to individual qualified customers, courtesy of automobile functional automated teller machine (ATM) systems. Many financial institutions and other retail institutions (like petrol filling stations and department stores) now offer customers credit cards in order to turn them into more loyal clients (Kurita *et al.*, 2012).

Hardly therefore, would any well meaning individual/institution contest any move that technology is very crucial and strategic to the economic growth and development of nations. Through these technological developments, the market for credit card promises to be as vast as the cell phone phenomenon of the early 2000 era. Thus, there is still incredible high demand for existing/new products and opportunities for huge profits in the market cannot be so shortly explored, exploited and exhausted. The experiences of some leading banks in the introduction and operations of ATMs are quite revealing in this regard. They are chronicled in the next segment relative to selected top-ranking commercial banks like First bank of Nigeria (FBN) Plc. and Diamond bank of Nigeria (DBN) Plc.

Types of Automated Teller Machines (ATMs)

Automated Teller Machines (ATMs) are mainly of two types. One is a simple basic unit that allows an individual to withdraw cash, check balance, change the PIN, get mini statements and receive account updates. The more complex units provide facilities for cash or cheque deposits and line of credit & bill payments (Lasisi & Ajisafe, 2012).

There are also onsite and offsite Automated Teller Machines- the onsite ATMs are within the bank premises, unlike the offsite ones which are present in different nooks and corners of the country to assure that people have basic banking facilities and instant cash withdrawals if they can't go to a bank branch.

ATMs can also be categorized based on the labels assigned to them. Some of these labels are listed below:

- i. Green Label ATMs- Used for agricultural purposes
- ii. Yellow Label ATMs- Used for e-commerce transactions
- iii. Orange Label ATMs- Used for share transactions
- iv. Pink Label ATMs- Specifically for females to help avoid the long queues and waiting time
- v. White Label ATMs – Introduced by the TATA group, white label ATMs are not owned by a particular bank but by entities other than the bank
- vi. Brown Label Banks- Operated by a third party other than a bank

There are also a few biometric Automated Teller Machines that need fingerprints & eye scanners to be operated.

Nigeria banks and ATM wind of change

The ATM system of FBN and DBN date back to 2003 when they proudly announced the launching of local debit card point-of-sale (POS) terminal in collaboration with Chams Nigeria limited and inter-switched Nigerian limited. Under this agreement FBN introduced its first cash cards product designed to be accepted at merchant outlets for the purchase of goods and services. The POS terminal is connected to inter-switch via communications links such as telephone lines, and with that the first ATMs accepted a single use token or voucher that was retained by the machine. Then came the idea of personal identification number (PIN), which is stated on a physical card for necessary security verifications when retrieving money in an ATM system. It is widely held that the first talking ATM with (private audible instructions for the blind) was installed in Canada in 1999, while the United States (US) had it in San Francisco in the same year. By the year 2005, the number has grown to approximately 30,000 in the US alone. With respect to banking instructions, Ozuru and Kalu (2020) identified that ATMs allow a banks customer to make cash withdrawals and check their account balances at anytime without a conventional teller. With a functional ATM at the point-of-purchases, the cardholder is expected to slot the credit card (debit card or bank card) in for contact with the magnetic strip. Consequently, it instantaneously requests for the PIN which provides security and ensures validity. If the cardholder's account is sufficiently funded to absorb the value of the transaction,

it will immediately within 24hours. When the PIN is properly inputted, a list of choices of transactions is displayed to the customer, through which the customer completes the required transaction. If the customer's desire is to withdraw cash, the cash is dispensed through a feeder slot. If deposits are to be made, the customer feeds the deposit envelopes into the deposit slot when cued by the machine. When the transactions are completed, the customer receives the receipt while the ATM retains its own receipt for records of the transactions (Ozuru & Kalu, 2020).

There are limits to the number of items and how much a person can withdraw from his account on daily basis. Drawing from the FBN experience, essentially, the benefits of First Cash Card to holders include the following:

Advantages of Automated Teller Machine (ATM)

- 1) **Cash economy:** The card is very convenient to use because it eliminates the need to carry large amount of cash.
- 2) **Access economy:** the card holder does not need to visit the bank to load the card as the card gives access to the bank account.
- 3) **Safety economy:** since it is PIN protected, it is safe as long as the card holder does not compromise the PIN.
- 4) **Mercantile economy:** cardholders can access cash from ATMs and POS terminals as well as merchant outlets. Furthermore, account balance requests can be done at POS terminals by the cardholders.

The card is accepted not only at first bank ATMs but also at allied counterpart banks. Thus, the cardholder does not need to make a trip to affected banks to withdraw cash or check balance.

Other specific benefits to merchants relate to:

- a) **Multi-functionality:** POS terminals are multi-functional. In other words, various cards such as verve card, master card and visa card which will be accepted in near future, can be processed on a single terminal. Merchants do not have to install more than one terminal in order to handle these transactions.
- b) **Liquidity:** it eliminates most cash carrying problems with their associated costs and risks;
- c) **Acceptability:** the terminal will accept cards from inter-switch member bank which have the inter-switched logo at the back; including those of FBN, United Bank for Africa (UBA), Guarantee Trust Bank (GTB), Zenith Bank, Access Bank, Fidelity Bank etc.
- d) **Opportunity:** the merchant has the opportunity to make more sales as the cardholder's spending is not constrained by the amount of cash he is carrying at the moment. Furthermore, it is gratifying to note that first cash card holder has the opportunity of checking account balances, withdrawing cash anytime, changing funds between linked accounts, changing PIN where and when necessary, obtaining mini statements, purchasing goods/paying for services, carrying out cash bank transactions and collecting cash from merchants.

In all, First Cash Card can be used at any ATM located at FBN branches nationwide to withdraw cash, as well as POS terminals at selected merchant locations for purchase of goods and services. The customer service staff are equally available at branches with ATMs to assist customers. The POS debit card transaction is the next logical step to electronic payment system (EPS) in Nigeria and aligns the country with global trends. Generally, the fundamental magnetic strip contains a bundle of information such as cardholders PIN, bank account number, driving license number, residential address, date of birth etc. depending on the company.

On the other hand DBN introduced its ATM system which they chose to call anytime money. This is because it enables customers to cash money from their account and to carryout other basic banking activities outside banking premises and beyond banking hours. The DBN ATM

banking transaction includes cash withdrawal, balance inquiry, mini statement access, checkbook request, full statement request and fund transfer (between related accounts). The ATM service is available for subscription to individual/joint account holders who operate chequing, savings and salary account with the bank. The special benefits to cardholders include:

1. **Cash withdrawals possibility:** Customers can withdraw cash from the ATM as many times as possible (wished) subject to daily limit.
2. **Balance accessibility:** the ATM affords the card holder the opportunity to have a display of account balance on the screen and also print it.
3. **Mini statement accessibility:** customers can obtain statements of their last 10 transactions through the ATM which can also be displayed on the screen and printed.
4. **Full statement accessibility:** through the ATM, a three month full bank statement can be requested, which is immediately processed and delivered to the customers mailing address.
5. **Card safety and security possibility:** the customer will be to use his card on the ATM appropriately 24hours after it has been activated in the system.
6. **Cheque book accessibility:** customers can request for Cheque book and it will be processed within 48hours for collection at the customer's home branch.
7. **Fund transfer possibility:** funds can be transferred from one account to another as long as they are cardholder's accounts and are accessible by DBN ATMs up to four of the cardholders personal accounts can be attached to one banking card.
8. **Multiple account possibility:** with one card customers can access up to four of his personal accounts if so desired.
9. **Two card possibility:** one customer can apply for and obtain an additional card for their account. This is specially beneficial where he operates a joint account or wishes his spouse or children above 15years to independently access the account through the ATM. Each of the two cards has daily withdrawal limit of amount to withdraw.

Disadvantages

In every business there are risks associated with operations and corporate ATM systems are not exception. Financial institution thus experience high risks when issuing credit cards to clients. They may lose money when people default on account (not repaying all the money they have spent using the cards). Also, the banks may lose money when customers do not use, this particular financial instrument enough so that the profits generated are sufficient to cover the cost of operation of the whole credit card system. Sauders and cornett (2017) thus contended that credits risks arises because of the possibility that the promised cash flows on financial claims held by financial institutions such as loans and bonds), will not be paid in full. If the principal on all financial claims held by financial institution are paid in full on maturity and interest payment made on their promised payment dates financial institutions should always recover back the originals principal lent plus an interest returns in which case, they would face no credit risk. If a borrowed defaults, however both the principal loaned that the interest payment expected to be received are at risk. In addition to technology risk banks also face operations risk, which generated relate to technology risks but arise mainly from existing technology malfunctions or back office support systems break down. Nigerian banks may be easily susceptible to these risks because they are barely embracing these new technologies with dearth of skilled personnel to manage the facilities. For instance, a commercial banks computer system may fail to register incoming payments (funds borrowed) message on e-naira wire transfer but continues to process out bound(fund lent) message, although these ATM-related risks prevail in Nigerian banks, they are not insurmountable, given the right level of commitment and accorded ideal strategic technology management better for it.

Uses of an Automated Teller Machine

Automated Teller Machines have revolutionized the banking sector by providing easy access to customers and loading off the burden from bank officials. Some of the uses of an ATM are- Most commonly, users can withdraw money and check their account balance at an ATM. Bank account holders can also transfer money or change the PIN (Personal Identification Number) Newer and advanced ATMs also provide options to open/withdraw a Fixed Deposit (FD), or to apply for a personal loan. One can also book railway tickets, pay the insurance premiums, income tax & utility bills, recharge mobile, and deposit cash. Some of these facilities may require to register at the bank branch. Customers can perform direct transactions at their convenience. Banks have installed their ATMs today in public spaces, highways, malls, marketplaces, railway/airport stations, hospitals, etc (Nitin & Rajat, 2009).

Automated Teller Machines provide 24×7 access anywhere and at any time.

ATMs help to avoid the hassle of standing in long queues at the bank even for simpler transactions like withdrawing money. It has also helped in reducing the workload of the bank officials.

Other uses include:

- i. To avail of the facility of Automated Teller Machines, one need to have a bank account and an ATM card against the account for the same. Most of the times, banks issue a debit card that one can use not only at ATMs but also at online payment gateways or card swipe payments.

Every Automated Teller Machine has some common basic parts, even if they may differ in size and design. These are:

Input Devices

1. Card Reader – Every Automated Teller Machine has a space to insert the debit or the ATM card. The ATM card generally has a magnetic strip on the back, and in a few cases, a chip on the front, that contains the account details. Card Reader recognizes these details and passes them on to the user server.
2. Keypad – All ATMs have a keypad where you can insert numbers, clear them, or cancel any transaction. You can use it to enter the PIN and the amount you wish to withdraw. These keypads can either be physical buttons on the ATM or virtual keypads on the touchscreen.

Output Devices

1. Display Screen – There is a display screen in every ATM, usually LCD or CRT that displays the transaction information like steps to do the transaction or balance after withdrawal. Therefore, it acts as a guide to performing a transaction. It displays options of PIN change, quick cash withdrawal, balance check, etc.
2. Cash Dispenser – Cash is safely stocked into the Automated Teller Machine by bank officials. There is a cash dispenser from where you can collect cash after withdrawing a certain amount from the ATM.
3. Receipt Printer – After completing a transaction, the receipt printer in the ATM records the type of transaction, amount withdrawn, and the remaining balance. In an ongoing transaction, ATMs generally display the question if the customers want the receipt or not. So, if requested, you get the receipt from the receipt printer.
4. Speaker – There is a speaker in most of the ATMs which gives the audio instructions for accessing the machine & doing transactions. Therefore, it further enables the users to perform the transaction smoothly.

The step-by-step guide on how to operate an ATM:

- i. Approach the ATM: Walk up to the ATM and ensure that the surrounding area is safe and well-lit. Be cautious of anyone behaving suspiciously nearby.
- ii. Insert your card: Locate the card slot on the ATM and insert the debit or credit card with the card's magnetic strip facing down or the chip facing up, depending on the type of card and ATM. Follow the on-screen instructions if any.
- iii. Enter your PIN: Once the card is inserted, the ATM will prompt you to enter your Personal Identification Number (PIN). Carefully enter your PIN using the keypad provided. Ensure that you shield the keypad with your hand or body to prevent others from seeing your PIN.
- iv. Select your transaction: After entering your PIN, the ATM will display a menu of transaction options on the screen. Common options include withdrawals, deposits, balance inquiries, and fund transfers. Select the transaction you want to perform by pressing the corresponding button on the keypad.
- v. Follow on-screen instructions: The ATM will provide step-by-step instructions for each transaction. Read the instructions carefully and follow them accordingly.
- vi. Withdrawal: If you choose to withdraw cash, enter the amount you wish to withdraw and confirm the transaction. The ATM will dispense the requested amount in cash.
- vii. Deposits: If you want to deposit cash or checks, the ATM will guide you on the specific procedure. Some ATMs require you to insert checks or cash directly into designated slots, while others may provide envelopes for you to place your deposits.
- viii. Transaction completion: Once you have completed your transaction, the ATM will display a summary of the transaction details on the screen. Take note of any important information or receipts provided.
- ix. Collect your card and cash: After completing your transaction, the ATM will return your card. Remember to take your card back from the machine. If you made a cash withdrawal, collect the dispensed cash as well.
- x. Confirm your transaction: Take a moment to confirm that you have collected your card and cash before leaving the ATM area. If there are any issues or discrepancies, contact your bank immediately.

It's essential to always be cautious and aware of your surroundings when operating an ATM. Shield your PIN entry, avoid sharing your PIN with others, and keep your transaction receipts for future reference (James & MCAndrews, 2003).

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THE NEED FOR SCIENCE TEACHERS TO BE COMPUTER LITERATE TO ENHANCE THE USE OF E-LEARNING IN TEACHING AND LEARNING SCIENCE SUBJECTS IN SECONDARY SCHOOLS IN ANAMBRA STATE

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Abstract

Science Education is very important in technological development of any nation, because of its numerous benefits, therefore the teaching of science subject in secondary school must shift from traditional or conventional method to technological teaching method. All nations of the world are in the era of information and communication technology (ICT) where teaching and learning could no longer be restricted to the classroom; rather it could be done anywhere including your bed room, rest room, play ground on the sea or in the air. That is why science teacher should be computer literate in order to enhance the use of E-learning in teaching and learning of science subject so that our nation will be among the technological nations. It was recommended that seminars and workshops should be organized regularly by Ministry of Education for pre-service and in-service teachers to make them upgrade their knowledge in ICT facilities and laptops should be made available to teachers.

Introduction

The quality of education in the world or a nation today could be determined by the extent of computer literacy possessed by her teachers. One of the most important factors in improving students' achievement in science subject is by empowering seasoned qualified science teachers who are computer literate and upgrading those teachers by sending them to computer workshop and seminar so that they will fit in the moving train of networking system. Ibrahim (2010) stressed that the extent of computer literacy among science teachers would go a long way to bring about pupils high academic achievement. The introduction of computer into teaching and learning has made both teachers and students overcome the re-occurring problem of conventional methods of teaching and learning science education (Ebeh, 2019). The growth of computer, internet and other electronic devices provide opportunities for the development of quality teaching and learning of science subjects. Science subjects taught in the secondary schools include physics, chemistry, biology, mathematics, agriculture, Home Economics, Basic Science etc. The teaching of these subjects is confined to the classrooms with ill-equipped laboratories using the teacher centered method. Teachers are the key factors in any educational innovation. They need training in the use of the e-learning devices like computer, internet and others to enhance teaching and learning of science subjects as the world is increasingly getting technologically driven.

Concept of Computer

A computer is a device that accepts information in the form of digitalized data and manipulates it for some result based on a program, software or sequence of instructions on how the data is to be processed. Also, computer can be described as a machine or a device that accept data under the control of a stored program in prescribed form, process data and supply the result as information in a specific form. It performs three major function such as it accepts data, it processes data and supply the result as information. Oxford Dictionary of Science (2003) defined computer as a programmable electronic device designed to accept data, perform, prescribed mathematics and logical operations at high speed and displays the result of these operations. Adedapo, Mitchel and Agunbiade (2016) see computers as a machine that

can solve problems by accepting data, performing certain operations and presenting the results of those operations under the direction of detailed steps-by-step instruction. The use of computer in teaching and learning science subjects contribute to quality teaching and learning of science subjects.

Limitations of Computer

Despite the importance of computer in teaching and learning of science subjects in secondary schools, there are many problem facing the use of computer in the schools. Eyibe (2014), mentioned that computer have many limitations like frequent breakdown, very short lifespan, frequent change of models or technology, difficult to use, power failures and outages . Solutions to the above problems should be possible if schools employed computer technical assistance. Computer assistance will provide the teachers with up-to-date equipment in the new world of technology. Also, they will help in maintain the computer to avoid frequent break down (Eyibe & Ogwata, 2016).

Concept of E-Learning

E-learning means electronic learning. E-learning is a unifying term used to describe the fields of online learning, web-based training and technology delivered instructions. Ebeh (2019) says that e-learning is a utilization of electronic technologies to access educational curriculum outside the traditional classroom. Adeosun in Eze (2016) refers to e-learning as comprising the combination, implementation and relationship of teaching and learning via different ICT media such as computer, internet multimedia, projector, video tapes, CD-Rom, flash drives, satellite, telephone, television among others. Stockley in Ebeh (2019), define e-learning as the delivery of learning, training or education programmes via electronic means using computer or other electronic devices to provide training, educational or learning materials. It can also be described as the use of information and communication technology, example, internet, computer, mobile phone, learning, management system (LMS), televisions, radio and others to enhance teaching and learning activities. E-learning refers to electronically supported learning and teaching using any form of digital communication, electronic devices or the internet. It involves such processes as computer-based learning and internet-based learning, but does not necessarily require either a computer or an internet connection, rather only the use of electronics such as CD Rom, watching an educational television program, or computer conferencing. It also includes delivery content via the internet, internet/extranet (LAN/WAN), audio and video tape, satellite broadcast, interactive TV, and CD-Rom. Therefore, e-learning is a structured purposeful use of electronic system or computer in support of the learning process to cover wide set of applications and processes, such as web-based learning, computer based learning, virtual classrooms and digital collaboration (Ebeh, 2019).

The basic principle of e-learning is connectivity; the process by which computers are networked to share information which can connect people. This is provided for by what is often called the e-learning landscape or architecture which is refers to hardware, software and connectivity component required to facilitate learning (Achufusi and Okapa, 2020). With e-learning, there is a shift from the traditional approach of teachers directed didactically to modern method, where computers technology plays a significant role; thereby improving the quality, efficiency and effectiveness of teaching and learning. E-learning as a sub-system with ICT is the electronic process which enhances the delivery and administration of learning opportunities and support via computer networked and web-based technology to help individual performance and development (Rosenberg in Achufusi and Okpala, 2020).

The National Policy on Education (FRN, 2014), places emphasis on the usage of variety of media and technologies to provide and improve access to good quality education for large

number of learners. The integration of ICT into the teaching and learning process has introduced a new system of learning called e-learning which is being accessed and delivered electronically with multimedia gadgets.

The Roles of E-Learning in Teaching and Learning of Science Subject in Secondary Schools

E-learning is an increasingly prevalent, viable and fully recognized method for teaching and learning science. E-learning accommodates different types of learning styles student learn at their own pace and through variety of activities. E-learning generates intrinsic motivation and initiation of organized active learning in science and technology.

It provides remote access via computers and networks to scientific instruments that allows students aid teachers to conduct scientific investigation that might otherwise be unavailable to them (NACOL in Ebeh, 2019). E-learning is learner centered. The greatest lesson learned from E-learning is that it is more focused on the learner and also more interesting to the learner as learners are allowed to select learning materials that meet their level of knowledge, interest and what they need to know to perform more effectively in an activity.

Generally, online learning accommodates everyone's needs by creating a whole new world where billions of houses of content on just about any topic you can think of, is available for anyone's consumption at any fine. All that is needed is an internet connection. Students can learn after work, on weekends without missing any programs. E-learning provide flexibility and that is what we need in today's busy world.

It also help to introduce innovation for the teachers and students. With the current changing and evolving technology, it is important for teaching material and method to be evolving and staying relevant. The teacher can quickly update and upload it live for students to continue studying.

E-learning is not only easily accessed, but the content is quicker to get through as well. In fact, statistics show that the actual time required for student to learn is reduced by up to 60% in comparison to traditional learning methods. Teaching and learning can be done at the comfort of their own homes. Thereby reducing travel expenses.

E-learning does not only benefit the teachers online course creators, but it benefits the students learning as well. (National Science Teachers Association www.nsta.org). The National Science Teachers Association (NSTA) supports and encourages the use of E-learning experiences for prek-16 science students, as well as for science educators engaging in professional learning in the traditional, informal or online learning environment. NSTA defines e-learning as the effective learning process created by combining digitally delivered content with learning support and services (Waller, 2001). E-learning can and should significantly enhance science teaching and learning experiences. NSTA further explains that e-learning is not limited solely to distance based online courses and instruction where the learner and instructor are separated by place and time, but e-learning include traditional classroom instruction that incorporates the planed and effective use of collaborative and or interactive digital tools and resources, blended learning experiences that incorporate various combinations of technology-mediated and traditional classroom instruction, and distance delivered courses or programs, as well as the rich collaboration and discourse enabled through online learning, networks and communities.

E-learning is an increasingly prevalent, viable and fully recognized method for teaching and learning science (Dede, Brown-LBahy, Ketelhut and Whitehouse (2004). NSTA supports e-learning as a promising way to more effectively provide access to images of science teaching that embrace three-dimensional learning in a wised range of classroom with diverse learner (NRC, 2012).

It also gives science educators opportunities to experience firsthand appropriate use of technology in teaching and learning and increase their confidence in using their tools in their own practice.

E-learning also meet the needs diverse student and teacher. Learners with varied preference for learning interacting across learning environments.

It reduce the isolation of science educators especially those in rural areas or teaching specialized science subjects-by providing and expanding access to colleagues and experts (NASEM, 2015).

It engages a greater number of teachers in ongoing high-quality peer-to-peer and teacher focused professional learning experiences (Csss, 2015).

It provides remote access-via computers and smart and mobile devices to networks, data and scientific instruments that allows teachers and the students they serve to conduct scientific investigations that might otherwise be unavailable to them (NACOL, 2008).

Needs for Science Teachers to be Computer Literate

- Science teachers should be computer literate so that they will be able to make use of online tools to promote sharing of information, discourse, critical analysis, and collaboration between students and teachers at various location throughout the world.
- They should be able to access up-to-date information relating to science content and pedagogy.
- Being computer literate will give science teachers opportunity to share and engage with like-minded colleagues through discourse as they learn content and new innovations for teaching science subjects.
- With the knowledge of computer, science teachers should have experience on how to employ three dimensional teaching and learning strategies and make their use explicit.
- Being computer literate, will widen science teachers experience in using e-learning technologies in teaching their students.
- During pandemic, science teaching and learning will be on-going at the comfort of their homes if teachers are computer literate.

Effects of E-Learning in the School System

1. **Increased Access to Education:** E-learning breaks down geographical barriers, allowing students to access educational materials and courses from anywhere with an internet connection. This is particularly beneficial for students in remote areas or those unable to attend traditional schools due to various reasons like illness or disability.
2. **Flexibility and Convenience:** E-learning offers flexibility in learning schedules, enabling students to learn at their own pace and according to their own schedules. This flexibility is advantageous for students balancing school with other commitments such as work or extra curricular activities.
3. **Personalized Learning Experience:** With e-learning platforms, educators can tailor learning materials and experiences to meet the individuals need and learning styles of students. Adaptive learning technologies can assess students' strengths and weakness and provide targeted instruction, leading to more personalized learning outcomes.
4. **Enhanced Digital Literacy Skills:** E-learning requires students to engage with digital technologies and online platforms, fostering the development of digital literacy skills. These skills are increasingly essential in today's digitally driven society and are transferable to various aspects of life and work.

5. **Cost-effectiveness:** E-learning can be more cost effective than traditional classroom based education, as it eliminates expenses associated with physical infrastructure, transportation, and printed materials. This cost-effectiveness can make quality education more accessible to a wider range of students.
6. **Environment Impact:** By reducing the need for printed materials and commuting, e-learning can have a positive environmental impact by lowering carbon emissions and reducing paper waste.
7. **Global collaboration and diversity:** E-learning facilitates collaboration and communication among students and educators from diverse geographic locations and cultural backgrounds. This exposure to different perspectives fosters global citizenship and cross-cultural understanding.
8. **Continuous Learning Opportunities:** E-learning provides opportunities for lifelong learning, allowing individuals to acquire new skills and knowledge beyond formal education settings. This continuous learning is essential in a rapidly changing job market where up-skillful and reskilling are increasingly necessary.

Conclusion

There is no gain saying the fact that teachers are the key factors in e-learning programs which requires competence in managing the required e-learning devices.

Teaching and learning science subjects in secondary schools require instructional materials such as ICT facilities. ICT facilities are set of tools that help one work with information and perform tasks related to information processing. There are various forms of ICT facilities in the society ranging from computer, laptops, internet, digital calculators, etc. Some science teachers in secondary schools cannot effectively use ICT facilities in teaching due to lack of competence in basic ICT.

The emergence of e-learning applications in educational delivery services in the secondary schools pose a lot of problems to the teachers. Some teachers lack the adequate knowledge and skills for e-learning instructional delivery.

Recommendations

Based on the problem of lack of adequate knowledge of ICT instructional facilities like computer laptops, internet, digital calculators etc. The author suggest the following:

1. Government should make the study of computer as a course compulsory at teacher training institutions.
2. Seminars and workshops should be organized regularly by Ministry of Education for pre-service and in-service teachers to make them up-grade their knowledge in ICT facilities.
3. Laptops should be made available to teachers.
4. Adequate e-learning facilities should be provided by the government to improve teaching and learning of e-learning.
5. School to cooperate with teachers by providing sufficient time for them to implement new technologies in the classroom.
6. Teachers should be open-minded towards new approaches to teaching. Where support is lacking, they need to find ways to be able to solve problems involving their use of ICT in schools.
7. Finally, teachers should acquire skills of self-organization which will help them a great deal in conducting their classes when using ICT.

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AVAILABILITY AND ACCESSIBILITY OF INTERNET IN FEDERAL UNIVERSITY OF TECHNOLOGY, OWERRI BY UNDERGRADUATE STUDENTS

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Abstract

This study investigated the perception of the availability and accessibility of internet in Federal University of Technology, Owerri by undergraduate students. The study was guided by two specific objectives. In order to achieve the objectives, two research questions were posed. Descriptive survey research design was adopted for the study, while a sample size of 180 undergraduate students of Federal University of Technology, Owerri was randomly selected from a population of 1069 final year students. The instrument for the study was a well validated questionnaire titled: Undergraduate Students Perception of the Availability and Accessibility of Internet Questionnaire (USPAAIQ) with a reliability coefficient of temporal stability of 0.97 mean, standard deviation, t-test analysis were used for data analysis. Findings identified that; internet was available as well as accessible to the undergraduate students of Federal University of Technology, Owerri. Based on the findings and implication of the findings, the researcher recommended among others: the university should enjoy constant power supply, so that Internet services in the school's digital library can be stable; orientation programs on the use of internet should be organized at intervals for the students; so as to ensure maximal and proficient utilization of the internet for academic purposes.

Keywords: Availability, Accessibility, Internet, Undergraduates Students.

Introduction

ICT stands for information and communication technology. It refers to technologies that provide access to information through telecommunication. It is similar to Information Technology (IT) but focuses primarily on communication technologies. This includes the internet, wireless networks, cell phones and other communication medium. It means we have more opportunities to use ICT in education to improve quality of teaching and learning (Ratheeswari, 2018). The researcher also observed that ICT are making dynamic changes in society. They are influencing all aspects of life. The influences are felt more and more at schools.

However, ICT provide both students and teachers with more opportunities in adapting learning and teaching to individual needs, forcing schools to aptly respond to this technical innovation. Arugu and Chigozie, (2016) submitted that ICT is an umbrella term that includes any communication device or application, encompassing: radio, television, cellular phones, computer network hardware software, satellite systems and so on, as well as the various services and applications associated with them, such as video conferencing and distance learning. ICTs are often spoken of in a particular context, such as ICT in education, health care, or libraries.

The uses of internet are enormous ranging from academic research, receipt of global information, linkage with other institutions of the world, bridging communication gap between developed and developing countries and also assist students to be computer literates. The internet is loaded with data and information which provides students with opportunity to engage in more challenging and life time activities. The internet is a uniform, global computer network connecting millions of computers across the world. It is a voluntary network in which many computers connected have chosen to do so in order to share and exchange information

in a quick and effective manner. For instance you can look for articles in other libraries from your computer and communicate with friends (Oso and Adesua, 2017).

Over the years, the internet has been a very important instrument for facilitating academic activities in tertiary institutions in Nigeria. The information and communication technology revolution is sweeping through the world and the gale has even caught up with developing countries like Nigeria. There has been a tremendous growth in the use of the Internet and the World Wide Web for finding and sharing information (Ivwhighrehweta and Igere, 2014) According to Emeka and Nyeche, (2016) the internet today is a worldwide entity whose nature cannot be easily or simply defined. To many, the internet is a large computer network linking together millions of smaller computers at numerous sites in various countries belonging to thousands of business, government, research, educational and other organizations. To the internet users, the internet is a global community-one with a very active life. In today's world, the Internet plays a vital role in the teaching, research and learning process in academic institutions. Thus, the advent of the Internet has heralded the emergence of a new form of knowledge production and distribution.

Fasae and Aladeniyi (2012) opine that for developing countries like Nigeria to grow and attain its economic and social status, such country must be fully ready in strengthening and empowering its academic institutions, both in science and technological capacity. Hence, the students in their respective fields will need an array of reliable and interactive means of accessing and retrieving information without wasting much time. Similarly, the use of this Internet is greatly dependent on some associated factors such as purposes, students experience, locations, Internet facilities and services available, among others on academic pursue of the students in their institutions. Deniz & Geyik, (2015) reveal that the time spent on the internet is not a waste of time as it is perceived to be productive. They opined that there are more rewards of internet use in comparison with its drawbacks.

The importance and usefulness of the nternet cannot be overemphasized. The National Policy on Education (2014), recognizes the prominent role of Information Communication Technology [internet] in the modern world today hence the integration of ICT in Education in Nigeria. Students of Federal University of Technology Owerri are not left out; they feel more dependent on internet services for teaching and class assignment respectively and the gathering of information. Before the innovation of the internet they were faced with difficulties in carrying out effective research for their academic works. With the availability of internet services, they are now faced with the conventional method of updating their knowledge and putting more data in their research approach; thereby contributing to the creativity of knowledge based information oriented and system driven modern society.

Lecturers of Federal University of Technology Owerri always complain of the inability of the students to carry out meaningful research work given to them in form of continuous assessment, term papers, and projects, among others. Also, in the case of searching for research topics, the researcher observed that recent projects in the shelves of the school's library were mere duplications of old ones; in terms of content and references. Most of the literatures reviewed were scanty and outdated; some students attributed this to unavailability of materials and information needed to delve into novel and contemporary areas. Educational system is a knowledge organization that requires constant and consistent updating and renewal to forestall growing stale and obsolete. One wonders why anyone should complain of lack of information in this era of internet services that gave access to interesting documents for research, such as journals, magazines, computer manuals, news summaries and academic papers. Thus, the problem of this study posed as a question is: what is the level of availability and accessibility of internet for undergraduate students of Federal University of Technology, Owerri?

Specifically, the study determined: undergraduate students perception on internet

availability in Federal University of Technology, Owerri with respect to those who are aware and who are not aware and undergraduate students perception on internet accessibility in Federal University of Technology, Owerri with respect to those who have access and who do not have access.

Research Questions:

The following research questions were posed to guide the study:

1. What is the mean response score of undergraduate students' perception on internet availability in Federal University of Technology, Owerri with respect to those who are aware and who are not aware?
2. What is the mean response score of undergraduate students' perception on internet accessibility in Federal University of Technology, Owerri with respect to those who have access and who do not have access?

Hypotheses:

There is no significant difference in the mean response scores of undergraduate students perception on internet availability in Federal University of Technology, Owerri with respect to those who are aware and who are not aware.

There is no significant difference in the mean response scores of undergraduate students perception on internet accessibility in Federal University of Technology, Owerri with respect to those who have access and who do not have access.

Method

This research adopted the descriptive survey research design. The design is considered appropriate because of its suitability for studying phenomena and establishing between variables on Undergraduate Students perception of the Availability and Accessibility of internet in Federal University of Technology, Owerri. The study was carried out in Federal University of Technology Owerri (FUTO). The university is sited in Owerri, a metropolitan city located between latitudes 05° 29' 06s and longitude 07° 02' 06s in the southeastern part of Nigeria. The area experiences mean daily minimum temperature range of 19-24°C and maximum range of 28-35°C, average relative humidity of up to 80%, and a longer wet season which lasts from April-November. The vegetation, though dominated by semi-deciduous forest has been altered by agriculture and other anthropogenic activities, with dominant top-soil of moderate humus composition.

The Otamiri River, a major river in Owerri which serves domestic uses, fisheries and artisanal sand mining courses through the university campus, onto the suburbs and then to the neighboring Rivers State where it first confluences with the Oge-ochie, and then Imo Rivers before emptying into the Atlantic Ocean. The university is located in Owerri West, the capital of Imo State. The university is bounded by the communities of Eziobodo, Umuchima, Ihiagwa, and Obinze, all in Owerri West L.G.A., Imo State, Nigeria.

The population of the study was 1059 final year students of School of Engineering and Engineering Technology (SEET) for 2019/2020 academic session, since they are the ones currently undergoing active research on project writing. (Source: office of the Dean of Engineering and Engineering Technology). The sample of the study consists of 180 undergraduate students which represent 16.9% of the entire population. The sampling was randomly selected from the final year students of each of the schools using simple random sampling technique. This was done in order to have a fair selection. In the use of the simple random sampling technique by replacement, the use of slips of paper or lucky dip was employed. The name of each member of the population was written on a slip. The slips were

folded and put in a container. After a thorough reshuffling, the researcher not looking into the container, dipped his hand and picked one slip. He unfolded the slip, recorded the name on the slip, folded it back again and puts it back into the container. The researcher repeated this process until the required number of elements 180 were drawn. This process of replacing, after each draw, a slip that was drawn before a subsequent draw is referred to as “sampling by replacement”. It ensures that each member of the population has an equal probability of being drawn.

The researcher used a sample size of 180 undergraduate final year students from the Faculty of Engineering and Engineering Technology (FEET) Federal University of Technology Owerri. The instrument for data collection is a self-structured questionnaire developed by the researcher titled “Undergraduate Students Perception of the Availability and Accessibility of Internet Questionnaire (USPAAIQ)”. The questionnaire has two sections A and B. Section A contains the students’ demographic variable, while section B contains 10 structured item statements as clusters A and B (cluster A for availability of internet while cluster B for Accessibility of internet). A 4 point rating scale of Strongly agreed, Agreed, Disagreed and Strongly disagreed type of questionnaire will be used as follows:

Strongly Agreed (SA)	= 4 Points
Agreed (A)	= 3 Points
Disagreed (D)	= 2 Points
Strongly Disagreed (SD)	= 1 Point

For face and content validity, the researcher gave the questionnaire to 3 experts in the field of measurement and evaluation and ICT for their criticisms and validation of the instrument. Cronbachs alfa correlation coefficient of 0.91 was obtained for the reliability. Therefore, the instrument became suitable for the study. 180 questionnaires were administered and a total of 180 was retrieved. The students’ questionnaires responses were used for the data analysis. The researcher used a mean score and standard deviation of the responses was calculated and used to answer the research questions. t-test analysis was used to test the hypothesis at 0.05 level of significance.

Results

Ho₁ There is no significant difference in the mean response scores of undergraduate students perception on internet availability in Federal University of Technology, Owerri with respect to those who are aware and who are not aware.

Table1: t-test analysis showing difference in the mean response scores of undergraduate students perception on internet availability in federal university of technology, Owerri

Source of variation	N	X	SD	df	t-cal.	t-crit./tab.
Students who are aware of internet availability	120	8.67	0.87	1.78	5.53	1.96
Students who are not aware of internet availability	60	2.66	0.32	$\alpha = 0.05$		

The result in table 1 reveals difference in the mean and standard deviation of students who are aware and who are not aware of internet availability to be 8.67 ± 0.87 and 2.66 ± 0.32 respectively. The table also presents that t-cal of 5.53 is greater than t value of 1.96 at 0.05 alpha level of significance, hence the hypothesis is rejected. This shows that there is significant

difference between undergraduate students of Federal University of Technology, Owerri who are aware of internet availability and those who are not. This means that internet is available to undergraduate students of Federal University of Technology, Owerri.

Ho1 There is no significant difference in the mean response scores of undergraduate students' perception on internet accessibility in federal university of technology, Owerri with respect to those who have access and who do not have access.

Table2: t-test analysis showing difference in the mean response scores of undergraduate students perception on internet accessibility in federal university of technology, Owerri

Source of variation	N	X	SD	df	t-cal.	t-crit./tab.
Students who have access to internet availability	140	7.63	0.74	1.63	4.44	1.96
Students who do not have access internet availability	40	1.57	0.22	$\alpha = 0.05$		

The result in table 2 reveals difference in the mean and standard deviation of students who are aware and who are not aware of internet availability to be 7.63 ± 0.74 and 1.57 ± 0.22 respectively. The table also presents that t-cal of 4.44 is greater than t value of 1.96 at 0.05 alpha level of significance, hence the hypothesis is rejected. This shows that there is significant difference between undergraduate students of Federal University of Technology, Owerri who have access to the internet and those who do not. This means that internet is accessible to undergraduate students of Federal University of Technology, Owerri.

Findings

The result of the study revealed that there is significant difference between undergraduate students of Federal University of Technology, Owerri who are aware of internet availability and those who are not. It reveals that there is significant availability of internet for some undergraduate students of Federal University of Technology Owerri. This means that internet is available to some undergraduate students of Federal University of Technology Owerri. This finding also confirmed a previously existing findings, for example; Daniel and Rhoda, (2015) in their research work at University of Jos; the analysis of the data and findings indicated that there is Internet connectivity in the school's digital library. It therefore becomes a plus to Nigerian education system in the provision of the ICT for effective teaching and learning.

In the second objective and test, the study revealed that there is a significant difference between undergraduate students of Federal University of Technology, Owerri who have access to the internet and those who do not. This implies that the hypothesis which states that there is no significant difference between undergraduate students of Federal University of Technology, Owerri who have access to the internet and those who do not is rejected. This means that internet is significantly accessible to some undergraduate students of Federal University of Technology Owerri. This finding also confirmed a previously existing finding of Siddiquah et al, (2017) in their related work which revealed that the students have computers and Internet facilities at home and universities. Also Adegbiya et al, (2012) in their related research work confirmed that the respondents strongly agreed that Internet facilities were available to them at various locations except in their hostels. The results on the level of accessibility of Internet resources showed that 83.4% and 80.4% of the respondents very often and often respectively

used some Internet resources such as search engines and e-mails among others.

Conclusion

The dependence on the internet and its services is increasing day by day and the users of internet like undergraduate students of Federal University of Technology Owerri are mostly dependent on the internet for their various educational purposes. The internet facilities have enhanced students' academic excellence by providing them with latest information in the internet. Following the present study, from the result shown on table 1, it shows that the internet is available to the undergraduate students of Federal University of Technology Owerri. The result on table 2 likewise shows that the internet is accessible to the undergraduate students of Federal University of Technology Owerri. From the findings, availability and accessibility of internet is extremely important to undergraduate students of Federal University of Technology, Owerri. It increases their confidence while carrying out their academic activities, boosts their academic grades and aids them in carrying out their day-to-day academic works like: assignments, term papers, research projects, project proposals among others. It brings them to a higher level of enlightenment through research on current and trending global issues, gives them an edge over their colleagues, and sets them on a high technological pedestal. It makes their education less stressful, insightful and enjoyable. It also improves and widens their sense of discovery.

Recommendations:

- I. The following recommendations were made based on the findings of the study: The universities should enjoy a constant power supply, so that Internet services in the school's digital library can be stable.
- II. Universities should partner with non-governmental organizations (NGOs) through Public Private Partnership (PPP) to provide virtual libraries for them.
- III. Librarians should train users in accessing Internet and e-resources provided by the library.
- IV. Government and university management should increase funding coming to the university so that undergraduate students can enjoy full Internet services.

Educational Implications of the Study

The implication of the study as it concerns education is that, it addresses the availability and accessibility of internet among undergraduate students of Federal University of Technology Owerri. However, from the point of view of education, it will make it easier for the students to access relevant information, acquire necessary skills, improve in their knowledge base and share related ideas among others.

Another implication of this study is that it will help the students to be acquainted with new sources of research areas in education that will improve their academic performances in their different areas of study. This study will also help to point out how information technological tools such as computer, internet, and telephone, among others can help students grow in their academic pursuit and equally develop their skills through their access to the web.

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COMPUTER NETWORK AS A REINFORCEMENT TO EFFECTIVE UTILIZATION OF ELECTRONIC DATABASE SYSTEM IN EDUCATIONAL SECTOR IN NIGERIA

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Abstract

The study centered on Computer Network as a Reinforcement to Effective Utilization of Electronic Database System in Educational Sector in Nigeria. Computer network as a group of connected computer that allow people to share information and resources. It is the connection of two or more computers to enable computer user to exchange information and resources. Computer network has element or component, types, benefits and disadvantages of computer network are contained in-computer network. The researcher also found the utilization of electronic database system in educational sector in Nigeria.

Keywords: Computer, Network, Reinforcement, Utilization and Electronic.

Introduction

An electronic database is a collection of data stored in one or more digital media. It can be accessed by any user with appropriate permissions and rights. Electronic databases are used for various purposes, including storing, retrieving and managing information on a wide range of topics such as books, newspapers, health records and much more. A database typically contains fields, or columns, where each field has a specific type of data and length; the most common types are text, numbers, dates and currency (Kofi, 2014). To make it easier to search for data within a database, indexes can be created on one or more fields. An electronic database is a lot like any other library. It's where one go to find books, articles, and other materials that have been organized by subject or author. But instead of paper books, it's full of zeros and ones on the screen. The best part about an electronic database is that one can search for anything with just a few keystrokes. An electronic database is a great way to store and organize data. It's a form of computer software designed for storing, retrieving, and managing data in an efficient manner with the goal of making it easy for one to find what one is looking for quickly (Lawal, 2021).

Example of electronic database

An electronic database is a collection of information that can be accessed by computer. This means you can find whatever it is you're looking for in seconds, without having to go through piles and piles of paper or books. Most databases are available online and often provide an easy way to search for specific items. Some examples are Google Scholar, PubMed, CINAHL Plus with Full

Text, Scopus from Elsevier Publishing and Web of Science from Clarivate Analytics (Obiamalu *et al.*, 2021).

Types of Electronic Databases

Centralized database

A centralized database is a system of storing information that allows for quick retrieval and updating by authorized users. These databases are generally run on large computer systems with high-speed access to the Internet, making it easy to add new entries or change existing

data. In this article we'll show you how to set up your own centralized database using MySQL, Apache, PHP (a programming language), and Linux (an operating system) (Okunoye, 2020).

Cloud database

Cloud databases are a powerful new technology that is making computing more accessible and affordable for small businesses. The cloud takes the onus of hardware and software installation off your shoulders so you can focus on other aspects of your business. The cloud database is a type of database that can be accessed from any device, no matter what the location. It's also very scalable and low-cost to use (Shukla & Mishra, 2011).

Distributed database

A commercial database is an organized collection of data stored in tables on a computer or multiple computers where large amounts of information can be retrieved efficiently by using queries to extract relevant information from the larger set of data. There are many types of databases, some public and some private but they all store huge amounts of information across different devices such as hard disks or memory sticks (Sudhler & Seethalekshmi, 2013).

Open-source database

Open-source databases are a great way to save money on your business. They offer a cost-effective alternative to costly software like Oracle, which can be up to twice as expensive for the same features and functionality. Open-source database solutions also allow you more control over the data schema, meaning that you don't have any limitations in what type of data structures or queries you want to build (Tiemo, 2017).

Personal database

Personal databases are the perfect way to keep track of your personal information. They allow you to store and organize everything from birthdays, addresses, phone numbers, employment history, and bank account information in one place so that it is all accessible with a few clicks. An electronic database is an excellent way to save time and stay organized. If you're looking for a new system, or just want to learn more about them in general, this article might be helpful! It's always great when people can find a method of saving themselves some time. In this case, it's through the use of an electronic database that saves all your information in one place so you don't have to go searching around for what you need later on (Toteng *et al.*, 2013). With a database you can organize your data into different folders so that it's easier to find what you're looking for when you need it. And if something goes missing or gets deleted from the original file, there's always a backup on the hard drive. Plus databases come with a password-protected security system that keeps everything safe and secure. So whether you're at home or work, don't get lost in information overload, get organized today with an electronic database (Okunoye, 2020).

Objectives of database system in educational section in Nigeria

1. Enabling data access easy for the user
2. Providing a source of mass storage of Data
3. Allowing multiple users to access the database at the same time
4. Providing appropriate and quick response to user queries.

Uses of electronic database system

An electronic database is an excellent way to save time and stay organized. If you're looking for a new system, or just want to learn more about them in general, this article might be helpful!

It's always great when people can find a method of saving themselves some time. In this case, it's through the use of an electronic database that saves all your information in one place so you don't have to go searching around for what you need later on.

With a database you can organize your data into different folders so that it's easier to find what you're looking for when you need it. And if something goes missing or gets deleted from the original file, there's always a backup on the hard drive. Plus databases come with a password-protected security system that keeps everything safe and secure. So whether you're at home or work, don't get lost in information overload, get organized today with an electronic database.

Computer Network

According to Steward (2013) defined network as a group of computers and other devices, such as printers and modems, connected to each other. This enables the computers to effectively share data and resources. The computers in a network can share data, messages, graphics, printers, fax machines, modems, and other hardware and software resources. He maintained that, computer network, or communications network is defined as a system of interconnected computers, telephones, or other communications devices that can communicate with one another and share information or data. The network must be able to transmit this information quickly with reliable and efficiency.

According to Peterson (2011) a computer network or data network is a telecommunications network that allows computer networks, networked computing devices pass data to each other along data connections. The connections (network links) between nodes are established using either cable media or wireless media.

He further says that, a computer network is a group of computer systems and other computing hardware devices that are linked together through communication channels to facilitate communication and resource-sharing among a wide range of users. He also, enumerated the uses of network thus:

- (i) Networks are used to facilitate communication via e-mail, video conferencing, instant messaging
- (ii) Network enable multiple users to share a single hardware device like a printer or scanner,
- (iii) Network enable file sharing across the network
- (iv) Network allows for the sharing of software or operating programs on remote system.
- (v) Network make information easier to access and maintain among network users.

Network Elements

- a. Servers
- b. Clients
- c. Media
- d. Shared data
- e. Resources

Servers: Servers are the computers that provide the shared resources to network users. There is usually only out server in a small network, but bigger networks may have more than one server.

Clients: Clients are the computers that can access the shared network resources provided by a server.

Media: Refers to the cables linking workstations together.

Shared Data: A server provides shared resources and data over a network. The files that are provided by the server over the network are called shared data.

Resources: Files, printers or other items that can be used by network users are known as resources. These resources can be either hardware or software resources.

Types of Network

According to Oroke (2010) stated that network which consist of various combinations of computers, storage devices and communications devices, can be divided into three main categories, differing primarily in their geographical range.

These includes:

1. Local Area Network LAN
2. Wide Area Network WAN
3. Metropolitan Area Network MAN

Local Area Network (LAN): Connects computers and devices in a limited geographical area, such as one office, one building, or a group of buildings close together (for instance, a college campus).

Wide Area Network (WAN): Is a communications network that covers a wide geographical area, such as country or the world.

A WAN may use a combination of satellites, fibreoptic cable, microwave, and copper wire connections and link a variety of computers, from mainframes to terminals.

Metropolitan Area Network (MAN): Is a communications network covering a city or a sub-urban.

Benefits of the Computer Network

In most organizations, a network offers benefits, such as data sharing and online communication that are not provided by a stand-alone environment (An environment in which there is several computers that are not connected to each other is called a standalone environment/ thus, these are the benefits of a network.

Sharing of Peripheral Devices

Because peripheral devices such as laser printers, disk drives, and scanners are often quite expensive, management wants to maximize their use, to justify their purchase. Usually, the best way to do this is to connect the peripheral to a network serving several computer users.

Data Sharing

The data can be easily shared in a network so other user can access it at any time. For example, a user working in a team wants to share some data with the other team members.

Resource Sharing

Resource sharing is also an important benefit of a computer network. For example, if there are four people in a family, each having their own computer, they will require four printers, if they want to use the resources at the same time.

Centralized Software Management

One of the greatest benefits of installing a network is the fact that all of the software can be loaded on one computer (the file server).

Communication Medium

A computer network can provide a powerful communication medium among people spread widely at different physical locations. It act as a powerful communication medium when it comes to sharing information and resources.

Data Security and Management

In a business environment, a network allows the administrators to better manage the company's critical data.

Disadvantages of the Computer Network

These are as follow:

1. Expensive to install
2. Cables may break
3. Data security
4. File server may fail

Effective Utilization of Electronic Database System in Educational Sector in Nigeria

During the course of a day we might use a telephone directory, a dictionary, an encyclopedia, an airline flight guide, a bibliography, wikipedia or a yahoo or Google index, in fact, we use databases to store all kinds of knowledge that we retrieve on a regular basis.

What is then a database?

A database is an organized list of facts and information.

Database usually contains text and numbers, and frequently they hold still image, sounds and video or film clips.

However, today we are more interested in database constructed on computers where database management programs help people design and build collections of information.

Electronic database can be utilized as follows:

Updating: A typical database is designed around a central set of facts. All databases permit their operators to add new information or to up data old facts whenever needed.

Sorting: In an electronic database stored in a computer, the order of information can be rearranged or sorted quickly. To help people retrieve and print facts, computer databases, sort lists into reports.

Boolean Logic

An electronic database can be searched rapidly for specific items of information. Often, the search commands incorporate Boolean algebra logic so users can use AND, OR or NOT to eliminate unwanted entries.

Electronic Storage

Most academic databases are stored electronically, either on computers serving the internet or on CD-ROM or DVD discs.

Expert System

One kind of database, known as an expert system, presents information on a specialized field. For example, a medical information database might gather expertise from physician specialists, as well as specific facts about drugs. The database might then package and deliver the information as a substitute for direct contact with a physician.

Conclusion

Computer technology application is increasing in daily bases. This computer and communications technology has made the entire world that we live into a "global village". People can easily speak to one another or interact and exchange information in multimedia,

electronically from one part of the world to other part. This development has better implication on all facets of human life such as business, administration, management, education, governance, agriculture, sciences and research purposes.

For any computer system to attain its usefulness, it has to be linked to one another in what is known as computer network.

Recommendation

1. Computing hardware devices should link together through communication channels in order to facilitate communication and resource-sharing among a wide range of users.
2. Database should be well installed that will help people design and build collection of information.
3. In a big networks, many servers should be employed so that resources can be shared to clients who may need it instantly.

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BUSINESS EDUCATION STUDENTS' ACADEMIC ACHIEVEMENT AND RETENTION OF SELECTED TOPICS IN ENTREPRENEURSHIP IN FEDERAL COLLEGE OF EDUCATION (TECH) UMUNZE: AN AUGMENTED REALITY PERSPECTIVE.

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Abstract

The study examined the achievement and retention of selected topics in Entrepreneurship In Business Education topics among NCE year three students of Federal College of Education (Tech), Umunze, Anambra state using augmented reality (AR) approach. A quasi-experimental design was adopted. The population was 104, consisting of all NCE year three students of FCE(T), Umunze. The whole population was used hence no sampling and sampling technique. The instrument for data collection was Entrepreneurship in Business Education Achievement Test (EBEAT). Data collected were analysed using mean for research questions and ANCOVA for hypotheses at 0.05 level of significance. Result of the study revealed that AR is more effective in improving achievement and retention of selected topics in entrepreneurship in Business Education than demonstration teaching method. When AR was adopted in teaching selected entrepreneurship in Business Education topics to students, they perform better in their examinations. It was recommended, among others, that teachers should adopt AR in teaching and learning of entrepreneurship in business education and other fields of study.

Keywords: Augmented Reality, Academic achievement, Retention, Entrepreneurship

Introduction

Entrepreneurship in business education was designed to provide learners with skills, knowledge and motivation to encourage entrepreneurial success in a variety of setting. Being a course that is capable of providing learners with jobs after school, it ought to be taught well to ensure that students acquire the necessary knowledge and skills for employment after graduation. Lucas, Spencer and Claxton in Akamobi (2021) noted that the effectiveness of any skill-oriented educational process depends largely on the quality of teaching and learning in the classroom, workshop or laboratory. Observation suggests that entrepreneurship in business education is usually taught using lecture and demonstration teaching method. The lecture and demonstration methods however, do not seem to aid critical and creative thinking as well as collaborative problem solving (Garzon & Acevedo, 2019). It is incapable of providing the effect needed to cope with the challenges of rapid technological development in a globalized world. It is therefore pivotal that entrepreneurship in Business Education teachers realize the need for a better understanding of what method to use in teaching and learning of the course as it greatly determines students' acquisition of knowledge and skills. Again, the use of technology in education has been known to foster learning (Singaravelu & Sivakumar, 2020; Kumar, 2020; Wei, Kuah, Ng & Lau, 2020; Sahota, 2023). They create interactive and engaging learning experiences which help to improve students' problem-solving and critical thinking skills (Garzon & Acevedo, 2019). Students' critical thinking as well as knowledge synthesis should be engaged in order to develop problem-solving skills by utilizing learner-centered approaches like augmented reality (AR).

Augmented reality (AR) interface was developed and introduced by Sutherland I. in 1968. From its name, we deduce that this approach "augments" the real world around us. It does this by superimposing digital information over the real world which creates an interactive experience for students (Singaravelu & Sivakumar, 2020). With the advent of new

technologies, such as augmented reality, there is an opportunity to explore new and innovative ways of teaching. Augmented reality allows learners to visualize and interact with digital contents which give users an enhanced experience in a way that is not possible with traditional methods (Kumar, 2020). Learners are able to perform physical experiments in a virtual world. This makes them learn through experimental learning as they try several iterations to find out the best and the most suitable combinations. AR applications can run over and offer interesting services through tablets and mobile phones with full range of features (Singaravelu & Sivakumar, 2020). While augmented reality has been used in various fields, its use in education, particularly in teaching business concepts and skills, is still in its infancy. Augmented reality has the potential to revolutionize the way students learn, by providing an immersive and interactive experience that can make complex concepts easier to understand while improving students' engagement and motivation (Sahota, 2023). Sahota noted also that AR enhances the retention of information since they can understand better and visualize complex concepts making them more likely to remember the information long-term. Similarly, Garzon and Acevedo (2019); Akcayir and Akcayir (2017) submitted that AR is able to transform dull monotonous learning instructions into an exciting and engaging environment eventually improving students' performance. This means that AR may boost retention and academic achievement.

Academic achievement means the successful result of interaction between a teacher and a student (Igbo & Ihejieme in Akamobi, 2021). It measures a learner's level of knowledge or skill accomplishment in a specific area. Academic achievement determines the efficacy of instruction and is also useful in testing retention of skill or information. Nya (2023) submitted that academic achievement is in collaboration with retention. The major problem faced by most students is inability to remember what they have learnt and this can result to students' performing poorly in achievement tests (Ta & Alaa, 2020). Retention in entrepreneurship in business education is not gotten by listening to the teacher teach or mere memorization rather, it is gotten through students' active participation which is dependent on the use of appropriate teaching method. Singaravelu and Sivakumar (2020) elucidated that students learn and retain more when they develop their own knowledge and meaning from their own experience. Sahota (2023) revealed that using AR in teaching could improve students' achievement and retention. Several studies have explored the potential of augmented reality in education, but there is still a lack of research on its effectiveness in teaching business concepts and skills. This gives impetus to the study on business education students' academic achievement and retention of selected topics in entrepreneurship in Federal College of Education (Tech) Umunze: An augmented reality perspective.

Statement of the Problem

The aim of any teaching and learning process is to cause a positive change in the mind of the learner. It is to enable the learner to perform or do something well in specific and broad situations (Kumar, 2020). Business education programmes generally and entrepreneurship in business education specifically provides skills in new and emerging jobs and innovations to fit-in in the world of work or to become self-reliant. Federal Republic of Nigeria (2014) in her National Policy on Education posited that the goal of entrepreneurship education is based on students' performance. Sadly, in F.C.E.T Umunze, students' academic achievements in entrepreneurship in business education seem to be dwindling. (Isa, Mammam, Bala & Badar, 2020) and (Nya, 2023) submitted that students' poor academic achievement is as a result teaching method used by the teacher which is mainly teacher-centered.

Observation of the school system suggests the teachers seem to use more of lecture and demonstration methods in teaching entrepreneurship education. They seem to rarely use other methods and approaches. Consequently, students appear not to retain what has been taught and

probably may have low academic achievements. The problem of this study therefore is to investigate whether augmented reality improved Business Education students' academic achievement and retention of selected entrepreneurship concepts in Federal College of Education (Tech) Umuze.

Purpose of the study

The main purpose of this study is to determine the academic achievement and retention of selected entrepreneurship concepts in Federal College of Education (Tech) Umuze: An augmented reality perspective. Specifically, the study determined:

1. The academic achievement mean scores of students taught selected topics in entrepreneurship using demonstration teaching method and those taught using augmented reality.
2. The retention mean scores of students taught selected topics in entrepreneurship using demonstration teaching method and those taught using augmented reality.

Research Questions

The following research questions guided the study:

1. What is the academic achievement mean scores of students taught selected topics in entrepreneurship using demonstration teaching method and those taught using augmented reality.
2. What is the retention mean scores of students taught selected topics in entrepreneurship using demonstration teaching method and those taught using augmented reality.

Hypothesis

The following null hypotheses were formulated for the study:

1. There is no significant difference in the academic achievement mean scores of students taught selected topics in entrepreneurship using demonstration teaching method and those taught using augmented reality.
2. There is no significant difference in the retention mean scores of students taught selected topics in entrepreneurship using demonstration teaching method and those taught using augmented reality.

Methodology

The study adopted quasi-experimental design. Specifically, the pre-test, post-test non-equivalent treatment group design was adopted for the study. The design was adopted because it was not possible for the researchers to randomly select the subject and assign them to groups without disrupting the academic programme and the time table of F.C.E. (T) Umuze. The study was carried out in Anambra state, Nigeria. The population of the study comprised the entire 104 NCE year three students in the school of business education, F.C.E.(T), Umuze. The whole population was used, hence no sampling and sampling technique. The 104 students were grouped into four intact classes. Two intact classes were randomly assigned control group while the remaining two intact classes were randomly assigned experimental group. The control group has 45 females and 11 males while the experimental group has 35 females and 13 males.

The instrument for data collection was Entrepreneurship in Business Education Achievement Test (EBEAT) for measuring achievement and retention of entrepreneurship in business education students of Federal College of Education (Tech) Umuze. The instrument consists of 40 multiple choice questions based on the minimum standard of Federal Republic of Nigeria, National Commission for Colleges of Education, Abuja. EBEAT was designed to cover the following contents: market segmentation, consumer behavior and human resource management which were taught during the study. The instrument EBEAT was validated by

three experts, two from the department of Business Education and one from the department of Measurement and Evaluation, all from the Faculty of Education, Nnamdi Azikiwe University, Awka. The reliability of the instrument was determined by administering the instrument to a trial group of year three students in the school of business education, Nwafor Orizu College of Education, Nsugbe. Reliability co-efficient of the score was established using Kuder-Richardson 20 formula which yielded 0.87. The researchers who are the course lecturers conducted the experimental treatment. Pre-test was administered to both the experimental and control groups after which proper teaching started by using a prepared lesson plan. Each lesson lasted 1hour and the treatment for 4 weeks. At the end of the treatment, a post-test was administered on both groups with the EBEAT and after two weeks interval delay, post-test was administered to both groups. Data collected were analyzed using mean scores and standard to answer research questions and the null hypothesis were tested using Analysis of Covariance (ANCOVA) at 0.5 level of significance.

Results

Table 1. Mean and Standard Deviation of Students' Academic Achievement Mean Scores in selected Topics in Entrepreneurship in Business Education for Demonstration and Augmented Reality Groups.

Group	N	Pre-test		Post-test		Mean Gain
		X	SD	X	SD	X
Control (Demonstration)	56	36.79	8.34	47.42	8.98	10.63
Experimental (Augmented Reality)	48	36.43	7.21	60.55	9.24	24.12

Table 1 shows that pre-test, post-test achievement mean scores of demonstration group are 36.79 and 47.42 and the standard deviation group of 8.34 and 8.98. 10.63 is the mean gain. The augmented reality group had a pre-test and post-test achievement mean scores of 36 43 and 60.55 with the standard deviation of 7.21 and 9.24. The mean gain is 24 32. However, for each of the groups the post-test achievement mean scores were higher than the pre-test achievement mean scores with augmented reality group having a higher mean gain. The result indicates that augmented reality approach improved students' achievement better than demonstration teaching method.

Table 2. Mean and Standard Deviation of Students' Retention Mean Scores in selected Topics in Entrepreneurship in Business Education for Demonstration and Augmented Reality Groups.

Group	N	Pre-test		Post-test		Mean Gain
		X	SD	X	SD	X
Control (Demonstration)	56	47.42	8.98	47.72	8.84	.30
Experimental (Augmented Reality)	48	60.55	9.21	61.89	9.36	1.34

Data in Table 2 shows that the post-test, delay post-test retention mean scores of demonstration group are 47.42 and 47.72 with standard deviation of 8.98 and 8.84 The mean gain is 0.30 The augmented reality group had a post-test and delay post-test retention means

scores of 60.55 and 61.89 with standard deviation of 9.21 and 9.56 The mean gain of augmented reality group is 1.34. This shows that each of the group has a mean gain with augmented reality group having a higher mean gain. This indicates that students taught with augmented reality retained knowledge more than students taught with demonstration teaching method.

Table 3. ANCOVA Summary of Teaching Methods on Students' Academic Achievement Mean Scores in Selected Topics in Entrepreneurship in Business Education.

Source	Sum of Squares	Df	Mean of Squares	F-cal	Sig	Remark
Teaching Methods	1081.666	2	540.833	13.629	0.000	Rejected
Error	4007.959	101	39.683			
Total	639448.000	108				

Table 3 shows that the p-value of 0.000 was obtained for teaching methods on students' academic achievement mean scores in selected entrepreneurship in business education topics. Since the p-value of 0.000 is less than 0.05 level of significance, this shows that there was a significant difference between the academic achievements means scores of NCE year three students taught selected entrepreneurship in business education topics using demonstration teaching method and those taught using augmented reality. The null hypothesis was therefore rejected.

Table 4. ANCOVA Summary of Teaching Methods on Students' Retention Mean Scores in Selected Topics in Entrepreneurship in Business Education.

Source	Sum of Squares	Df	Mean of Squares	F-cal	Sig	Remark
Teaching Methods	1127.070	2	563.535	14.405	0.000	Rejected
Error	3951.171	101	39.121			
Total	630038.000	108				

In Table 4, the data shows that the p-value of 0.000 was obtained for teaching methods on students' retention mean scores in selected entrepreneurship in business education topics. since the p-value of 0.000 is less than 0.05 level of significance This shows that significant difference exists between the retention mean scores of NCE year three students taught selected entrepreneurship in business education topics using demonstration teaching method and those taught using augmented reality. The null hypothesis was therefore rejected.

Discussion

The data presented in Table 1 provide answer to research question one, findings revealed that students taught selected topics in entrepreneurship in business education using augmented reality performed better with a mean gain of 24.12 than the group taught using demonstration method with the mean gain of 10.63 However, results in Table 3 indicates that the difference in the mean gain is significant. With F-ratio of 13.629 and p-value of 0.000 which is less than 0.05 level of significance The null hypothesis which stated that there is no significant difference between the academic achievement mean scores of students taught selected topics in entrepreneurship in business education using demonstration teaching method and those taught using augmented reality was rejected. This implies that there was significant differences between the academic achievements mean scores of students taught selected topics in entrepreneurship in business education using demonstration teaching method and those taught using augmented reality. The finding is in line with the finding of Sahota (2023) who

reported that academic performance of students taught using augmented reality improved significantly better than those taught with demonstration teaching method. The finding also supports Akcayir and Akcayir (2017) submitted that AR is able to transform dull monotonous learning instructions into an exciting and engaging environment eventually improving students' performance.

The result obtained for research question two showed that students exposed to augmented reality had a higher retention mean gain of 134 than students exposed to demonstration teaching method with the retention mean gain of 0.30. The result in Table 4 indicates that the difference in the mean gain is significant. With F-ratio of 14.405 and p-value of 0.000 which is less than the 0.05 level of significance. The null hypothesis which stated that significant difference does not exist between the retention mean scores of students taught selected topics in entrepreneurship in business education using demonstration teaching method and those taught using augmented reality was rejected. This implies that significant difference exists between the retention mean scores of students taught selected entrepreneurship in business education topics using demonstration teaching method and those taught using augmented reality. In other words, in augmented reality classroom, students internalize and retain what they are taught. A teacher can encourage students to internalize their learning by informing the students what the learning content/experience is all about, what the specific objectives are; what tools are to be used to motivate them and help to achieve the objectives. The finding is in consonance with the assertion of Sahota (2023) that AR enhances the retention of information by students since they can understand better and visualize complex concepts making them more likely to remember the information long-term.

Conclusion

The findings of this study revealed that augmented reality is more effective in improving students' academic achievement and retention in selected topics in entrepreneurship in business education than demonstration teaching method. Significant difference was established between the retention mean scores of students taught selected topics in entrepreneurship in Business Education using demonstration teaching method and those taught using augmented reality. This is due to the fact that the result revealed that NCE year three students taught selected topics in entrepreneurship in Business Education using augmented reality had a higher mean gain for achievement and retention than their counterparts taught using demonstration teaching method. It follows therefore that if augmented reality is adopted in teaching entrepreneurship in Business Education in FCE(T), Umuze, students will perform better in examinations and retain what they have learnt. This will enable them acquire needed skills that will enable the graduate to be self employed or gainfully be employed in industries.

Recommendations

The following are recommended based on the findings:

1. Teachers of entrepreneurship in business education should adopt augmented reality or other related technologies in teaching entrepreneurship in business education in order to enhance knowledge mastery and retention among students.
2. Business education teachers should be sensitized and sponsored by government and other stakeholders to attend workshops, seminars and conference to receive training on the use of digital technologies in teaching.
3. Curriculum planners should collaborate closely with Business Education experts to develop a workable entrepreneurship curriculum that effectively incorporates digital technologies.

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UTILIZATION OF DIGITAL MEDIA FOR INNOVATIVE LEARNING IN TEACHER EDUCATION AMONG STUDENTS OF FEDERAL COLLEGE OF EDUCATION OBUDU CROSS RIVER STATE, NIGERIA

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Abstract

The study investigated utilization of digital media for innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria. Two research questions guided the study and two hypotheses were formulated and tested for the study. The study adopted correlational survey design. The population comprised 300 academic staff in Federal College of Education Obudu Cross River State, Nigeria with a sample of 200 academic staff which was selected using simple random sampling technique. The instruments used for data collection were Utilization of Digital Media Questionnaire (UDMQ) and Innovative Learning in Teacher Education Questionnaire (ILTEQ). The instruments contain 15 items. The instruments were trial tested on 30 academic staff using Cronbach Alpha and a reliability coefficient of 0.87 was obtained. The instruments were structured on 4-point Likert scale of Strongly Agree (SA)=4, Agree (A)=3, Disagree (D)=2 and Strongly Disagree (SD)=1. Data collected were analyzed using Pearson Product Moment Correlation to answer the research questions and test hypotheses at 0.05 level of significance. The findings of the study showed significant relationship of utilization of electronic books and mobile phones with innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria. The study concluded and recommended that administrators of teacher education institutions should encourage utilization of digital media in order to enhance students' innovative learning.

Keywords: Digital media, electronic books, mobile phones, innovative learning

Introduction

Teacher education is the training given or provided in an institution to teachers or would be teachers to enable them acquire, inculcate and impart knowledge to their pupils or students. It is a programme that is related to the development of teacher proficiency and competence that would enable and empower the teacher to meet the requirements of the profession and face the challenges therein (Ugwoke, Ofoegbu & Ugwuanyi, 2012). Teacher education prepares two categories of teachers; teacher trainees and on-the-job trainees to acquire intellectual and attitudinal expectations, subject-matter knowledge and skills aimed to equip him or her for effective delivery at any level of schooling as well as socio-societal adaptations (Federal Republic of Nigeria, 2014).

Teaching is a complex activity and requires people with knowledgeable and competent skills to be effective in the task of instructional delivery to learners. Therefore teacher training institutes such as the Colleges of Education and Faculties of Education in Universities need to inculcate into prospective teachers values and skills as future teachers in the learning processes. Invariably, educational institutions, expectedly, need to anticipate new developments and prepare prospective teachers for their future role (Tella, 2011). In Nigeria, Colleges of Education are one of the teacher education institutions that are saddled with the responsibility of training prospective teachers for effective instructional delivery in primary and secondary schools.

Fundamentally Colleges of Education are to help prospective teachers demonstrate proper leadership qualities; exhibit the knowledge, skills and attitudes which will enable them to contribute to the growth and development of their communities in particular and their nation in general; help prospective teachers to be able to exhibit sound mastery of their subject areas and the ability to impart such knowledge to their students; enhance commitment to the teaching profession; apply the skills in the use of new technologies among others (FRN, 2014). According to FRN (2014), teacher education programmes shall be structured to equip teachers for the effective performance of their duties and Information and Communication Technology (ICT) training shall be incorporated into all teacher education programmes.

Today, rapid development of digital media and network recently affects significantly any aspects of human life, including learning activity. This development makes the learning activity occurring not only with limited information source but with more varying and opened one. Digital media involves the creation of audio, video, websites, social media and applications using technology such as the internet and electronics (Career Guide, 2022). Essentially, it's any form of media that relies on an electronic device for its creation, distribution, viewing and storage. Some examples of digital media include: Social networking platforms, web pages, electronic books, mobile apps and video animations. These digital media have brought about innovative learning in educational institutions including Colleges of Education.

Innovative learning in educational institutions especially teacher education institutions like Colleges of Education is the application of modern methods and tools to enhance students' learning. Innovative learning intends to raise productivity and efficiency of learners in order to improve learning quality. The essence of innovative learning at all levels of education is for effective understanding of school subjects. Vieluf, Kaplan, Klieme and Bayer (2012) state that the pressure to increase equity and improve educational outcomes for students is growing around the world. Learners need to utilize digital media to for effective learning. In teacher education, utilization of digital media in different forms could help prospective teachers become masters of their subjects of specialization. Different digital media such as computers, internet, electronic books, electronic dictionaries, animations, mobile phones and a lot more are utilized in teacher education institutions. However, the researchers' concerned is to investigate how utilization of electronic books and mobile phones as digital media enhance innovative learning among students in teacher education institutions.

Electronic book (e-Book) is a type of publications in digital format. This digital text publication is called e-Book, e-Text online-Book, and file-Book (Arthur, 2023). E-book is one of the digital media utilized to display multimedia information in concise and dynamic form. Into e-book, sound, graphics, picture, animation and movie shows can be integrated so that the information presented will be richer than that in conventional book (Alshehri 2019). E-books provide not only written information but also sound, picture, movie, and other multimedia elements for learners to utilize. Park, Kim and Yoo (2012) in their study in South Korea found that digital book gives positive response when it is used concomitantly with Problem Based Learning model. Kim and Quan-Haase (2013) also found that digital book is effective to improve the attraction of historical learning. Chan-Seok, Mihye and Kwan-Hee (2012) further found that the use of e-books can improve learning effectiveness and learning motivation. Learners could access e-books through multiple sources including computers, tablets and mobile phones.

Mobile phones are wireless handled device that allows users to make and receive calls, send text messages, multimedia messages, email, internet access, snap pictures and many other functions (Yuan & Liu, 2010).Utilization of digital media with e-books and cellular phone among the students in developing countries can improve the access to learning material and

education service, particularly in rural and remote areas (Kim & Quan-Haase, 2013). Research related to the students' attention and visual perception found that many students want to use more comfortable learning materials such as mobile phones so that they can learn whenever and wherever they are (El-Seoud and Alwadani, 2014). Utilization of mobile phones makes learner-centred learning possible by enabling learners to customize the transfer of and access to information in order to build on their skills and knowledge and to meet their own educational goals (Sharples, Taylor, & Vavoula, 2007). Utilization of mobile phones could positively effects learners' learning experience as learners take a greater responsibility for the learning process instead of being passively fed information by an instructor. Based on the above background, the researcher investigated utilization of digital media for innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Statement of the Problem

Innovative learning has assumed to improve learners' learning effectiveness in various institutions of learning across the globe since the advent of digital media facilitated by Information and Communication Technology (ICT). It seems that many learners no longer rely on their teachers for aided learning but rather utilize various digital media such as computers, internet, e-books, mobile phones and many others to facilitate their learning. This practice seems to be a common place in various educational institutions including teacher education instructions. However, it has been observed by the researcher that the quality of learning outcome among students of Federal College of Education Obudu Cross River State, Nigeria is not proving worthwhile. Many students seem to fail in demonstrating mastery of what the curriculum of Colleges of Education has to offer to prospective teachers. It appears that most of the students in the college do not utilize digital media such as e-books and mobile phones for innovating learning. This seems to be affecting the realization of the mandate of teacher education in producing high quality teachers. It is against this background that the present study sought to investigate utilization of digital media for innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Purpose of the Study

The purpose of the study was to investigate the relationship between utilization of digital media and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria. Specifically, study sought to:

1. determine the relationship between utilization of e-books and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.
2. ascertain the relationship between utilization of mobile phones and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Research Questions

The following research questions guided the study:

1. What is relationship between utilization of e-books and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria?
2. What relationship between utilization of mobile phones and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria?

Hypotheses

The following hypotheses were formulated and tested at 0.05 level of significance:

1. There is no significant relationship between utilization of e-books and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.
2. There is no significant relationship between utilization of mobile phones and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Methodology

The study adopted correlational survey research design. The population comprised 300 academic staff in Federal College of Education Obudu Cross River State, Nigeria with a sample of 200 academic staff which was selected using simple random sampling technique. The instruments used for data collection were Utilization of Digital Media Questionnaire (UDMQ) and Innovative Learning in Teacher Education Questionnaire (ILTEQ). The instruments contain 15 items. The instruments were trial tested on 30 academic staff using Cronbach Alpha and a reliability coefficient of 0.87 and 0.93 were obtained. The instruments were structured on 4-point Likert scale of Strongly Agree (SA)=4, Agree (A)=3, Disagree (D)=2 and Strongly Disagree (SD)=1. Data collected were analyzed using Pearson Product Moment Correlation to answer the research questions and test hypotheses at 0.05 level of significance.

Results and Discussions

Test of Hypotheses

Hypothesis 1: There is no significant relationship between utilization of e-books and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Table 1:

Pearson Product Moment Correlation of Significant Relationship between Utilization of E-books and Innovative Learning in Teacher Education among Students of Federal College of Education Obudu Cross River State, Nigeria

Variables		Utilization of E-books	Innovative Learning
Utilization of E-books	Pearson	1	.091**
	Correlation		
	Sig. (2-tailed)		.000
	N	200	200
Innovative Learning	Pearson	.091**	1
	Correlation		
	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

The result in Table 1 showed that Pearson Product Moment Correlation of significant relationship between utilization of e-books and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria was ($r=0.091^{**}$) and $P=0.000$. Since $r=0.091$ is less than 0.05, the null hypothesis was not accepted. This implied that there was a negative significant relationship of utilization of e-

books and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Hypothesis 2: There is no significant relationship between utilization of mobile phones and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Table 2:

Pearson Product Moment Correlation of Significant Relationship between Utilization of E-books and Innovative Learning in Teacher Education among Students of Federal College of Education Obudu Cross River State, Nigeria

Variables		Utilization of Mobile Phones	Innovative Learning
Utilization of Mobile Phones	Pearson Correlation	1	.072**
	Sig. (2-tailed)		.000
	N	200	200
	Pearson Correlation	.072**	1
Innovative Learning	Sig. (2-tailed)	.000	
	N	200	200

**. Correlation is significant at the 0.05 level (2-tailed).

The result in Table 2 showed that Pearson Product Moment Correlation of significant relationship between utilization of mobile phones and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria was ($r=0.072^{**}$) and $P=0.000$. Since $r=0.072$ was less than 0.05, the null hypothesis was not accepted. This implied that there was a negative significant relationship between utilization of mobile phones and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria.

Discussion of Findings

The findings of the study showed that there is positive significant relationship between utilization of e-books and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria. This means that the less the utilization of e-books, the less innovative learning will improve students' learning in teacher education. This finding is contrary with the findings of Park, Kim and Yoo (2012) in their study in South Korea which found that digital book gives positive response when it is used concomitantly with Problem Based Learning model. The finding also disagreed with the finding of Kim and Quan-Haase (2013) which showed that digital book is effective to improve the attraction of historical learning. Furthermore, the finding is in disagreed with Chan-Seok, Mihye and Kwan-Hee (2012) who found that the use of e-books can improve learning effectiveness and learning motivation.

The findings of the study also showed that there is positive significant relationship between utilization of mobile phones and innovative learning in teacher education among students of Federal College of Education Obudu Cross River State, Nigeria. This means that the more utilization of mobile phones, the more innovative learning will improve students' learning in teacher education. This finding agreed with Kim and Quan-Haase (2013) whose

finding showed that utilization of digital media with e-books and cellular phone among the students in developing countries can improve the access to learning material and education service, particularly in rural and remote areas. The finding also aligned with El-Seoud and Alwadani (2014) who established that research related to the students' attention and visual perception found that many students want to use more comfortable learning materials such as mobile phones so that they can learn whenever and wherever they are. More so, the finding agreed with Sharples, Taylor and Vavoula (2007) who indicated that utilization of mobile phones makes learner-centred learning possible by enabling learners to customize the transfer of and access to information in order to build on their skills and knowledge and to meet their own educational goals.

Conclusion

Innovative learning is essential for prospective teachers in teacher education institutions especially in the era of Information and Communication Technology (ICT). Utilization of digital media such as e-books and mobiles proves to make learning more effective among learners. The study concluded that digital media such as e-books and mobile phones have positive significant relationship with innovative learning in teacher education among students in Federal College of Education Obudu Cross River State, Nigeria.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. The management of teacher education institutions such as Colleges of Education should ensure that prospective teachers are exposed to digital media such as e-book in order to enhance their innovative learning skills for better learning outcomes. This could be achieved through procurement and provision of internet services and computers in the institutions' libraries so as to provide learner opportunity to utilize such facilities.
2. The management of teacher education institutions should also ensure to give prospective teachers proper orientation on utilization of mobile phones for innovative learning so that it will not distract them from focusing on their studies rather than utilizing their mobile phones for academic purposes. This could be achieved through organization of orientation session by the management of the institutions to education learners on healthy ways of utilization of mobile phones.

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DIGITAL MARKETING AND ENTREPRENEURSHIP IN TEACHER EDUCATION: CHALLENGES AND PROSPECTS

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Abstract:

This paper explores the challenges and prospects of digital marketing and entrepreneurship in teacher education. Digital marketing and entrepreneurship are two dynamic and influential concepts that have increasingly found their place in the realm of teacher education. Digital marketing encompasses a wide range of strategies and techniques aimed at promoting products, services, or ideas through digital channels. Entrepreneurship education, on the other hand, focuses on fostering an entrepreneurial mindset among educators and students alike. This mindset encourages innovation, problem-solving, and the ability to identify and seize opportunities. In teacher education, entrepreneurship can be seen as a means to cultivate teachers who are adaptable, creative, and capable of introducing innovative teaching methods and solutions within their classrooms. It also opens doors to educational ventures and initiatives, allowing educators to become active contributors to educational transformation. The paper concluded that digital marketing and entrepreneurship offers promising avenues for enriching teacher education. The paper examines the processes of integrating these concepts into teacher training programs and discusses the way forward for effective education in this domain. By analyzing the current landscape, the researchers aim to provide valuable insights for educators and policymakers.

Keywords: Digital, Marketing, Entrepreneurship and Teacher Education.

Introduction

In recent years, the fields of digital marketing and entrepreneurship have undergone rapid growth and transformation. This paper delves into challenges and prospects of digital marketing and entrepreneurship in teacher education, shedding light on the changing landscape of pedagogical approaches and skill requirements in the modern era. In a broad sense, "digital" refers to anything related to technology that uses discrete values (often represented as 0s and 1s) to encode information. It's the opposite of analog, which uses continuous signals (Smith, 2023). Marketing is the practice of promoting and selling products, services, or ideas. It involves activities such as market research, advertising, branding, and distribution to reach and engage with a target audience. Marketing aims to create awareness, generate interest, and ultimately persuade individuals or groups to take a desired action, such as making a purchase (Kotler, 2021). Entrepreneurship refers to the process of identifying opportunities, taking risks, and creating and managing businesses or ventures. Entrepreneurs are individuals who exhibit innovation, creativity, and a willingness to undertake financial and personal risks to develop and grow their businesses. Entrepreneurship involves activities like idea generation, business planning, resource management, and adapting to changing market conditions (Brown, 2022). Teacher education often referred to as teacher training or teacher preparation, is the process by which individuals acquire the knowledge, skills, and competencies needed to become effective educators or teachers. It involves formal training programs, often at colleges or universities, where future teachers learn about pedagogy (teaching methods), subject matter expertise, classroom management, and educational theory. Teacher education programs aim to prepare individuals to meet the needs of diverse learners and to facilitate effective learning experiences in classrooms (Johnson, 2023).

In the context of digital marketing and education, it often pertains to the use of computers, the internet, and electronic devices to create, store, transmit, and process data. In the context of teacher education, it involves equipping educators with the knowledge and skills to leverage digital tools and platforms to enhance their teaching methods and connect with tech-savvy students. This integration not only prepares future teachers to navigate the digital landscape but also empowers them to create engaging and interactive learning experiences.

The Significance of Integrating digital marketing and entrepreneurship into Teacher Education

The integration of digital marketing and entrepreneurship into teacher education holds great promise. It not only equips future educators with the tools and mindsets needed to thrive in the digital age but also addresses the evolving needs of students who are growing up in a highly interconnected and entrepreneurial world. This combination offers a holistic approach to teacher training, preparing them to excel as both effective instructors and innovative education leaders. Digital marketing, entrepreneurship, and teacher education can interact in several ways, each contributing to the enhancement of teacher preparation and the modernization of education. Federal Ministry of Education of Nigeria in (2021) suggested how these areas intersect as detailed below;

- **Curriculum Enhancement:** Teacher education programs can integrate digital marketing concepts into their curricula. Educators can learn how to use digital tools and platforms for teaching and communication. Understanding digital marketing can help them engage students more effectively, create online learning materials, and adapt to the changing landscape of education.
- **Pedagogical Innovation:** Digital marketing strategies can be employed within teacher education itself to enhance teaching methods. For instance, educators can use digital marketing techniques to create engaging online courses, leverage social media for educational purposes, and reach a wider audience of aspiring teachers.
- **Entrepreneurial Mindset:** Infusing entrepreneurship education into teacher training can foster an entrepreneurial mindset among educators. This mindset encourages innovation, problem-solving, and adaptability, which are valuable skills for teachers. Entrepreneurially-minded teachers may create innovative lesson plans, experiment with new teaching methods, or even initiate educational startups or initiatives.
- **Digital Literacy for Students:** Teacher education can equip educators with the skills to teach digital literacy and digital citizenship to their students. In a digitally driven world, these skills are essential, and teachers need to be well-prepared to guide their students in using technology responsibly and effectively.
- **Career Opportunities:** Some teacher education graduates may choose to pursue entrepreneurial ventures related to education, such as starting their own tutoring services, online courses, or ed-tech startups. Understanding entrepreneurship can prepare them for these career paths.
- **Professional Development:** Ongoing professional development for educators can include training in digital marketing and entrepreneurship. This helps teachers stay current with evolving educational technologies and methods, ensuring they can provide the best possible learning experiences for their students.
- **Community Engagement:** Teachers can employ digital marketing techniques to engage with parents, school communities, and the broader public. Effective communication and outreach are essential in the education sector, and digital marketing strategies can enhance these efforts.

The interaction between digital marketing, entrepreneurship, and teacher education is multidimensional. It involves preparing educators to leverage digital tools, fostering an entrepreneurial mindset among teachers, and even creating opportunities for educators to innovate and adapt to the ever-changing educational landscape. These interactions ultimately aim to improve the quality of education and better prepare teachers for the modern classroom.

Challenges of Digital Marketing and Entrepreneurship to Teacher Education:

Challenges and prospects of digital marketing and entrepreneurship to teacher education according to Smith (2023), include the following;

Challenges

- **Lack of Curriculum Integration:** Many teacher education programs struggle to incorporate digital marketing and entrepreneurship into their curricula due to their traditionally rigid structures.
- **Teacher Preparedness:** Educators often lack the necessary knowledge and skills in digital marketing and entrepreneurship to effectively teach these subjects to future teachers.
- **Resource Constraints:** Limited resources and outdated teaching materials pose significant challenges in providing comprehensive education in these areas.

Prospects

- **Enhanced Pedagogy:** Integration of digital marketing and entrepreneurship can lead to more engaging and relevant teaching methods, preparing teachers to meet the evolving needs of students.
- **Career Opportunities:** Equipping future teachers with entrepreneurial skills opens up opportunities for them to explore innovative teaching methods and even start their educational ventures.
- **Student Engagement:** Incorporating digital marketing techniques can make learning more interactive and appealing to the tech-savvy generation of students.

Conclusion:

Digital marketing and entrepreneurship in teacher education offer promising avenues for enriching teacher education. However, addressing the associated challenges and embracing the prospects require a concerted effort from educational institutions, policymakers, and educators. By doing so, we can empower future teachers to excel in an increasingly digital and entrepreneurial world.

Recommended Steps in Curbing the Challenges of Digital Marketing and Entrepreneurship in Teacher Education;

- **Curriculum Revision:** Teacher education institutions should adapt their curricula to include modules on digital marketing and entrepreneurship, ensuring that graduates are well-prepared for the modern classrooms.
- **Professional Development:** Continuous training and professional development opportunities for educators are essential to bridge the knowledge gap.
- **Industry Collaboration:** Partnerships with industry experts and organizations can provide valuable resources and insights to teacher education programs.

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DIGITAL TECHNOLOGY IN TEACHING COMPOSITION WRITING SKILLS IN NIGERIAN SCHOOLS

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Abstract

Writing is one of the essential means of communication. Composition allows writers to express their thoughts using pen, paper, prints and computer. Writing cuts across curriculum, therefore, everybody needs it. It is sad to note that teaching and learning composition writing skill is made difficult because of the traditional method of teaching, still prevalent in most schools in Nigeria. Learners usually encounter difficulties in developing the skills of writing, especially idea generation, organization, sentence construction and paragraph creation, hence, performance in composition and other subject areas are generally poor. In order to cover the existing gaps, digital technology is incorporated in education, most especially in teaching composition writing because it makes learning easier, for example, using mobile phone is affordable, learners can access writing materials using internet. They can connect using devices like google chromes and u-tube. Also, to ensure fluency in their tasks, word and sentence checkers are used to guide learners to create meaningful task. Digital technology gives learners the opportunity to interact with other learners globally through blogs, WhatsApp and emails. In this 21st century, the teacher only guides and gives feedback for learners to improve difficult areas. The study recommended that schools should be equipped with digital technology, especially computers. In conclusion, teachers and educators are urged to incorporate digital technology in teaching because it makes learning easier and faster. Also, it makes learning fun and exciting activity, so, it enhances interest and the passion to remain focused.

Keywords: *Composition, writing, digital, technology, skills.*

Introduction

Composition writing is a means through which one expresses their thoughts in complete sentences. Hall (2019) says composition is an act of expressing meaning or to compose an interesting story. Writing is closely linked to thinking, hence Kellogg (2008) refers to that assertion saying the two are practically twins. Writing cuts across curriculum. Everybody needs it in their subject areas for effective communication. Subsequently, its relevance cannot be under estimated. Among many, it gives learners the opportunity to develop their writing skills, for instance, idea generation and organization, sentence construction and paragraph creation. Writing is an essential job skill upon which one's learning and conduct is judged. Critical and less critical information is stored in writing for possible reference.

In spite of the importance of writing, it is faced with problems. Learners find it difficult to develop their writing skills. For example, learners make mistakes in sentence construction. It is frequently marred with mixed tenses, incorrect and ambiguous statements. The teacher is often left to make meaning from faulty sentences. Punctuation is used inappropriately in sentences, chiefly, incomplete sentences, phrases and clauses carry full stop while complete sentences take commas. Apart from that, in paragraph creation, lengthy text is notice with lumping of points in a paragraph which makes the whole work senseless sometimes. Fareed, Ashraf and Bilal (2016) attribute such problems to lack of adequate dialogue between teachers and students about the constructive steps that need to be taken to address such issues. Gowon

and Yashim (2022) assert that the major cause of writing problem is poor methodology. The traditional teaching of writing is skill practiced in most schools. This maybe the reason the performance of students in composition writing is poor and this seems to be effective communication in all facets of life. Hence, the need to explore other ways of addressing the problems like the use of digital technology in teaching composition writing skills.

Digital technology incorporates all subject areas and is one of the breakthroughs in the 21st century. This method came into being to complement the traditional approach. Digital technology in education is globalized as many countries have adopted it for easy learning. The change in the learning environment adopted mobile telecommunication which is easy to afford and it provides easy access to getting information, especially wireless and portable devices such as I pods, MP3 players and smart phones. The positive effect of digital technology in education cannot be underestimated. Deniz (2022) reiterates that digital technology gives a complete layout for interactive engagement among learners. The use of digital technology is quite learner centred.

Composition Writing Skills: Writing is the assembling of words, phrases, clauses and sentences structurally and lexically concise for the purpose of making meaning. Gowon and Yashim (2021) submit that writing is an intellectual activity of using graphic symbols orally conceived and truthfully putting them into meaningful context. As a result, it is described as a cyclical activity that goes through a process of re-writing and editing to ensure fluency and meaning in text. Without these efforts, the writer creates ambiguity and makes understanding a difficult task to the reader. In other words, conscious efforts must be put in place to follow the writing process.

Writing is a cognitive complex activity involving different elements that are interrelated and need systematic approach. Anyebe (2019) pose it that learners should use the process approach because it is laid in stages. It comprises variety of activities, purposefully incorporating writing skills. Prewriting stage gives learners the opportunity to generate ideas using different techniques like brain storming and concept mapping. The second stage is drafting and it focuses on starting to write without much regard to textual features like neatness, spelling and grammar. Editing and revising give final approval for a publishable text.

Composition writing is a means of expressing one's thoughts. Hall (2019) explains that, composition writing is an act of expressing meaning or compose a story. It is a fact that, students who have good writing skills are always successful at expressing their ideas and reaching their goals. Also, composition writing is a process of thoughtfully taking decision on what is necessary and organising such thoughts into meaning context. It involves a collection of expatriate skills including letter formation, spelling, punctuation, grammar and organization, Aldin, Omer, Hamid and Elteb (2019).

Structurally, any kind of composition has three sections, introduction, body and conclusion. The introduction is conceived to draw the attention of the reader and making it clear and readable. The body comprises the development of points by vividly describing, explaining and relating experiences and events. The conclusion sums up, recommends or forward suggestions as solution to problems identified by the writer. More so, composition writing provides learners the opportunity to develop skills in writing, for example, the sentence is the highest grammatical unit that gives a complete thoughts. On the other side, the paragraph is the assembling of a thought expressed in sentences, thereby giving concise thoughts to the writer and reader.

In addition, a good composition should have rich content. The writer is expected to tackle the subject matter giving details and meeting the requirements of the examiner. Anyebe, Neple and Onoja (2022) ascribe rich content to having fluent ideas. The authors further reiterate that, having rich content in composition, means the ability to convince the reader to the extent

of citing examples and illustrations. Organizing of points is another relevant skill in writing. It means that, every point in a paragraph should be chronologically arranged. It should follow proper sequence of growth. Language expression entails fluency which is achieved through proper clarity, syntactically and grammatically well ordered. Mechanical accuracy takes care of the use of punctuation marks. Punctuation marks give meaning to the writer's expression.

Writing is beneficial to all learners because it cuts across curriculum. Students do not only listen in their subject areas but they take notes during lecture delivery. Also, writing is not a skill for the few but one essential skill for all students planning to enter the workforce. Good writers always impress their supervisors and naturally, students who have good writing skills are always successful at expressing their ideas and reaching their goals. Writing, enhances the ability to acquire and develop cognitive skills such as generating and organizing ideas, content and language norms (spelling and grammar). Larios, 2007 (as cited in Al - Sawalba (2014), writing has the ability to solve linguistic issues and assist learners in developing their second language proficiency. Also, writing helps to transmit information, thoughts feelings and reaction.

Writing Problems: Despite the relevance of writing, it has been observed generally that students' performance in writing is poor. Specifically, Nabhan (2016) identifies some major difficulties face by learners to include poor idea generation and organization, faulty paragraph creation, misuse of the punctuation marks and wrong sentence construction. Composition writing enhances the development of writing skills but it is not given the optimal attention because the wrong methodology is practiced. Kemboi, Adiena and M'mbone (2014) state that the conventional or product approach is still practiced by teachers in most schools. Consequently, students' achievement is not satisfactory and poor writing skill is the main cause. Also, in spite of the fact that, writing is a vital means of communication, students' writing skill is poor.

Experience has shown that, learners hardly express themselves coherently in writing. In generating ideas, sketchy and unorganized points are seen frequently. Sentence construction is marred with mixed tenses, incorrect and ambiguous statements. The teacher is often left to make meaning from faulty sentences. Punctuation is used inappropriately in sentences, for example, incomplete sentences, phrases and clauses carry full stop while complete sentences take commas. Apart from that, in paragraph creation, lengthy text is noticed with lumping of points in a paragraph which makes the whole work senseless to some extent. Fareed, Bilal and Ashraf (2016) attribute such problems to lack of adequate dialogue between teachers and students about the constructive steps that need to be taken to address such issues. You all agree that, the major cause of writing problem is poor methodology. Others are poor linguistic background because of insufficient exposure to speaking and reading which are likely to affect the use of English in writing.

It could be seen that the major cause of the writing problem is the methodology. It is obvious that in a typical conventional writing situation, a model text is used for learners to follow. They merely use the same type of words, phrases and sentences. As for the proponents of the product approach, this style makes their work an error free exercise. There are four stages of the conventional method; familiarization, controlled, guided and free writing. In familiarization, the teacher instructs learners to make exploits on the model text bearing in mind they will produce similar features. In controlled writing, the teacher selects grammatical features and drills learners on pronunciation and memorization over a short period of time, subsequently, exercises are given on the features. In guided writing, learners are assigned responsibility of producing similar text while free writing allows learners to write freely but following the model.

Previous studies have criticized the traditional method as having concern on the finished product (Akinwamide 2018). The author explains that the focus of teaching writing is on different parts, words, phrases and sentences. It is teacher-centred and accords importance to checking of errors in grammar. The stages of the conventional method lacks definite writing activities for learners and it is glaring that writing skills are neglected. The learning process is individualistic and collaboration is not practiced as is currently done in the 21st century language teaching. In the twenty first century teaching, digital technology is globalized in education to complement the traditional method of teaching.

Digital Technology: It involves finding and assessing information using digital tools, for example, social media web browsers and online discussion boards. Digital technology provides opportunities that traditional teaching cannot give, for example, ideas, images, graphics, and hyperlinks (Deniz, 2022). Digital technology generally is the use of computers and technology assisted strategies to support learning in schools. Specifically, digital technology avails learners the opportunity to use programmes or applications designed for problem solving or open ended learning while teachers on their part have interactive whiteboards or teaching platforms.

Digital technology in education is globalized as many countries have adopted it for easy learning. The change in the learning environment adopted mobile telecommunication because it provides easy access to getting information, such as, wireless and portable devices like I pods, Mp3 players and smart phones. Also, laptops computers/mobile phones are revolutionizing education and transforming the traditional based teaching and learning into anytime and anywhere education (Fattab, 2015).

Digital Technology in Teaching Composition Writing: The advantages of using digital technology in teaching writing is enormous and with digital technology, teaching and learning can take place anywhere not necessarily in the classroom. There are digital tools that learners can use to enhance their learning abilities as such, digital learning is very interesting to use in developing writing skills than the traditional (Sarwat, Kabir and Sehar, 2021). Digital technology has some tools that enhances students learning, such tools include;

Computer Application: Word production programme enhances and guides learners to improve in their spellings. It predicts words suitable for learners to use in their writing. It usually list words that begin with those letters. This measure quickens the speed of typing.

Speech – to – text programme: This is helpful in typing words, most especially during video/audio conferencing. It is hardly achieved when there are distractions, especially when wrong words are typed, wrong spelling of words and a noisy environment.

Text – to – speech: It improves listening, most especially in writing. It provides the right spellings of words when students edit any task given.

Spell – Checkers: It assist writers to identify wrong spellings and correct them immediately.

Computer – mediated – technology: It refers to tools that can be connected to the computer.

Internet: The internet is the largest tool that one can access millions of information in minutes. It is a global village that connects the world. It is at the disposal of writers to access and share ideas as they collaborate with other learners elsewhere in the world.

Social Software: These are programmes such as WhatsApp, blogs, face book, twitter and instagram. These are tools where writers can chat and share ideas. Teachers can as well upload writing materials relevant in writing.

Messengers: It is also known as MSN Messenger and windows live messenger. Messenger is a Microsoft program for windows that allow users to chat online using the internet, the examples of messengers are;

Computer – mediated tools like Skype, Imo, face book, yahoo and WhatsApp are for educational programmes. The teacher can instruct his learners through messengers. With the

use of the messengers, groups can be organized to teach and guide students through voice, text or visually. Through this learners can raise issues, solve problems and share ideas.

Multimedia technology: Multimedia technologies are digital pictures, scanning audio and visual technologies. They help to assist effective communication, especially in the large usage laboratory.

Importance of Digital Technology in Education:

The positive effect of digital technology in education cannot be overemphasized. Deniz (2022) states that digital technology gives a complete layout for interactive engagement among teachers and learners. This collection is quite learner - centred. It motivates learners to develop creativity, especially in writing. It helps learners to work because of the availability of tools meant to access information, for example, internet browser, WhatsApp and emails. Consequently, it raises their interest to achieve the task given to them. Azmi 2017 (as cited in Deniz 2022) emphasizes that students tend to display positive response when they are using any digital tool or device.

Another vital role of digital technology is the way in which it is improving learners' vocabulary. The availability and uses of spell and sentence checkers linked to micro software like excel and emails, enhance fluency in meaning and in the writing task. The current method of teaching creates fun as learners show more interest in manipulating digital tools to attain success in writing. By implication, teacher development in digital technology should be enforced to assist learners and their needs. When this is done, it will reduce digital limitations and anxieties, especially in the writing process.

Digital technology gives learners the opportunity to meet and interact with wider audience whether native or non – native speakers. Learners' joy of meeting wider audience creates cordial relationship to the extent of getting to know their cultural background. Audio and video conferencing allows learners to communicate with renowned authors as they get first-hand knowledge from those in authority. It enhances the development of writing skills and good memory that cannot be easily erased. In fact, meeting their audience fosters new development in learning.

Also digital technology allows learners to receive feedback from their teachers, peers even unknown people with records (Deniz 2022). It is a fact that, this motivates faster learning whether as individuals or groups. They usually use blogs, WhatsApps and other digital tools to chat and edit their corrections in no time. Moreover, sharing ideas among learners nationally and globally strengthens weaker learners to be more involved. The role of the teacher is to facilitate learning activities which is a bigger step away from the traditional teaching.

Digital technology affords learners with consistent learning, especially using mobile phones because of its accessibility. Having this digital tool, makes it faster to access information. It is a major breakthrough that, wireless and portable devices like I pods, Mp3 players and smart phones provide faster information. Others are laptops which are gradually replacing the traditional method of teaching and learning. Currently, teaching and learning are done anytime and anywhere (Fattab, 2022). Twenty first century teaching is not limited to the classroom. Also, social media clicks allow popular features like tags, networks and repost (Al - Shargi and Abbasi, 2021).

Challenges

Despite the enormous benefits of digital technology in learning composition writing, there are challenges that are overwhelming the process, most especially in Nigeria. Most schools are not equipped with the digital devices of learning like computers. Worst still, these schools are not even electrified and even if they are, the epileptic power supply in Nigeria is a

thing of concern. In fact, there is wide gap in the use of digital technology in some countries in Africa, Nigeria to be specific.

Most teachers and students are not computer literates. Therefore, they show negative attitudes toward incorporating digital technology in teaching writing. Teachers' negative attitudes can be linked to expensive training and purchase of computers. Also, government make yearly budgets but little attention is given to equipping schools with digital technology.

Mobile telecommunication, like the mobile phones are expensive to purchase, especially those that are android and others that have internet facility. Most schools in Nigeria are prohibiting the use of mobile phones, especially in the classroom. Sometimes, phones are ceased from students and are never returned. In fact teachers and students lack the knowledge of imparting learning using mobile phones. More so, purchasing the data to browse is another issue in the use of digital technology. It is always like gambling. The quicker one purchases data, the sooner it finishes.

There is large exclusion of the world in digital technology, especially Africa and in Nigeria. Many people's income is too low to gain connectivity (Economic Commission for Latin America and the Caribbean (ECLAC) 2021). There is low quality access to devices that are fixed at home. Also, the author adds that there is lengthy proliferation of fake news and cyber-attacks. There is also hacking of accounts and privacy is not secured.

Implications and Recommendations

The current method of teaching writing is a move towards incorporating digital technology anywhere and anytime. Learning is not fixed to the classroom, therefore, teachers should be flexible to accommodate global teaching practices. Language curriculum planners should make adjustments to incorporate digital technology and providing learning materials in English content areas.

Government and non – governmental organization (NGOs) should organize digital technology workshops, seminars and conferences for language teachers. Let them be exposed to creating materials and access information using different devices. This measure will expose teachers to practise how language teaching is done both in native and non – native speaking English countries. Government should supply all current resources, experts and popular professional teachers of English, so that, they will give instruction using digital technology.

Teachers should be passionate about self-development. They should update their knowledge on global teaching practices, especially the use of digital technology. Computer literacy is key to the 21st century teaching and learning. By that, the students teachers are producing would be able to function in all sectors, especially to basic computer knowledge of receiving information and sending through different means like emails, blogs and websites with other students globally.

Government should equip schools with learning materials like computers. Teachers should create conducive learning environment and the teaching process should be learner – cantered while the teacher guides, directs, counsels, and facilitates learning activities.

Conclusion

Writing is one of the important means of communication, however, teaching it using the traditional method makes it difficult for learners to develop good writing skills. In the 21st century, digital technology makes writing easier for learners as it avails learners with digital tools such as words sentence and spelling checkers to ensure fluency and meaning in writing. Teachers are urged to create conducive writing environment for learners to experience writing as fun and an exciting activity. This will bring improvement in learning, even in other subject areas.

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DIGITALIZATION OF SOCIAL STUDIES EDUCATION: PROSPECTS AND CHALLENGES

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Abstract

The study focused on digitalization of social studies education with emphasis on the prospects and challenges. The purpose of this study is for social studies educators, school administrators, teacher educators and curriculum developers to understand more about the potentials and limitations of integrating technology such as a digital text. Digital literacy skill not only provides accurate access to information, but also enables students to study on a legal level, in compliance with ethical rules. Digital literacy makes it easier to use information accessed in daily life, to rearrange information, to generate new information, and to critically evaluate information. Against this backdrop, the 'brick-and-mortar' education approach survives on life support, with digital technologies promoting ubiquitous teaching and learning. Social studies is a course which plays a key role in providing students with digital literacy skills. On the other hand, technology allows a social studies teacher to reach beyond what lies within a classroom. It was, however, recommended that government should try to promote the experience of social studies educators in the use of technology and its integration into student learning. Social studies educators should also endeavour to adapt the civic and socialization role of social studies to blended and online places.

Introduction

Education has undergone serious changes across the globe in the 20th and 21st Centuries, especially as a result of digitalization. There have been efforts through reforms not only to bring education to the door step of people in various nations but also to bring the needed transformation and development. The impact of digitalization is tremendous in the field of education. Dennis (2015:637) opines that it is the force behind the changes taking place in higher education globally. The impact of the internet with its extraordinary store of knowledge is a breakthrough in this era. Social Studies is a subject that is designed to equip students/learners with relevant knowledge, attitudes, values and skills that will enable them function well in the society i.e. solve their problems and that of the society.

The digitalization of social studies education refers to the integration of digital technologies and tools into the teaching and learning of the social studies subject. This transformation has several key aspects:

- **Digital Resources:** Educators use digital resources such as e-textbooks, websites, multimedia presentations, and online databases to provide students with a wide range of information and learning materials.
- **Interactive Learning:** Digital tools enable interactive learning experiences, including simulations, virtual field trips, and educational games that engage students and make complex social concepts more accessible.
- **Global Connectivity:** Digital platforms facilitate global connectivity, allowing students to collaborate with peers from different regions and gain a broader perspective on social issues.
- **Personalization:** Adaptive learning systems can customize educational content to cater individual students' learning styles and pace.

- **Real-Time Updates:** Online resources can be updated in real-time, ensuring that students have access to the most current information and events in social studies.
- **Assessment and Feedback:** Digital tools enable more efficient assessment of students' progress and provide timely feedback, allowing teachers to tailor their instruction.
- **Teacher Professional Development:** Teachers may undergo training to effectively integrate digital tools into their pedagogy, ensuring that they can harness the full potential of technology in education.

The essence of digitalization of social studies education is to make prospective teachers effective in their subject in this 21st Century. Witten and David (2003) defines digitalization as the process of taking traditional learning materials that are in book form and papers and converting them to the electronic form where they can be stored and manipulated by a computer. Digitalization implies the creation of digital surrogates for an original copy or physical object. Digitization encourages open access to resources such as electronic theses.

From the environmental impact of using less paper for handouts and books to the time savings and convenience of research, digital learning is a wonderful way to cut costs, better utilise resources, promote sustainability and expand both reach and impact for students and teachers. Technology is pervasive and intertwined in many aspects of modern life and society. The digital revolution that is sweeping the world has begun to infiltrate the realm of education. It is rapidly transforming the way students learn, and as a result, technology is expected to improve the face of education by making it more inexpensive and accessible.

However, it is not entirely easy to achieve, as digitalization of education in general and social studies in particular is plagued with a lot of challenges especially in Nigeria. These challenges have hampered the introduction process. Thus, this paper will discuss the prospects and challenges of digitalization of social studies education.

Meaning of Social Studies

The term Social Studies was used in 1905, when a committee of Thomas Jessa first used it to include economics, sociology, anthropology, political science and geography. In 1956, history was included. Igbogbor (2000), views Social Studies as an integrative subject that contained social sciences that are of societal base. He added that Social Studies is targeted at producing better individuals for better society. Social Studies is about man's overall aspects of life; that which include social, economic and political activities. Social Studies therefore address man holistically. It is concerned with making the individual an integrative being in the society.

In addition, Social Studies simply put, is concerned with the development of appropriate attitudes. A subject of this quality should be taught with all emphasis in our schools and even be made compulsory. McCarthy (2001) asserts that Social Studies is an interdisciplinary subject in nature and content. Its focus is on man, their problems, survival, how they influence their environment and how environment in turn influence man. Social Studies examine human problems from holistic perspective. It combines the contributions of various subjects indicated above to solve human problems. As cited above, the contents of Social Studies are drawn from the social science subjects. It is the integration of the objective, purpose and aims of the various social science subjects. In short, Social Studies is in response to goal oriented edification that is geared towards sensitizing young people to solving personal and community-related problems. The scope of Social Studies is not fixed but dynamic in nature. It is ever-changing to accommodate man's many problems of life.

Concept of Digitalization

Borisenkov, Gukalenko & Pustovoitov (2021:12077) stated that digitalization refers to the conversion of materials created in another format into an electronic form. This definition excludes materials that were initially created digitally, such as email communication. Similarly,

Falasteen (2018:1750) defined digitalization as all the steps involved in the process of making collections of historical and other materials available online. Legg-Jack (2021:162) described digitalization as the course of converting analog information to a digital format.

Modern teaching materials are very crucial and most preferred in the digitalized world. A modern education system uses technology to impart knowledge. Digitization of education system is an opportunity to develop a cognitive resource-based mechanism in learners and improve skills, lifelong learning and continuous education. Digitization produces information that can be conveyed in many different methods. It brings about democracy of knowledge where education becomes a collaborative and self-driven enterprise. Nowadays, there are tools available to transform learning from an academic exercise to an engaging experience gratification and technological gains.

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). Machekhina (2017) defines digitalisation as "the translation of all information kinds, such as text, audio, pictures, video, and other data from multiple sources into digital language". 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 (Abdullahi & Tijani, 2019:31 & 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), 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.

Digitization is the trending term, describing the 21st century in the most precise manner as possible. We are in the era where unprecedented ideas are unfolding in our education sector and creating the advancement that cannot be matched by lagging behind in terms of technology.

Instructional digitalization is a subset of educational technology. It essentially deals with the process of using technology as a tool for instruction and as well describes the technologies that facilitate access to information of various kinds. It is concerned with the acquisition, processing, storage and dissemination of information in all of its various forms. A more comprehensive approval to the meaning of instructional technology is seeing it as the theory and practice of design, development, utilization, management and evaluation of processes and resources (Mohammed, 2020). This approach does not see technology as an end itself but rather as a delivery tool and a means to an end. This same approach also emphasizes that the use of technology only in the Social Science classroom cannot compensate for instruction that is poorly designed, developed and executed.

Instructional Digitalization for the 21st Century Classroom

Instructional Digitalization for the 21st century includes:

- a. Interactive white board: The SMART board is a real example and is finding its way into the classrooms today. The Social Science teacher can draw and write on it digitally as it has sensors that make these activities possible. It also has an array of templates and applications that make drawing, tabling and other manipulative functions possible. Its access to the websites makes it an ideal technology for the class and can also serve for power point presentations amongst other functions.
- b. Websites or Blogs: These are personal websites that allow updating by the author. Teachers can create domain name for themselves to enable them access any blog on a host site. This is bound to enhance interaction and communication. Social Science content can be easily created and shared by making the blog accessible to others
- c. Classroom personal computers (pcs): When a teacher and students have their Pcs, teaching and learning is enhanced. Projected instructions enable students to use their Pcs alongside the teacher and what is taught is easily comprehended.
- d. Projectors: Especially when used with a computer, presentations become very fascinating and appealing to students. In technology learning, the use of power point presentation is today a common phenomenon.
- e. Software and Computer: Educational software in an individual's personal computers can facilitate learning without a student carrying hardcopies of learning materials.
- f. Sound Amplifiers: The place of sound amplifiers or public address system is indispensable especially for a large class size. They come in different kinds and categories.
- g. Hand held Data Collector: A graphing calculator used as a laboratory instrument to collect and manage data.
- h. Television: It can be used to show Instructional DVDs or other relevant events that would aid a lesson in Social Science classroom.

Teaching and Learning of Social Studies

Ogbnuogwo et al, (2019) perceives teaching as a systematic, rational and an organized process of transmitting knowledge, skills etc in accordance with professional principles. The implication is that Social Studies teachers who do not perform the act in accordance with the principles of teaching are therefore not teachers. Naturally, the outcome of teaching is learning. Learning is an overt function of teaching which is the major function of the teacher. Where there is relatively positive permanent change in the behavior of an individual, then learning has occurred.

Effective 21st century teaching brings about effective 21st century learning. Effective teaching and learning refers to the degree to which goals are achieved through teaching. Effective teaching of Social Studies will definitely give rise to effective learning of Social Studies that is, attainment of goals of Social Studies as stated above. Ability to apply suitable pedagogical approaches is one sure way of achieving effective teaching and learning of Social Studies.

The Importance of Teaching and Learning of Social Studies

There are many reasons, importance or benefits derivable from the study of Social Studies as an integrated and multi –disciplinary discipline.

Amongst them are:

1. Its teaching will help create the awareness in the learners that discipline is an essential ingredient for an orderly and sustainable society.

2. Its knowledge will enable learners to live with mutual understanding in their families, communities, society and the world at large.
3. Also with it, we are taught the value of co-operation, effective citizenship, national unity and inter-dependence.
4. It will help acquire relevant or appropriate knowledge, attitudes and skills for a functional living in a contemporary society like ours.
5. It will help inculcate in the learners a problem solving attitude in life

The Usage of Digital Tools (ICT) in the Teaching and Learning of Social Studies

Educational systems around the world are under increasing pressure to use the new information and communication technologies (ICTs) to teach students the knowledge and skills in the 21st century. Sustainable development includes social well-being, which depends on education. Information technology has emerged to spread shared knowledge and is a primary driving force behind education reforms. The introduction of new technology-assisted learning tools such as mobile devices, smartboards, MOOCs, tablets, laptops, simulations, dynamic visualisations, and virtual laboratories have altered education in schools and institutions. The Internet of Things (IoT) is proven to be one of the most cost-effective methods of educating young brains. It is also a robust mechanism for integrating a world-class learning experience for everybody. Educational technology businesses are continually attempting to create novel solutions to expand access to education for individuals who cannot obtain adequate educational facilities (Ololube, Ubogu & Egbezor, 2007:186). Social media as a learning tool has come a long way. Large numbers of teachers and students use social media as an essential element of the overall e-learning experience. It is a critical venue for exchanging information about crucial topics these days. Aside from the ability to communicate information anywhere, at any time, social media sites are also a fantastic source of producing networking possibilities to establish social activities and possibly new jobs.

Information and communication technologies (ICTs) are a major factor in shaping the new global economy and producing rapid changes in the society. Ijimi (2004) pointed out that within the past decade, the new ICT tools have fundamentally changed the ways people communicate and do social studies business. They have produced significant transformation in Social Studies industry, medicine, business, engineering and other fields. They also have the potential to transform the nature of education- where and how learning takes place and the roles of students and teachers in the learning process.

Bruner in Nwana (2012), stated that an intentional attempt to use technology in teaching can improve the curriculum and make a difference in the quality of instruction. Technological tools are used in a specific methodology. Social Studies subjects needs to facilitate the students' technological skills and their methodology for teaching. When prospective teachers do not have technology integrated into the professional courses, they cannot apply technology to teaching and learning well in their fields of study.

Okebukola (2006) states that with the application of ICT in education, there will be improvement in the service delivery and access to knowledge. It will also make it easier to implement the curriculum and at the same time encourage critical thinking and offer unlimited means of achieving educational goals. Traditional classroom instructions fall short of providing an immediate learning environment, faster evaluations, and more engagement. In contrast, digital learning tools and technology fill this void. Some of the efficiencies such technologies provide are simply unrivalled by traditional learning methodologies. With smartphones and other wireless technology devices becoming popular among the general public, it only makes sense that schools and educational institutions make efficient use of them by putting technology in the classroom (Ogbnuogwo et al, 2019). Indeed, today's technology's adaptability and non-

intrusive character make learning more appealing to the next generation. However, it may be a formidable technique to manage initially since traditional instructors are hesitant to include contemporary technology and gadgets in schools, viewing them as a distraction rather than an intelligent learning aid. An online classroom calendar, where we may display class schedules, assignment schedules, field excursions, speaker events, examinations schedules, or semester breaks, will help students plan accordingly. Student response systems, such as smartphones and clicker devices, provide a quick and easy technique for teachers to determine students' learning of the presented content quickly and whether more explanation is required.

Challenges

While digitalization offers numerous benefits, it also presents challenges. Successful digitalization of social studies education involves careful planning, the thoughtful selection of digital tools, and ongoing professional development for educators to maximize its benefits for students' learning. Digitalization of education is a laudable project that encompasses the application of a wide spectrum of practices, including blended and virtual learning. Nevertheless, some hurdles impede its smooth operations especially in Nigeria. According to Asogwa (2011), some of the challenges include;

Inadequate funding: Funding for the purchase and maintenance of modern and state-of-the-art digital equipment by the government remains a major constraint.

Erratic power supply: It is very unrealizable for computerization and digitization to take effect in an environment of epileptic power supply. The issue of power has become a national calamity. Thus, it has to be given priority by any library aspiring to attain global visibility. Hence, all the institutions in Nigeria only depend on generators for power supply, and most often there is no light due to lack of diesel or generator breakdown which often hinders the digitization process.

Lack of Modern Infrastructure: Infrastructural facilities in most Nigerian academic institutions are in a state of disrepair. Machekhina (2017) observed that ICT department in these institutions lack modern computer systems; even the few available systems are being infected with virus which makes them unfit for the digitization project.

Lack of skilled staff: Many academic staff lacks basic computer training, not to mention specialized training required for digitization (Legg-Jack, 2021). There is a need for continuous training to build academic staff capacity in equipment maintenance and software management. Also, digitalization is a complex process which requires specialized skills. However, a good number of staff who may be involved in the digitalization process in Nigerian academic institutions may not be skilled as they do not possess adequate knowledge or competence in the handling of digitization equipment.

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.

Conclusion

Digital technology in the classroom refers to various software and gadgets meant to help students with particular accessibility needs. The most effective way to reduce the number of repetitive, time-consuming duties a teacher undertake is to use technology in the classroom. Digitalization has no doubt changed our education system, but we cannot say that it has diminished the value of our old time classroom learning. Neither do we want something so priceless to turn into dust. The best part about the digitalization of education in the 21st century is that it is combined with the aspects of both; classroom learning and online learning methods. Walking hand in hand both acts as a support system to each other, this gives a stronghold to our modern students. Digitalization in education has also proved to be the right method for saving resources. To use digital resources and processes effectively one must be digitally literate. Digitalization of education helps to promote higher-order thinking skills in terms of knowledge acquisition, knowledge deepening and knowledge creation among students and teachers – a transition from lower-order thinking to higher-order thinking.

Recommendations

Following the discussions so far, the following recommendations have been made:

- Social Studies teachers should be educated on the use of ICT devices for effective delivery of instruction
- Schools should implement blended and remote learning to allow students learn both online and offline on their own.
- 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.
- 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.
- 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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ONLINE TEACHING AND LEARNING STRATEGIES IN TEACHER EDUCATION

Benedette Onunkwor and Obiageli Anyaegbu (PhD)

Abstract

In our modern time, teaching is gradually shifting from traditional classroom to online teaching. Sometimes for one reason or the other, which could be personal or man-made, the teacher may not be able to meet with the students face to face. In such situation, the teacher organizes an online class wherein teaching and learning is done using different virtual networks. This paper describes the use of online teaching and learning strategies in teacher education. It examines the benefits of online teaching for both teachers and students, presents a framework for incorporating online teaching into teacher education, and identifies challenges that may arise when implementing online teaching and learning strategies. It concludes with a discussion of the implication for teacher educators and recommends strategies for increasing the effectiveness of online teaching and learning strategies in teacher education.

Key words: Online teaching, learning strategies, teacher education

Introduction

Online teaching and learning strategies are the modern technological means that teachers can adopt to keep teaching and learning going in our academic environment. The traditional face to face teaching and learning environment is teacher centred. The teacher controls the delivery of course contents but with the online teaching method, a learning environment that is controlled or negotiated by the learner is established. A learner-centered online classroom has the ability to enhance the interactivity and collaboration of the learner. The technology according to McVay et al should provide “the mechanism through which the online teacher implements the best pedagogy for that course or topic”. E-learning theory is built on cognitive science principles that demonstrate how the use and design of educational technology can enhance effective learning (David, 2015; Wang 2012). E-learning theory belongs to the grand theory of Connectivism because it emphasizes how technologies can be used and designed to create new learning opportunities and to promote effective learning. Connectivism as propounded by George Siemens and Stephen Downes is a relatively new learning theory that suggests students should combine thoughts, theories, and general information in a useful manner. It accepts that technology is a major part of the learning process and that our constant connectedness gives us opportunities to make choices about our learning. It also promotes group collaboration and discussion, allowing for different viewpoints and perspectives when it comes to decision-making, problem-solving, and making sense of information. Connectivism promotes learning that happens outside of an individual, such as through social media, online networks, blogs, or information databases.

The Concept of Online Teaching

Online teaching is the process of educating others via the internet from any location. It could be from the home, office, relaxation centre or any convenient place outside the formal classroom using various methods such as WhatsApp, Facebook, live classes, group video calls, webinars, by enrolling students from various backgrounds and geographical areas. The online applications are developed and designed to facilitate easy learning and better understanding. The advancement in technology has improved the quality of distance education and increased the trend of e-learning. Teachers can use online teaching apps that offer a host of brilliant features and transform the way topics are being taught to the learners.

These online teaching processes according to Wikipedia are computer mediated technologies that facilitate the creation and sharing of information, ideas, career interests and other forms of expression via virtual communities and networks. According to Ikegbusi, (2016), ICT is a revolution that involves the use of computers, internet and other telecommunication technology in every aspect of human endeavour. The author posits that ICT is simply about sharing and having access to data with ease. It is regarded as the super highway through which information is transmitted and shared by people all over the world. The field of education has certainly been affected by the penetrating influence of ICT worldwide and in particular developed countries. ICT has made a very profound and remarkable impact on the quality and quantity of teaching, learning and research in the educational institutions. Information and communication technology has the potentials to accelerate, enrich, and deepen skill; to motivate and engage students in learning to help relate school experiences to work practices; to help create economic viability for tomorrow's workers; contribute to and provide opportunities or connections between the school and the world (Watson, 2010).

Bransford (2014) and Brosnan (2014) note that ICTs are increasingly playing significant roles in organisation's and society's ability to produce, access, adopt and apply information. They are however being heralded as the tools for the post-industrial age and the foundations for a knowledge economy due to their ability to facilitate the transfer and acquisition of knowledge. Stressing the importance of the use of ICTs in schools, Okafor (2014) notes through ICTs, educational needs have been met; it changes the needs of education as well as the potential processes. Messages can be communicated through the e-mail, telex or telephone, especially the mobile ones. Furthermore, the use of ICTs in education also shifts the learning approaches. As put by Bransford, Brown & Cocking (2014), there is a common belief that the use of ICTs in education contributes to a more constructivist learning and an increase in activity and greater responsibility of students.

The pervasiveness of ICT according to Yusuf (2005) has brought about rapid technological, social, economic and political revolution, which has eventuated in a network society structured around ICT. The author goes further to say that ICT is an indispensable part of teaching and learning processes as its application makes teachers more efficient and productive, thereby engendering a variety of tools to enhance and facilitate teachers' pedagogical activities. On this note, Ikegbusi (2016) states that e-learning is becoming one of the most common means of using ICT to provide education to students both on and off campus by means of teaching online offered via web-based systems.

Some prominent examples of social media, which are part of ICT, according to Rouse (2017) include the following:

Facebook is a popular free social networking website that allows registered users to create profile, upload photos and videos, send messages, and keep in touch with friends, family and colleagues.

Twitter is a free microblogging service that allows registered members to broadcast short posts called tweets. Twitter members can broadcast tweets and follow other users by using multiple platforms and devices.

Google plus is Google's social networking project designed to replicate the way people interact offline more closely than is the case in other social networking services.

Wikipedia is a free, open content online Encyclopedia created through the collaborative effort of a community of users known as wikipedians. Anyone registered on the site can create an article for publication.

According to a publication released from the office of the Vice Chancellor for Undergraduate Education, Berkely, University of California, the Committee on Courses of Instruction (COCI), recognize that social media are embedded into the lives of many 21st

century students. According to COCI, the use of social media as a communication channel can help create a collaborative learning environment and engage students in a discussion of course topics in a more dynamic and current, authentic way. Bill Pelz (2009), a Professor of Psychology and Sloan Consortium *Award for Excellence in Online Teaching*, provides three principles of effective online pedagogy, which include:

- Principle 1: Let the students do (most of) the work. The more time students spend engaged with the content, the more they will learn.
- Principle 2: Interactivity is the heart and soul of effective asynchronous learning.
- Principle 3: Strive for presence: social, cognitive, and teaching presence.

Teacher Education

Teacher education is any of the formal programs that have been established for the training of teachers at elementary and secondary school levels. As stated by National Council for Teacher Education (1998) in *Quality concerns in Secondary Teacher Education*, the teacher is the most important element in any educational program. It is the teacher who is mainly responsible for implementation of the educational process at any stage. This shows that it is imperative to invest in the preparation of teachers, so that the future of a nation is secure. The importance of competent teachers to the nation's school system can in no way be overemphasized. The National Curriculum Framework (2005) places demands and expectations on the teacher, which need to be addressed by both initial and continuing teacher education.

It is well known that the quality and extent of learner achievement are determined primarily by teacher competence, sensitivity and teacher motivation. The National Council for Teacher Education has defined teacher education as – A programme of education, research and training of persons to teach from pre-primary to higher education level. Teacher education is a programme that is related to the development of teacher proficiency and competence that would enable and empower the teacher to meet the requirements of the profession and face the challenges therein. According to Goods Dictionary of Education, Teacher Education means all the formal and non-formal activities and experiences that help to qualify a person to assume responsibilities of a member of the educational profession or to discharge his responsibilities more effectively. In 1906-1956, the program of teacher preparation was called teacher training. It prepared teachers as mechanics or technicians. It had narrower goals with its focus being only on skill training. The

perspective of teacher education was therefore very narrow and its scope was limited. As W.H. Kilpatrick put it: Training is given to animals and circus performers, while education is to human beings.

Teacher education encompasses teaching skills, sound pedagogical theory and professional skills.

Teacher Education = Teaching Skills + Pedagogical theory + Professional skills.

Teaching skills would include providing training and practice in the different techniques, approaches and strategies that would help the teachers to plan and impart instruction, provide appropriate reinforcement and conduct effective assessment. It includes effective classroom management skills, preparation and use of instructional materials and communication skills. Pedagogical theory includes the philosophical, sociological and psychological considerations that would enable the teachers to have a sound basis for practicing the teaching skills in the classroom. The theory is stage specific and is based on the needs and requirements that are characteristic of that stage. Professional skills include the techniques, strategies and approaches that would help teachers to grow in the profession and also work towards the growth of the profession. It includes soft skills, counseling skills, interpersonal skills, computer skills, information retrieving and management skills and above all life- long

learning skills. An amalgamation of teaching skills, pedagogical theory and professional skills would serve to create the right knowledge, attitude and skills in teachers, thus promoting holistic development.

Learning Strategies

A learning strategy is an individual's way of organizing and using a particular set of skills in order to learn content or accomplish other tasks more effectively and efficiently in school as well as in non-academic settings (Schumaker & Deshler, 1992).

Learning strategy instruction focuses on strategies that facilitate the active learning process by teaching students how to learn and how to use what they have learned to solve problems and be successful.

These strategies involve teaching how to develop a plan for studying for a test, monitoring understanding of the content, clarifying the materials, and evaluating work. This type of self-regulated learning is the key to successful life-long learning and includes the development of such strategies as goal setting, self-instruction, and self-monitoring. (Graham, Harris, & Reid, 1992)

Online teaching strategy is a student-centred methodology that increases students' interest and participation levels in virtual classrooms. The teaching skills play a great role in successful interaction with the students. Teachers have to polish their communication skills in order to ensure that student engagement is on point. You should create a positive learning environment and incorporate various classroom activities and games to make sure that the students are attentive. It is a misconception that it is difficult to tackle student focus in online classrooms. All you have to do is understand that online classrooms are significantly different from traditional classes and alter the methods and strategies accordingly.

Online teachers use digital resources to share with their students and are accessible to so many people. It provides a lot of freedom to individuals to learn, teach, and develop skills at their own pace. This type of teaching supports one-on-one basis interaction with the students. It makes them comfortable with tough subjects. Teaching online requires strong network connectivity and computing device systems. Nowadays, more mobile applications are developed as they are easily accessible by a large population. The mobile versions of the live teaching apps have helped in increasing the attendance and registration of students. The following are some strategies that can be incorporated in the online English and literature teaching.

Incorporating online teaching using Content and Language Integrated Learning (CLIL):

The CLIL approach principally involves studying one subject (for example, literature in English) and learning a language, such as English, at the same time — effectively integrating the two subjects. The language teaching is organized around the demands of the first subject rather than that of the target language. So it's critically important to make sure that the integration is clear and that students are engaged. Having said that, the CLIL approach does create significant opportunities for cross-curricular working; it opens up language learning to a wider context and can be used to re-engage previously demotivated students. For instance, the topic 'Phonetic Transcription' can be taught alongside with literature in English. The teacher can choose a particular drama text and make the students dramatize it taking cognizance of the correct pronunciation of words. The students can be grouped and each group would be made to dramatize and send to the group chat for critique.

Incorporating online teaching using Audiolingual method: Audio-lingualism is a method of foreign language teaching where the emphasis is on learning grammatical and phonological structure, especially for speaking and listening. It is based on behaviourism and so relies on formation as a basis for learning, through a great deal of mechanical repetition. The teacher spends most of the time in the class drilling the learners on grammatical and phonological structures. Error correction is also important. Using the zoom, the teacher can bring out different sounds of the English language and drill the students on them. As the teacher does so, the students repeat after her. Again, the students can pronounce the words in their own voice, record and send to the group chat. After listening, the teacher reinforces correct pronunciations and makes corrections where necessary.

Incorporating online teaching using Grammar-Translation Method: This is a very traditional teaching approach which prioritizes translation from the students' mother tongue into the target language and vice versa. To succeed in this approach, students need to memorize long lists of vocabulary and detailed grammar formats and rules. The approach favours accuracy over fluency and tends to favour the development of reading and writing skills instead of speaking skills. The downside of this approach is that it does not prepare students with spontaneous communication skills. Classroom activities therefore usually include grammar drills, vocab tests and encouraging students to incorporate new grammar concepts in standardised writing tasks. The language teacher can teach essay writing using this method. After teaching the different types of essay using the Zoom or WhatsApp platform, the teacher can give the students sample essays and then encourage them to write theirs and send to the group chat for peer review.

The Benefits of Online Teaching and Learning Strategies in Teacher Education

The following would be achieved if student teachers are taught using the above methods and approaches to make them better teachers:

- **Covering of Syllables:** It is a well established fact that the syllables for the English courses and some other courses are usually broad. For instance, there are different aspects like essay/letter writing, comprehension, objectives, summary writing and oral English. The teacher is expected to cover these aspects before the examination. Using the online teaching strategies would help teachers to touch all the different aspects of the language and get the students ready for exams.
- **Students' Participation:** Most times students find reading and writing very difficult but if some topics are taught using the social media, the interest of the lazy students would be ignited and they would end up enjoying the subject.
- **Individualized learning:** If social media is used in teaching the English language, students can enter the internet at their convenience and learn. For instance, assuming the teacher bought a video of debate by students and share it through the class group chat on WhatsApp or Facebook, the student teachers could be instructed to watch it at home and then come to the class for group discussion. This way, they would discover a lot of points and ideas about the topics before coming to the class for a group discussion.
- **The Students Can Study at their Own Pace**
Because most schools have resorted to online teaching, student teachers can enter the internet at their convenience and learn. For instance, the teacher can prepare lecture material on topics they are expected to cover for the term and share it through the class

group chat on WhatsApp or Facebook, the students could be instructed to read those materials thoroughly at home and then come to the class for group discussion. ICT provides a great flexibility in education to ensure that learners are able to access knowledge regardless of space and time (Akele, 2013). As a result, it can foster the educational and special needs of the students since it can be utilized at their own pace. Kok, (2007) observed that using ICT helps students to communicate, share ideas, and work as a team anywhere, anytime.

- **It Keeps the Students Busy:** During the total lockdown following the COVID 19 Pandemic, in the state and some occasional sit at homes especially on Mondays, students and their teachers were all confined to their homes. The online teaching and learning draws the attention of the students during this period. It helps to curb some crimes that are being perpetrated by youngsters in the society. During lockdowns occasioned by kidnappings and unrest in our society, teachers can use the same already existing platforms to keep the students busy.

Challenges of Online Teaching and Learning in Teacher Education

The following are some of the challenges that may be encountered as regards utilizing online teaching in teacher education.

Epileptic Power Supply

Epileptic power supply is one of the challenges as regards embracing e-learning in Nigeria. This has been a lingering issue over the years in Nigeria especially in rural areas. There is no guarantee of steady power supply for at least six hours. This problem has affected so many aspects of human endeavours in the country; the education sector inclusive. As a result of the closure of schools, most students who reside in rural villages travelled back to their villages and most villages in the rural areas are not even connected to power supply at all. As a result, this category of student teachers will experience difficulty keying in to the e-learning platforms effectively. In urban areas where residents are connected to the source of power, its paucity brings about difficulty in powering of the educational gadgets like laptops, desktop computers, smartphones, etc. needed for learning.

High Cost of Data and Internet Devices

High cost of data and internet devices are also one of the major obstacles to e-learning in Nigeria. Most times the internet services required to connect to the e-learning platforms require a lot of data and the cost of purchasing such data bundles are on the high side thus making it difficult for both teachers and students to purchase. Sometimes the internet services are usually so poor especially when it comes to Zoom, Skype, Video Conferencing and the likes where both the teachers and the students are expected to interact. Again the internet devices needed for the online lectures like laptops, desktop computers, smartphones, etc. are on the high side considering the low income level of an average civil servant in the country. Few students who can afford the gadgets do experience difficulties due to poor internet facilities. This poor internet facilities and high cost of its devices may result in poor attendance of students during the online classes. This however can be linked to the poverty situation in the country as some families might not be able to afford basic needs such as food and clean water let alone the expensive gadgets or resources to sustain them for online learning.

Attention Divert

Despite the fact that there are so many advantages inherent in using the social media to teach during the post pandemic era, the attention of students may be diverted to pornography and other horrible sites. This is because the internet contains some junk and obscene sites which, if not regulated and censored before students are allowed to work on it can lead to all forms of moral decadence, especially among teenagers and youths. In this case, teachers and parents are advised to monitor the activities of the students as they consult the social media sites and also make them to understand the danger of consulting horrible sites at their age.

Teachers' Lack of Computer Knowledge

In some institutions, lecturers lack internet knowledge and as a result, keying into the online programme becomes a challenge. Some teachers in secondary schools are very much at home with the traditional classroom teaching method. A good number of them do not have smart phones talk more of going online for any business. Such teachers resort to the services of online business centers for uploading their learning materials during online lessons. Those categories of teachers are known as analogue teachers who find it difficult to change with the system. Because they have refused to change with the modern trend, the outcome remains that they will find it very difficult to cope with online lessons.

Conclusion and Recommendation

Utilizing online strategies in teacher education is very important in our society where the teachers are at the fore front in imparting knowledge on the students. When the student teachers are properly trained using the different online teaching strategies, they will surely become better teachers that would in turn train other teachers. In ensuring that the student teachers are well grounded, the teachers can use the different methods and techniques of teaching using E-learning platforms like Zoom, Skype, Google play store, WhatsApp, Facebook, Telegram, etc. Using these online platforms to teach the student teachers in our schools will enable the students to study at their own pace, promote distance education, encourage feedback, keep students busy, etc. However, there are some disadvantages like epileptic power supply, high cost of data and internet devices, attention divert, teachers' lack of computer knowledge, etc. which may be encountered. In order to embrace online teaching strategies fully and enjoy its advantages in teaching the student teachers, the following should be taken cognizance of:

- Teachers and students should be encouraged to be computer literate because using the online teaching strategies demands that one must be proficient in the use of computer.
- Computers and tablets should be supplied to schools to ease teaching and learning using the online strategies.
- Basically, power supply is usually a stumbling block as regards using the online gadgets. The school authorities must ensure that there is twenty- four-hour power supply in schools.
- Curriculum planners should ensure that learning materials are produced in soft copies to ease teaching and learning.
- Teachers should put in their best to ensure that the students are at home with the subjects.
- As they use the online strategies, the teachers should monitor the student teachers to ensure that they do not deviate from their focus.

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OPPORTUNITIES AND CHALLENGES OF TECHNOLOGICAL UTILIZATION IN TEACHER EDUCATION, INSTITUTION AND MANAGEMENT, IN THE DIGITAL ERA

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Abstract

The evolutions in the current digital world have paved way for the fast-tracking of improvement in the teacher education, institution and management. This has equally yielded the acquisition of necessary teaching skills and strategies in the teaching and learning environment. This development which has provided several opportunities is however, not without its challenges. The digital trend has brought opportunities to the teacher education, management and institution in areas encompassing mobile technology, blended learning, and/or cloud-computing. The fulcrum of this paper therefore, was to critically examine the various concept areas that the teacher education, institution and management have benefited in the digital economy such as mobile digital learning, administration, teacher education institutions as well as the opportunities and challenges of utilizing the mobile digital learning. Based on these, it was recommended that the government through the ministry of education should provide adequately to teacher education institutions, the needed mobile technological devices for effective utilization, administration and management of the teacher education institutions.

Keywords: Digital Learning, Administration, Teacher Education, Teacher Education Institutions, Opportunities, Challenges.

Introduction

It is the duty of the teacher education institutions to train teachers globally both at the in-service and pre-service levels so as to ensure adequate acquisition of relevant teaching skills and strategies for the actual implementation of teaching and learning in the educational environment. The pre-service and in-service teachers training is performed by teacher-educators who equally serve as administrators in the teacher education institutions. The conventional methods of instruction and administration have been utilized by the academic administrators for the effective management of teacher education institutions but observations have shown that advancements in technological trends in education and other fields of endeavor, digital innovative trends are more effective in enhancing the quality and easy-flow of administrative roles in teacher education institutions. Some of the digital innovative trends that are being utilized among others include mobile technology, blended learning, e-learning, and so on. These digital innovative trends have their opportunities and challenges in the administration of teacher education and institutions. This paper therefore sought to focus on utilization of technology, in the teacher education, institutions and management as well as opportunities/benefits and challenges of mobile technology utilization in administration of teacher education institutions in this digital era/economy.

Concept of Mobile Digital Learning

Mobile technology is a concept that has been given various meanings by educational and instructional technologists. According to Vijayalakshmi (2018), mobile technologies are portable devices that are carried about and used in performing a wide variety of tasks. The

portable devices encompasses cellular phone, Personal Digital Assistants (PDA) tablet, laptops, among others. Mobile technology equally includes the use of a variety of transmission media such as: radio wave, microwave, infra-red, Global Positioning System (GPS) and Bluetooth to allow for the transfer of data via voice, text, video, two-dimensional barcodes and more.

However mobile technologies such as mobile phones connect to a wireless communications network through radio wave or satellite transmissions. Most mobile technological devices such as mobile phones and iPads, provide voice communications, Short Message Service (SMS), Multimedia Message Service (MMS), games, cameras, video players, navigational systems, and also provide internet services such as web browsing and e-mail which help in dissemination of information needed in the learning environment of the teacher education institution. They can be used over a wide area without a physical connection to a network. From the above discussions, one can assert that mobile technologies are hand-held technological devices used in accessing information flexibly at anytime irrespective of pace of learning by learners, location and space. Four different communication technologies exist, which are used in ensuring the viability of mobile devices. They include General Packet Radio Service (GPRS), Wireless (Wi-Fi), Bluetooth and Infrared. These communication technologies are available in some mobile devices. The mobile devices that do not have these technologies are supplied with communication ability by using one of the transferring technologies such as USB, Compact Flash Card and PC Card transferring technologies such as USB, Compact Flash Card and PC Card PCMCIA). Wi-Fi, which is mostly preferred in mobile devices, is a technology that provides devices such as personal computers, play stations and digital audio players with wireless internet. Moreover, the other technology that increases the applications and efficiency in mobile devices is Augmented Reality (AR). AR technology, which has developed in a very short time, has proved to be very innovative and efficient technology in order to solve some kinds of problems. This AR technology can be used in smart phones (Android, iPhone), tablet PCs, (Android, iPad), desktops and internet-based applications. The AR technology is therefore used actively in mobile applications in order to bring different approaches in learning. Conventionally, orientation education, which in an educational setting, entails a programme for new students at the beginning of their time at an institution, (helping them to understand the school policies, resources, academic expectations, and campus culture) are given by tour guides or they are given on line. However, these methods do not erect conscious learning. With the AR technology, the mobile learning carried out by means of smart phones that include video camera and internet connection or through a GPS technology makes learning conscious, easy and unlimited. The AR technology is a very important technology in terms of being user-centered, visualizing the processes it does and providing real-time feedback in the educational environment/institution. This technology arouses interest among learners and reinforces leaning (Chou, and ChanLin, 2018). The Mobile Cloud Computing (MCC) technology is a kind of service that provides common data sharing among the data processing devices through its performance to deliver data online. It provides a wide range of opportunities for mobile service sector by making computing resources available in mobile devices on a data network. Mobile learning devices and technologies instantly enables interaction between the learners and the teachers, among classmates or with learning systems. It is equally a good opportunity provided for the learning environment. The learning devices are able to be used intensively in managerial and educational processes in many associations, and they also play an important role in developing interaction within the classes or outside the classes in educational institutions. Ericson, being one of the leading communication technology companies in the world, estimates in the report published in 2012 that the number of people using mobile devices will exceed 4 billion in 2018

(Ericsson, 2012). Along with the developments in information technologies, wireless communication and mobile devices in use in order to support the traditional learning (Wang, Liu, Chou, Liang, Chan & Yang, 2017). Wireless communication techniques may help teacher-educators obtain the necessary information on the administrative issues of teacher education institutions. In addition, teacher-educators can direct pre-service and in-service teachers in teacher education institutions to the information by using these techniques. Therefore, teacher-educators as administrators can use their mobiles or PDAs (Personal Digital Assistant) in order to access the information they need (Robbert, 2019). In the contemporary time, it is possible to outline the mobile devices used in mobile learning as the following:

- a. **Smart Phone:** It is a kind of communication device that has been designed by adding the features of PDA. Due to the fact that smart phones have mobile operating system and many applications, they are very common devices used actively in all areas for different purposes. These mobile devices are being used by administrators in teacher education institutions in order to achieve the set objectives.
- b. **Tablet PC:** Tablet PC is the most popular computer of our time which is a portable personal computer typically smaller than a notebook computer but larger than a smart phone, and it is easy to transfer the data by means of its internet and memory device. It is a kind of computer usually having 7 or 10.1 inch-touch screen.
- c. **PDA (Personal Digital Assistant):** Personal Digital Assistant, also known as palmtop computer, is a mobile device that functions as a personal information manager such as keeping addresses or names. It has the ability to connect to the internet and, it is also portable. With the developments in electronics and computer technology, the size of computers has become small and features of them have increased. The production of computers having the features of camera, video and GPS have expanded, but it has also started to give its place to smart phones.
- d. **Laptop:** Laptops are some of the portable devices that are mostly used in our daily life. Laptops can have all the properties of a normal PC. Due to its mode of production through advanced technological means, as well as its in-built valuable contents, and their difficulty during installation, their cost is quite high. Laptops enable users to obtain the information they want by means of such wireless connection types as USB, wireless network, Bluetooth and infrared devices independent from time and place.

Concept of Administration

The concept of administration simply describes the activities that are performed in order to plan, organize and run a business, school or other institutions (John, 2016). The school administrator therefore ensures adequate planning, organizing, directing and managing the school through the use of specific managerial skills in order to achieve the pre-defined instructional and educational goals. The pre-defined instructional and educational goals can now be facilitated through digitalization process such as: keeping digitalized custody of personal record, creating digital platforms for personnel, keeping digitalized accounting records, etc. All these are achieved by teacher-educators in the teacher education institutions.

Concept of Teacher Education Institutions

Teacher education is an education that is planned to equip the prospective teachers with the needed skill and knowledge to efficiently impact knowledge on the learners. It is the professional education of teachers that equips them with the right attitudes, skills and knowledge which will make them to embark on their responsibilities efficiently and effectively, focusing on the needs and aspirations of the society at any time. Teacher education embraces the preparation of would-be teachers, as well as those already in the system, for acquisition and updating of skills and knowledge, for effective instruction (Okoro, 2015). Supporting the

above views, Mkpa (2015) posited that teacher education involves the procedures designed to equip teacher both at the pre-service and in-service level with the knowledge, attitudes, skills and competencies which they need to perform their professional duties successfully as teachers wherever they may find themselves. However, the prospective teacher, pre-service teacher or intending teacher or aspirant teacher is provided the opportunity to develop cognitive perspective, through the processes involved in teacher education (Ipaye, in Mkpa & Okoro, 2015). It is the belief of Okoro and Ali-Okoro (2017), that teacher education is an educational programme that is designed and prepared formally and systematically to involve the process of equipping teachers (pre-service and in-service) with the necessary professional tips, skills, attitudes, educational reforms, innovation and knowledge needed for upgrading them to carry out their professional duties and responsibilities in the teaching and learning environment. Teacher education is also the process of equipping the would-be teachers and those already in the service, with the necessary qualities, capabilities and capacities for effective administration of the content of the curriculum. Therefore, it systematically prepares the would-be teachers for the anticipated teaching task ahead (Okoro, 2018). There is no doubt that from the above deductions, the teacher education can be construed as the professional educational programme designed following systematic procedures, processes and formal ethics of preparing, equipping, updating and upgrading pre-service and in-service teachers. In other words, teacher education can be said to be the making of provision for deficient teacher-educators with the required innovative skills, knowledge and attitudes as well as innovative professional and educational reforms for adequate implementation or execution of professional duties in the teaching and learning environment. The various ICT tools now assist the teacher by facilitating learning in different forms. The teacher can now organize virtual class through use of ICT tools such as mobile phones. He/she can equally organize discussion classes and request for the opinion of his/her students through zoom meetings, etc.

Based on the afore-said, the teacher education can be classified as follows:

- a) **Pre-Service Teacher Education:** The pre-service teacher education can be said to be the training and preparation of would-be teachers for acquisition of genuine knowledge, skills and attitudes in relation to contents of the curriculum (Okoro, 2018). It also involves the methods of imparting the contents, as well as professional expectations of teachers who help to shape the future of citizens of the nation.
- b) **In-Service Teacher Education.** This is classified as the continuity in the training of teachers because the teachers here have already received pre-service education. These teachers continue to receive the training while they are on their job of teaching (Okoro, 2018). This is among the efforts geared towards improvement of quality education. Teacher education activities are structured to equip teachers for effective performance of their duties.

The teacher education takes place in an official setting called teacher education institution. Therefore, teacher education institutions are those institutions where teacher education takes place. it can equally be said to be the place where teacher education activities are arranged sequentially, planned and organized by institutional administrators for the production of professional and competent teachers. The following educational institutions were authorized by the Federal Republic of Nigeria in 2013 to give required professional retraining for continuity in meeting the required minimum standards:

- Colleges of Education
- Faculties of Education in Universities
- Institutes of Education,
- National Teacher Institute,
- School of Education in the Polytechnics,

- National Institute for Nigerian Languages,
- National Mathematical Centres, (P.40).

It is pertinent to examine other opportunities/benefits created by the mobile technology as well as its challenges in the administration of teacher education institutions.

Other Opportunities/Benefits and challenges in Utilizing Mobile Technologies in the Administration of Teacher Education Institutions

In the words of Sharples (2016), the following are the issues in utilizing mobile technologies in the administration of teacher education institutions:

1. **Recording of Experiences under Tension with Privacy/Security Issues:** The newly advanced mobile technological devices allow institutional administrators to develop full digital records of teacher-educators', non-academic staff and learners' lives and experiences. Through the utilization of mobile technological devices, institutional administrators may impinge on both the actual enjoyment of those experiences in the first place, and on the rights of others to have their experiences without being recorded or observed by others. In addition, the security and privacy of teacher-educators', non-academic staff and learners' own experiences need to be understood, taken into consideration and respected by the institutional administrators.
2. **How Physical Device /characteristics affect the Interferences:** A mobile phone maybe small and light but, usually has poor capability at recording video. It requires detailed cooperation from participants to get something acceptable. This clearly causes interference in a negative way. However, sharing a mobile photo on the screen is often adequate, and can enhance an experience for many. The drift towards ubiquitous computing (computers available everywhere, embedded in everyday devices) does not remove this issue, but does alter its impact.
3. **Social Issues:** Interference always affects the administration of teacher education institutions through the utilization of mobile technological devices. In particular, there can be enhanced feelings of inclusion or exclusion within a group of teacher-educators, non-academic staff and learners in terms of using a mobile phone to see a photo, academic documents, among others. Technical capabilities and familiarity come into this, but more obvious are the social implications where tribal discriminations or preference (that is where administrators may discriminate or make preference against the educators based on their tribes or social affinities) may occur. Technology in general tends to be much like marmite, in that people either love it or loathe it – very few are neutral about it in the administration of teacher education institutions.
4. **Trust and Affordance are Imposed on Technologies:** There have been sets of reasonable ideas on the level or extent on how much teacher-educators, non-academic staff, learners as well as administrators can be trusted and interacted with; however, technological intervention can alter our perceptions, in that people are opened up to more external influences than the immediate environmental experience, and our experiences of technology vary wildly so that people have different expectations of it in the administration of teacher education institutions.
5. **Perceptions of Learning Conflict with Personal Choices and Freedoms:** Many scholars see learning as what a learner does in school, and therefore, not seen as a personal choice or a freedom. Through the utilization of mobile technological devices, mobile learning supports people, especially the institutional administrators, in the activities in which they willingly participate, and can enhance their enjoyment of these for their teacher-educators as well as non-teacher-educators and learners. It is highly pertinent to ensure that there is high level of understanding more about the roles of

technology in supporting the interactions between formal and informal learning in the administration of teacher education institutions.,

6. **Attention Aspects:** Design and working in real spaces all impact the roles and use of technology. If we are out and about, we may well be in new, often uncontrolled environments, in which we need more basic situational awareness and alertness in order to navigate it, survive it, or appreciate it (depending on the situation). Having to change a focus of attention from the 'real world' to a specific device can be problematic.

7. **Technology can Deskill Users, with Old and new Skills Interfering:**

Technology can provide administrators with so much assistance that they forget how to do things for themselves: why remember anything if you can look it upon Google, for example? This is not often a wholly good thing, and sometimes a very bad one. Carefulness is highly required while designing learning experiences with technology that enhances learning (in whatever shape or form we are considering) rather than simply making it easier for people to do something. In addition, old skills and new ones can interfere with each other. For example, the desktop metaphor was a useful construct in moving people from their paper-based offices towards understanding and using computers. However, for many people, especially the younger ones (who were born in the technological age), their acquaintance with technology is more than that of filing cabinets.

The 21st Century youth: In recent times, modern children possess different perceptions of technology than older people. they re-appropriate it for their own uses and have different expectations of it. it is an integral part of their everyday world. These social, psychological experiential and technical differences are often not fully understood, and even more rarely utilized, by existing or proposed systems, and yet they need to be if the system are to have more significant impact among the administrators in teacher education institutions.

The following among others, as opined by Prokofyeva and Boltunova (2018) are the benefits of applying mobile technologies in the administration of teacher education institutions.

1. **Expanding Opportunities and Ensuring Equal Access to Education:** Nowadays, mobile technologies are universally used even where there are not enough schools, books and computers. The prices for mobile phones are constantly decreasing, so an increasing number of people, even in the poorest regions, have the opportunity to purchase such devices and know how to use them. A growing number of projects indicate that mobile technology is an excellent teaching and learning tool for teacher-educators and students who are deprived of the opportunity to receive quality education in the administration of teacher education institutions. Thus, the Bridge – IT project for Latin America and Asia, which is based on the research approach to learning, provides modern teaching materials. The project is aimed at geographically isolated educational institutions and is implemented through mobile communication. With its help, even educational institutions that are not connected to a fixed telephone network receive Internet access (UNESKA , 2018).

2. **Learning Personalization:**

Mobile devices usually are a property of their owners. They are also at their disposal throughout the day and have many customization features. That is why mobile technologies provide more opportunities for personalization when compared with stationary and information exchange technologies in administering teacher education institutions. Depending on the skills and knowledge of the user, applications for mobile phones and tablets allow choosing texts that are more difficult or easier to read. This approach allows eliminating the constraints faced by students with a higher or, conversely, lowering level of knowledge compared to the rest of the class. Although these capabilities were implemented on personal computers several years ago, their use

had serious limitations. Students did not have the opportunity to freely bring a personal computer to the classroom or take it home, many could not even afford to buy such a device, so this technology even if available in computer centers and specialized laboratories, did not become truly personalized. Due to its exceptional portability and relative cheapness, mobile technologies have greatly expanded the potential and opportunities for personalized learning (Golitsyna & Polovnikova, 2011). With the help of mobile devices education becomes informal, personalized and situated (UNESCO, 2018).

3. **Instant Feedback and Evaluation of Learning Results**

Mobile technology accelerates the process of evaluating learning results and gives students and teachers the opportunity to track progress quickly. Previously, students had to wait days or even weeks for recommendations based on their knowledge. High acknowledgements are given to interactive functions of mobile devices as the answers can be obtained almost instantly. This allows students to quickly identify problems in learning process and repeat the key concepts. The use of mobile technologies increases the efficiency of teacher-educators' works – through automation of the processes of distribution, collection, analysis and documentation of the evaluation data. Therefore, these are mobile applications, which allow teacher=education to quickly assess the knowledge of students, checking their fulfilled tasks for reading texts in teacher education institutions.

4. **Learning at Anytime and Anywhere**

Since most of the time the mobile device is close to its owner, it allows to conduct the teaching –learning process at any time and in any place. The application of mobile learning gives the user a choice: user can perform an exercise that requires several minutes, or completely concentrate on the task for several hours. M-learning can deliver information from anywhere in the world for the teacher–educators and the students. It can be supplied anywhere in the world ensuring that students are satisfied in their learning, and that any problems arising from their study can be dealt effectively in teacher education institutions (Golitsyna and Polovnikova, 2011).

Other benefits as opined by Elias (2011); Crescente and Lee (2011) are as follows:

1. Relatively less pensive opportunities, as the cost of mobile devices are significantly less than PCs and laptops.
2. Multimedia content delivery and creation options
3. Continuous and situated learning support\decrease in training costs
4. Decrease in training costs
5. Potentially a more rewarding leaning experience
6. Improving levels of literacy, numeracy, and participation in education amongst young adults.
7. Using communication features of a mobile phone as part of a larger learning activity, eg.: sending media or texts into a central portfolio, or exporting audio files from a learning platform to your phone.

The following among others, as opined by Mehdipour and Zeehkafi (2013) are the challenges of mobile technologies in the administration of teacher education institutions:

Technical Challenges

Some of the technical challenges can include the following:

1. Connectivity and battery life

2. Screen size and keysize (Maniar, Benneth, Hand and Allan, 2008)
3. Meeting required bandwidth for nonstop/fast streaming
4. Number of file/asset formats supported by a specific device
5. Security and copyright issues.
6. Multiple standards, multiple screen sizes, multiple operating systems.
7. Reworking existing E-learning materials for mobile platforms
8. Limited memory (Elias, 2011).

Social and Educational Challenges

Accessibility and cost barriers for end users: Digital divide

1. Assessing learning outside the classroom
2. Supporting learning across many contexts
3. Content's security or pirating issues
4. Frequent changes in device models/technologies/functionality etc.
5. Developing an appropriate theory of learning for the mobile age
6. Conceptual differences between E-learning and M=learning
7. Design of technology to support a lifetime of learning (Sharples, 2000; Moore, 2009).
8. Tracking of results and proper use of this information
9. No restriction on leaning timetable
10. Personal and private information and content
11. No demographic boundary
12. Disruption of students' personal and academic lives (Masters, K: Ng'ambi D., 2007).
13. Access to and use of the technology in developing countries.
14. Risk of distraction (Crescente & Lee, 2011).

Apart from the afore-listed challenges, there can be other challenges to the use of mobile learning which may include the high costs associated with equipment, connectivity, maintenance, technical support and teacher training; health-related issues; a lack of policy support and governmental investment; and/or a lack of interest and awareness from the part of policymakers and the public; and negative social attitudes that may perceive mobile phones as disruptive devices that students use primarily to play games, chat with friends and potentially engage in inappropriate behaviours such as cheating and cyber-bullying instead of concentrating in their studies.

Recommendations

In view of the challenges and benefit raised in this opinion paper, the following recommendations are made:

1. Chief administrators of teacher education institutions should encourage their academic and non-academic staff to attend workshops, seminars and conferences for the upgrade of their knowledge on technical operation and utilization of the mobile technological devices for adequate and effective discharge of administrative roles in teacher education institutions.
2. Prompt payment of salaries should be made available regularly to teacher-educators and administrators as well as teacher education institutions management in order to ensure individualized practice on the utilization of mobile technological devices.
3. The administrators and management authorities of teacher education institutions should endeavor to encourage their teacher educators as well as administrators to embrace and integrate adversely and adequately the mobile technological devices for effective administration of teacher education institutions around them.

4. The government in collaboration with ministries of education should provide adequately to teacher education institutions the necessary mobile technological devices for effective utilization, administration and management of the teacher education institution.
5. Workshops, seminars and conferences upon the utilization of mobile technological devices for management and administration of teacher education institutions should be organized for teacher educators, administrators and tertiary education managers by academic professional bodies that are ICT-compliant for effective and efficient administration of teacher education institutions.

Conclusion

There is no doubt that mobile technological devices assist greatly in the administration of teacher education institutions through various forms including the use of digitalized palmtops, smart-phones, PDAs tablets PCs, android phones, iPads, among others. They also help in standardizing the terrains of teacher education institutions' skillful training of teachers and development of pre-service and in-service teachers in order to ensure maximal attainment of pre-defined and determined aims and objectives. It is equally not in doubt that total globalization that has been experienced today also motivates institutional administrators to maximize the potentials of their teacher-educators thereby organizing and sponsoring conferences, workshops and seminars for the teachers' knowledge update. As mobile learning is equally seen as a facilitating tool to the human endeavours and the teacher education in particular. It encourages the facilitation of teaching process thereby assisting the work of the teacher and that of the teacher education institutions. It is however, not without its attendant challenges.

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EXPLORING THE EFFECTIVENESS OF TECHNOLOGICAL RESOURCES IN SCIENCE EDUCATION IN IMO STATE

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Abstract

Technology has become a vital part of our professional and personal lives. Today we cannot imagine living without many technological tools such as computers. For the last two decades technology has become inseparable from several areas, such as science. Hence, the paper explored the effectiveness of technological resources in science education in secondary schools in, Imo State. The survey method was adopted for the study. Targeted population were Science teachers from public secondary schools in Imo state. One hundred and eighty (180) Science teachers were randomly selected for the study which forms the sample size. Researcher self-designed questionnaire was used in the process of data collection. Data collected was analyzed using mean and standard deviation. The findings of the study shows that most teachers have not incorporated technological resources into teaching of science subjects for various reasons such as lack of knowledge of educational technology tools and having unfavorable beliefs about the effectiveness of technological resources on students learning of science education. Based on the findings, it was concluded that the use of technological resources in teaching of science education, promote teachers effectiveness during classroom instruction. It was recommended among others that Education technology should be made compulsory in all secondary schools in order to improve science teaching. The Teacher Registration Council of Nigeria should provide technological resources for teachers. Also, there should be opportunity for teachers' professional development through in-service education for science teachers

Keywords: Effectiveness, Technological Resources and Science Education

Introduction

Science and Technology play significant roles in the development of nations across the world. Hence, science and technology have been described as key drivers for positive nationhood because technological and scientific revolutions underpin economic advances, improvements in health systems, education and infrastructure among other benefits. Science education according to Al-rsa (2013) is an essential ingredient for the development of any nation and has a significant stake. It is a process of teaching or training especially, within the school system to improve one's knowledge about the environment and to develop one's literacy and skill of systematic enquiry as well as natural attitudinal characteristics (Al-rsa' 2013)

In the light of the above, Olatoye, (2011) is of the view that science education is the field concerned with sharing science content and process with individuals not traditionally considered part of the scientific community. The target individuals may be children, college students, or adults within the general public. The field of science education comprises science content and teaching pedagogy. The traditional subjects included in the standards in Nigeria are Biology Education, Chemistry Education, Physics Education, and Integrated Science Education. (Owoeye & Yara, 2011). In today's rapidly advancing digital era, technology has become an integral part of our lives, permeating various domains, including education.

Technological resources mean any and all technologies that produce, manipulate, store, communicate, or disseminate information. According to Murungi and Gitonga (2015) Technological resources is the collection of resources used for creating, storing, managing and communicating information. These technologies can be used to support teaching, learning,

research activities, collaboration learning and inquiry (Murungi & Gitonga 2015). These resources include, but are not limited to, wired and wireless data, video and voice networks, computers for processing information, and other devices for storing and archiving information. In the field of education, it connotes an electronic, digital, or physical resource that can support teachers in the delivery and testing of content (Ferk Savec, 2017). These resources include apps, platforms, and software, and can be used in virtual, hybrid, or traditional learning environments.

Costley (2014), observed that incorporating technological resources in the classroom can positively influence student learning in science. Using technology for teaching and learning is common nowadays (Price & Kirkwood, 2014). It has been proved that teaching with technological resources can expand and develop student's learning by supporting instructional goals. Moreover, using technology has a significant impact on education applications and changed the way educators teach, how students learn and the way teachers and students communicate (Storksdieck & Hunter, 2017). The implementation of technological resources in classrooms can greatly benefit teachers by enabling them to customize instructional materials and assessments according to their student's individual learning needs. Technology offers a wealth of authentic resources that can aid teachers in creating and delivering engaging lesson plans (Brunsell, 2014).

Integration of technological resources in science education improves the quality of teaching and learning, and helps to raise the standards of education (Sangrà & González-Sanmamed, 2010). , Abdullahi (2014) mentioned a number of advantages of utilizing technological resources in education. In science education, experiments play a key role. Usually it is taken for granted that all students actually observe the same facets that are so obviously to be seen from the point of view of the teacher. In the light of the above, Although the task of technological resources integration presents significant challenges to school districts, school administrators, and teachers alike, exciting new educational technologies are increasingly available that offer teachers novel ways of presenting material to students. Despite introducing the use of technological resources in our educational system , many schools are still struggling to find their feet's when it comes to technological resources implementation and integrations at their respective schools. Most of schools are faced with a number of challenges, which includes; limited facilities (like computer labs), lack of skills/experts (lack of trained teachers of ICT), geographical disadvantages, digital divide and financial constraints. (Carl, 2012.)

However, the effectiveness of technological resources in science education is faced with various constraints such as; shortage of time, equipment, teaching tools, pedagogical content knowledge, and pedagogical skills. (Guzey & Ro- ehrg, 2009). From the underscore view so far, poor utilization of technological resources in science education has remained a topical issue in our educational sectors, which has degenerated to all forms of academic laxity, poor self perception of concept, low retention capacity, and ineffectiveness in the teaching process pose an adverse implication on the learners academic outcome. During implementing educational technology resources such as computers, data collection, and analysis software, and interactive whiteboards can assist students to actively engage with the achievement of scientific knowledge and development of the nature of science

Objectives of the study

The main purpose of the study is to explore the effectiveness of technological resources in science education in, Imo state

Specifically, the study seeks

1. Find out the relevance of technological resources in effective teaching science education in Imo state

2. Find out the challenges encountered in effective usage of technological resources in teaching science education in Imo state

Research Questions

1. What are the relevance technological resources in effective teaching science education in Imo state
2. What are the challenges encountered in effective usage of technological resources in teaching science education in Imo state

Methodology

Research Design: This study adopted a descriptive survey design. The justification of this design was informed by the fact that the study's purpose was descriptive and allows collection of data without interference

Area of the Study: This study was carried out in Imo State, Nigeria with a land area of 5,530 sqkm. The State lies between latitudes 4°45'N and 7°15'N and Longitudes 6°50'E and 7°25'E. The State is located in the South-Eastern rainforest belt of Nigeria. The State shares boundaries with Abia in the East, Rivers State to the South and Anambra State to the North (ISSYB, 2004). The State has a total of twenty seven (27) Local Government Areas (LGAs) which is divided into 3 senatorial zones namely; Owerri, Orlu and Okigwe. Across these zones, agriculture is a major economic activities predominant amongst the people of the state

Population for the Study: The population consists of nearly 1800 science teachers selected from all the public secondary schools in Imo state **Source:** Secondary Education Management Board (SEMB 2023)

Sample and Sampling Technique: The sample of the study was One hundred and eighty (180) science teachers were purposively selected. The purposive sampling technique was used in the selection of the sample size.

Instrument for Data Collection: The instrument for data collection was a structured questionnaire which was based on the research questions guiding the study. The questionnaire was based on 4-point rating scale.

Validation and Reliability of the Instrument: Three experts two Education Foundation and one from Measurement and Evaluation all from AIFCE Owerri validated the instrument and their suggestions were effected and used to enhance the instrument.

Method of Data Collection: The questionnaire was administered on the respondents by direct contact method.

Method of Data Analysis: Descriptive statistics (mean and standard deviation) were used for data analysis, for the research questions

RESULTS

Research Question 1: What are the relevance of technological resources in achieving effective teaching of science subjects in Imo State?

Table 1: Mean and standard deviation responses on the relevance technological resources in effective teaching science subjects in Imo state

S/N	The following are relevance technological resources in effective teaching science education in Imo State	X	SD	Decision
1.	Promotes easy understanding of scientific concepts during teaching process.	2.78	1.06	Agreed
2.	Makes learning visible and a tangible reality.	2.86	1.01	Agreed
3.	Encouraging teamwork and collaboration	2.84	1.07	Agreed
4.	Increased student engagement	3.14	1.13	Agreed
5.	Improved Teacher Productivity and Efficiency	2.97	1.10	Agreed
6.	Increased collaboration and communication	3.03	1.11	Agreed
7.	Supporting differentiated instruction	3.3	1.13	Agreed
8.	Improved teaching and learning outcomes	2.87	1.14	Agreed
	Grand Mean and Standard Deviation	7.93	0.955	

Source: Field survey, 2023

Table 1 above showed that all the items had mean scores above 2.5 cut off point indicating that all the items were accepted as relevance of technological resources in achieving effective teaching of science subjects in Imo State

Research Question 2: What are the challenges encountered in effective usage of technological resources in teaching science subjects in Imo state”

Table 2: Mean responses of respondents on the challenges encountered in effective usage of technological resources in teaching science subjects in Imo state

S/N	Challenges encountered in effective usage of technological resources in teaching science education in Imo state are as follows	X	SD	Decision
1	Poor Finance and Budget constraints.	2.97	1.04	Agreed
2	Inadequate teachers professional development on technological resources	2.67	0.97	
3	Lack of time for critical selection of learning resources related to curriculum topics;	2.7	0.99	„
4	Poor Internet or computer access	2.66	0.96	„
5	pedagogical factors	3.02	1.04	„
6	Poor power supply	3.02	1.07	„
7	Keeping up with changes	2.91	1.04	
8	Students misusing technology	2.78	1.01	„
9	Cost of new technology	2.82	1.00	„
10	Teacher knowledge of technological resources	2.96	1.02	„

Table 2 above showed that all the items had mean scores above 2.5 cut off point signifying that all the items were agreed as challenges encountered in effective usage of technological resources in teaching science education in Imo state”

Discussion of Findings

Findings in table one shows the relevance of technological resources in achieving effective teaching of science subjects Imo State. The findings of the study sustain the fact that effective use of technological resources poses a significant relevance in the following ways by promoting easy understanding of scientific concepts during teaching process. Improved teacher productivity and efficiency, making learning visible and a tangible reality and above all supporting differentiated instruction. The findings of the study is not surprising because the findings of the study lay credence to the findings of Murungi and Gitonga (2015) which stated that technological resources can be used to support teaching, learning, research activities, collaboration learning and inquiry. This is evidence to the findings of Costley (2014) who reported that incorporating technological resources in the classroom can positively influence student learning in science. The findings of the study also corroborated with the findings of Price& Kirkwood, (2014) who reported that using technology for teaching and learning is common nowadays.

Findings in table two show the challenges encountered in effective usage of technological resources in teaching science education in Imo state. The findings outline poor finance and budget constraints, inadequate teachers professional development on technological resources. Lack of time for critical selection of learning resources related to curriculum topics and cost of new technology as some of the challenges encountered in effective usage of technological resources in teaching science education in Imo state. The findings of the study aligned with the findings of Guzey and Ro- ehlig, (2009) who reported that the effectiveness of technological resources in science education is faced with various constraints such as; shortage of time, equipment, teaching tools, pedagogical content knowledge, and pedagogical skills. The findings also supported the findings of Carl, (2012) who reported that challenges, which includes; limited facilities (like computer labs), lack of skills/experts (lack of trained teachers of ICT), geographical disadvantages, digital divide and financial constraints affect the effectiveness of technological resources usage

Conclusion

Based on the findings, the study concludes that integrating and use of technological resources in science education plays as veritable roles in the development of science education in Imo state. Furthermore, the study concluded that technological resources in science education promotes easy understanding of scientific concepts during teaching process. Improved teacher productivity and efficiency, making learning visible and a tangible reality and above all supporting differentiated instruction. Hence, the study concluded that despite the significant impact attributed to technological resources in science education. There are still challenges facing the effectiveness of integration and use technological resources in science education

Recommendations

Based on the findings, the following recommendations were derived

1. Teachers’ Professional development should be effectively encouraged through seminars and conferences and emphasis should be made on innovative teaching through computer based instruction.
2. Government and other donor agencies should adequately fund education through consolidated budgetary especially in the provision of technological resources for schools

3. The Teacher Registration Council of Nigeria (TRCN) should provide technological resources for teachers.

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THE ROLE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) IN INSTRUCTIONAL DELIVERY IN VOCATIONAL AND TECHNICAL EDUCATION: BARRIERS AND WAY FORWARD

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Abstract

This study examined the application of ICT in instructional delivery in Vocational and Technical Education. It asserted that the effectiveness, plausibility and sustainability of Vocational and Technical Education cannot actively be realized in this 21st century and technological age without the support services of ICT and its integration to instructional delivery thereon. Various paraphernalia of the pivotal roles played by ICT in Vocational and Technical Education context, ICT skills and competencies needed by Teachers for quality Vocational Education delivery were elucidated. Barriers such as financial constraints, inadequate infrastructural provisions, Teachers related factors, school factors and Technological factors were identified to be the major hindrances to the adequate integration of ICT in instructional delivery. The study recommended that Government at all levels of education should show priority attention to ICT usage in Vocational and Technical Education through effective ICT policy implementation and adequate funding of the Vocational Education. More so, ICT integration into vocational education programme should be by the use of instructional design.

Keywords: ICT, Application, Instructional Delivery, Vocational and TeEducation

Introduction

Education is truly the bedrock of many countries and societies socioeconomic, political and cultural development. It is one of the main instruments for national transformation, social change, likewise an aggregate tool for human emancipation and public enlightenment. Through education, rightful skills, competences and knowledge is acquired by individuals for their active contributions and participation in socio-economic activities within their environment. Given the relevance of education to both human and society development which can never be overemphasized; huge emphasis has always been placed on the effective administration and management of education for environmental sustainability and human progress by all countries of the world in the educational system, (UNESCO, 2000).

Vocational education is concerned with preparing students for jobs by providing them with expertise, skills, and appropriate behaviours in the workplace. Furthermore, vocational education according to (UNESCO, 2000) is defined as:

- A component of all-purpose education;
- Method of planning for vocational fields and successful job contribution;
- A component of lifelong learning and citizenship preparation.
- A tool for fostering ecologically friendly sustainable growth; and
- A way of alleviating lack.

Education has made significant contributions and impacts towards national development in the country. Although, the effectiveness, plausibility (in terms of credibility) and sustainability of the programme cannot actively be realized in this 21st Century and technological age without administration of such educational support service as the Information and Communication Technologies (ICTs). The Information and Communication Technologies (ICTs) which

continues to play significant role and make positive impact in the education sector, according Victor (2019), can simply be defined as the study or the use of computers for storing, receiving, analyzing, manipulating and transmitting of information used in the educational sector and the business sector as well.

Presently, the world is in a computer age and gone are those days when everything has to be done manually or traditionally. Ugwuogo (2019) stressed that there is no doubt that technology (that is, ICTs) has come to stay and today the society is reaping its numerous benefits in all aspects of life from domestic activities to complex problem-solving activities. In all processes, it has added a lot of value to both the living processes and in all aspects of the educational processes. The benefits of using various ICTs in vocational education are enormous.

One significant area different technologies have penetrated deeply and revolutionized is the indispensable field of learning, education and training. Technology has revamped the educational system from the generic system of group learning to a more individualized learning, (Ugwuogo, 2019). This has proven to be more effective especially with people with disabilities e.g. autism, blindness and other physical and mental disorders. Also, individuals can learn anything and train themselves on different skillset on technology search engines “*just ask Google*”, electronic databases and social networking sites e.g. YouTube, Pin it, Reddit, etc (Ugwuogo, 2019).

Examples of these ICTs which plays remarkable and significant roles in educational administration and management according to Vermaat (2019), include the use of computers and digital devices like laptops, desktops, palmtops, tablets and smart phones, Others include printers and scanners, fax machines, projectors, online technologies and social networks through the use of blogs, Facebook, zoom, Skype, WhatsApp, Instagram, YouTube, Twitter, among others (Vermaat, 2014). There are also emerging technologies such as robotics, virtual realities, Google Docs, educational platforms (Learning Management System as Moodle), cloud computing, games, among others which can equally be utilized in any educational setting and classroom. These online emerging technologies which requires Internet connections or connectivity to function have their own benefits to users in the educational setting and classroom, (Neira, Salinas & Crosetti, (2017).

In vocational and technical education, multi-media and telematics can help develop a range of skills and behaviours in a variety of ways. They will help pupils learn how to interpret and utilize the information that is communicated in a creative and enticing way as utilized in the learning phase. The most essential level of business and technical communication requires multi-media communication and knowledge retrieval skills. Students also engage in practices that enhance higher thinking skills that include problem-solving, reflection, recognition and analysis when working with multi-media and telematics technology, since they are concerned with complex, practical content. The services include training, educating policy leaders, producers, and problem solvers for vocational and technical education students as adults in the 21st century.

In lieu of the forgoing, this study examined the Application of Information and Communication Technology ICT in Instructional delivery in Vocational and Technical Education: Barriers and prospects. The study sort to review ICT integration to support students learning, application of ICT in Vocational Education context, ICT Skills and Competencies Needed by Teachers for Quality Vocational Education Delivery, the necessities of ICT in

Vocational Education, justification for ICT based Vocational Education, barriers for integration of ICT in Vocational Education, curriculum implication, prospects/way forward, conclusion and recommendations.

Objective of the study:

The main objective of the study is to investigate the Application of Information and Communication Technology ICT in Instructional delivery in Vocational and Technical Education. Specific objectives include to examine:

- i. The use of ICT to support vocational students' learning
- ii. The use of ICT in Vocational Education context
- iii. The ICT skills and competencies needed by teachers for quality Vocational Education delivery
- iv. The barriers for integration of ICT in Vocational Education and Way Forward

Review of Related Literatures

Uses of ICT to support students' learning

Our country, which has developed excellent learning styles among students, the use of ICTs for training and realistic training is critical. The emphasis on learning and research is no doubt an important inspiration base and the foundation for creating an environment for learning ICT mediated schooling, Internet/intranet connectivity and other core areas for convergence of technology and communications technology or the exercise of vocational and technical education. The International Conference on Technology and Mediated Learning covers information and communication technology (ICT) and Computer-Aided Instruction (CAI) in regard to the vocational and technical teachers, as well as the use of immersive tools to develop progression materials and Computer Aided Learning (CAL) for their students. Other developing countries have also used computer-assisted teaching, especially in the early years of schooling.

In vocational and technical education, multi-media and telematics can help develop a range of skills and behaviours in a variety of ways. They will help pupils learn how to interpret and utilize the information that is communicated in a creative and enticing way as utilized in the learning phase. The most essential level of business and technical communication requires multi-media communication and knowledge retrieval skills. Students also engage in practices that enhance higher thinking skills, which include problem-solving, reflection, recognition and analysis when working with multi-media and telematics technology, since they are concerned with complex, practical content. The services include training, educating policy leaders, producers, and problem solvers for vocational and technical education students as adults in the 21st century.

They offer students a variety of opportunities to improve their academic skills while encouraging teachers to progress with more software and engaging courseware. Communication is a crucial part of learning, according to studies. This is normally a negative thing in the classroom paradigm. The majority of laboratory models are "one-way teaching models," in which the teacher behaves, and the students merely respond. Computer-assisted instructions can significantly complement traditional instructional techniques, allowing students to learn in the easiest way possible, (Richa, Anuj & Anoop, 2021).

The Internet and Intranet have evolved into data and digital services rich sources. A private Internet for a selected number of people is known as an intranet. For example, an intranet is a school campus network that shares local information, including teaching and curriculum, while also having access to the Internet whereas the Internet is a global network of interconnected computers communicating over a variety of hardware platforms via protocols. Any machine on the Internet includes global knowledge - (the content of Intranet is only available to a small closed community such as school-teachers and students).

The information management Information system for education (EMIS/EDMIS) is a multi-user information system, digital information system and platform to store and retrieve educational data from colleges, grade levels, test results, schools, staff, financial institutions, and schools, the state or regional levels. Education Management Information System Demographics, information on jobs, training plans, advanced training classes completed by personnel and staff performance assessments will also be collected in uniform formats and entry at graduate, national and state levels in order to assist decision making. EMIS financial details include budgets, cash reserves, investment, payments, loan schedules and other upper-level management financial reports as well as information on building profile. Despite its widespread use in the developed world, EMIS is frequently restricted to student affairs offices in Universities and ministries of education in developing countries. Data on education preparation is typically collected by hand and is vulnerable to mistakes and inconsistency.

Uses of ICT in Vocational Education Context

Available literature has revealed that ICT has successfully been applied in the following Vocational educational dimensions (Richa, Anuj & Anoop, 2021):

- a. Studying ICT education prepares students so as to use ICT in their studies, future occupation and social life.
- b. Use of ICT as a tool that aids in the collection of data and documentation, making arraignments, projects, conducting research and communicating. The entire world has been reduced to a global village and through on-line services student access virtual library resources from any part of the world.
- c. ICT used as an instructional medium provides tools for teaching and learn itself; a medium through instruction games and simulation, educational networks, drills and practice exercises, modelling etc.
- d. ICT as a tool for the organization and management of educational environments.

(Ugochukwu, 2012), noted such application areas to include: resources management and financial control, student personnel services, admission, processing and storage of academic records etc.

ICT Skills and Competencies Needed by Teachers for Quality Vocational Education Delivery

The advent of computer and its attendant technologies has been a source of worry to the uniformed minds who feels that people would be thrown out of jobs. Teachers are not excluded from this pathetic reservation. But the truth remains that an effective and creative teacher's job will enhance in quality service delivery upon ICT application. The instrumentality of the

technologies of information and communication has significantly enriched the average teacher who can access the most current information bordering on content and pedagogy at the speed of light, (Ugochukwu, 2012), stated that for teachers to be ICT complaint, they need:

- a great pedagogical, didactical and educational psychology craftsmanship;
- subject matter mastery (in vocational content);
- a large knowledge (the application possibilities of) modern educational tools; and
- skills in student guiding processes (such as formulating assignments, projects etc) and counselling.

Again considering the fact that the new teacher is forced to collaborate with other colleagues in a way entirely different from that he was used to be requires hands on experience and skills of:

Creativity, personal relations, flexibility, logistic (assigning work and study practices and student grouping skills for working in projects, collaborative or cooperative work communication, administration and organization. The teacher should in fact be a good manager of both human and material resources and for these he needs a sound knowledge and skills of ICT, (Ugochukwu, 2012), (Richa, Anuj & Anoop, 2021).

The necessities of ICT for Vocational Education.

In ICT, the development, immersion, flexibility and engaging material is all about enhancing vocational and technical education and learning. It enables students to learn in a more personalized manner. Furthermore, the IT technology has the capability to accelerate, enhance and deepen skills, motivate and engage students in learning, assist students in linking school experiences to work practice and build economic viability for the employees of tomorrow.

Information and Communications (ICT) technology is an inextricable part of our culture. In traditional or distance education institutions worldwide, particularly in developed economies, ICT has demonstrated dramatic effects on the standard and quantity of instruction, analysis and research.

ICT thus enhances institutions' performance and efficiency, leading to a number of instruments to improve and promote the pedagogical practice of professional and technical instructors. For example, e-learning has become the popular mode of using ICT in education for students, (Yusuf, 2005); (Youssef & Dahmani, 2008). While professional and technical teachers should also take care of their students' particular interests, as in addition to traditional schooling, ICT oriented technology, such as e-learning, has a lot of potential. This is because ICT extended learning can provide new ways to achieve high standards' on cognitive tasks, including uniqueness, ingenuity, problem resolution, and teamwork, particularly by utilizing web-based technologies.

In addition to the requirements above, the following are, therefore, some of the clear and concrete reasons why ICT technology should be applied by skilled and technical teachers:

- a. Because the Internet typically provides digital documents, newspapers and similar resources, a modern ICT facility allows vocational and engineering students and instructors to access, control and use the knowledge on education and training environments (Oxfam Education Report, 2000).
- b. In Nigeria and Africa, accessibility and distance learning training would include, if well supported by e-learning expertise, a connection to, mobility and collaborative

work that could not be easily attended at universities in urban and rural communities in general. This has long-term consequences for high-quality educators and seekers of truth in any generation, place and time. Higher schools also have a responsive and accessible learning environment for students and instructors to progress on new knowledge and communications technologies.

- c. As a communal mechanism, it will foster collaboration and communication among students and teachers at both the international and local levels.
- d. It would enable people who want to work and learn at their own rate, regardless of location, to do so.
- e. It improves vocational and technical presenters' efficiency in terms of timely delivery of progression materials and provides full kindness to their pupils, which one can do by email reviews or other means.
- f. It would transform distance learning from "just-in-class" to "just-in-time," allowing for greater ease of access to education.
- g. Since it is appealing and engaging, a flexible user interface will pique the learner's curiosity, resulting in continued learning.
- h. It promotes the growth of human resources accomplished by fulfilling the demands of today's world budget, which is financed and guided by information and communication technologies.

Justification for ICT Based Vocational Education

The integration of ICT as a component of vocational curriculum is justified by its attendant benefits identified and yet to be identified.

- a. Most institutions in the society are going to become more efficient in their junctions as a result of information technology (IT) application and at some point, the primary and secondary schools will, too. This fit is just too good to ignore.
- b. ICT makes Active Learning (AL) possible. AL is an instructional approach that combines four initial elements namely;
 - i. Learning drawn from working on real problems;
 - ii. Individuals retains responsibilities for their own problems;
 - iii. It involves a group of learners who are engaged in real problems
 - iv. Includes the attempt to implement (and thereby test the) ideas developed with the action learning set.

At is therefore an effective vehicle for developing creativity as it engenders a capacity to as productivity questions and creativity most often raise from asking questions from different mind as, (Jegade, Ebio and Iroegbu, 2019).

ICT enhances the quality teaching and learning. By proper planning, we set out clear learning outcomes and suitable teaching methods to achieve them.

- i. ICT guarantees wider access and readership to learnable materials ride the use of internet possibilities.
- ii. ICT guarantees large group workshops that is, the application and use which are used to provide people with practice and hands on experiences of using information and ideas delivered by other means.

- iii. Technological development- IT offers unparalleled opportunities for information dissemination at relatively low cost.
- iv. There would be more variety on the student's learning that there is at present where lecture and seminars dominate the teaching processes students will devote time to independent learning made possible by on-line facilities.

Barriers in the Use of ICT in Vocational Education

Five main challenges according to (Shehu 2015) are presented as follows:

Infrastructure: Appropriate infrastructure is needed to ensure content delivery and equality of access. *Administration:* Sufficient resources and support for technology adoption must be provided by the system. *Learning:* The use of ICTs should be for better education and awareness. *Teaching:* Educators must be properly trained to instruct and support students' learning using ICTs.

Content Creation: Content development is time-consuming and expensive, and the content itself has a limited shelf life. Vocational education faces a significant challenge in developing and maintaining high quality.

While the technology-enhanced curriculum has a lot of potential, it also has some immediate drawbacks, such as capital investments in software programs and computer hardware, equivalent allowance to remove technical "haves" and "have-nots," suitable methods for mixing skill into curricular, patent problems, and a lack of educationally complete content. Moreover, for most teachers, introducing technology-enhanced learning is a major challenge because information technologies are both thrilling in their abilities and discouraging resulting from the doubt formed by the swiftness of transition.

Institutional Restrictions: In the literature, institutional obstacles to ICT-mediated learning have been well established. Some of the obstacles are as follows: lack of resources and assistance; scheduling difficulties; insufficient funding; high curriculum creation costs; instructional challenges; difficulties finding trained teachers; and difficulties maintaining dependable technical assistance and support.

Student Obstacles: Distance education students face a variety of challenges which include: the cost of apparatus and access to skill; inspiration; an absence of instant input from instructors; an insufficient level of funding and facilities; isolation in addition to alienation; a lack of ICT knowledge; and an absence of facts and time management skills

Curriculum and Content: Although much emphasis is placed on the creation of skills that support information and communication technology-facilitated learning, what is found to be the most pressing concern is its curriculum material

Efficacy and Appropriateness: It's a widespread belief that education via distance learning is ineffective in providing vocational and technical skills. However, it is much easier to provide distance education in the cognitive and affective domains than teaching manual skills at a distance. Through the updating and enhancement of learning skills, instructional strategy, adaptive learning representations, simulation of office climate, student support systems, allowance for e-learning, and the advancement of intelligent training, the effectiveness of distance learning in vocational education will continue to increase. The effectiveness of distance learning will be strengthened further by a greater focus on self-directed learning and an upsurge in computer learning among participants.

Curriculum implication/Policy Imperatives

The relevance of ICT in Vocational Education has been elucidated in this study. Equally, some issues critical to its effective integration were identified as a way of ensuring quality objectives

of the innovation. It is therefore pertinent to outline the following implicit curriculum implications and policy imperatives in tandem with (Richa, Anuj & Anoop, 2021):

- a. School authorities, teachers of vocational subjects and other stake holders should demonstrate honest commitment to the innovation devoid of mere lip service.
- b. Regular seminars, workshops and tutorials can be adopted as a means of improving the ICT skills and competencies of Vocational teachers.
- c. Time scheduling should accommodate extra “time out”
- d. The Programme of ICT should not be by arrangement or its implementation by “crash approach” but should be integral to entire education delivery system.
- e. Instructional Design Approach (IDA) should be adopted in integrating ICT in the schools vocational programmes.
- f. The Administrators of our education system need to be more committed to ICT policy implementation by the provision of requisite enablement.
- g. The school authorities, teachers of vocational subjects and other stake holders should demonstrate honest commitment to the innovation devoid of mere lip service.
- h. Regular seminars, workshop and tutorials can be adopted as a means of improving the ICT skills and competencies of Vocational teachers.
- i. Time scheduling should accommodate extra “time outs”
- j. The Programme of ICT should not be by and hoe arrangement or its implementation by “crash approach” but should be integral to the entire education delivery system.
- k. Instructional Design Approach (IDA) should be adopted in integrating ICT) in the schools vocational programmes.
- l. The Administrators of our education system need to be more committed to ICT policy implementation by the provision of requisite enablement.

Way Forward

- a. The government with the financial assistance from other bodies like the private sector, PTA, NGOs and financial institutions, should support schools through adequate provision of ICT infrastructure and resource provision in order to aid utilization of different ICTs in the Vocational Education and schools. (Jegede, Ebio& Iroegbu, 2019) equally opined that the government should provide more ICT facilities to all the basic schools to enable the schools to deploy ICT facilities for teaching and learning in the classroom.
- b. The government should increase the funding of schools through adequate budgetary the private sector and Non-Governmental Organizations (NGOs), voluntary agencies and international organizations should be encouraged to support the funding of UBE for effective utilization of ICT in the programme. The above statement is in line with the statement of (Jegede, Ebio and Iroegbu, 2019) who noted that the government should increase the funding of ICT education in all the basic schools across the country. Moreover, the 26% recommended by UNESCO to be allotted to education sector must be taken into consideration.
- c. The teacher-related problems and hindrances to ICT utilization in vocational education can be resolved through adequate teacher motivation, empowerment to boost their skills and teacher capacity building and development, among others. (Shehu, 2015) remarked that special capacity building workshops/seminars that provide hands-on and minds-on opportunities for all participants should be organized for in-service teachers in primary and secondary schools to build capacity at the Basic

education level. The central focus of the workshop should be practical application of ICTs in the classroom. In the same vein, talks, shows and discussions should be incorporated in the seminars to change the attitudes and mind-sets of in-service teachers about ICTs in teaching. Likewise, policy and curriculum provisions backed by infrastructural supplies for use of technologies to train teachers; including the application of Educational Technologies in microteaching and teaching practice at the initial teacher preparation stage; and promoting teachers' easy access to ICT devices, will aid to control the teacher-related factors hindering utilization of ICTs in Vocational and Technical Education.

- d. School administration factors should be resolved through the following means of employing effective maintenance strategies such as the preventive, routine, predictive and emergency strategies, for facility management in school; providing adequate support for teachers utilization of ICT in school through organization of capacity building programmes (like workshops, conferences, seminars, etc), effective monitoring and supervision of instructions, etc; and building/strengthening collaborations and partnerships with the school community in order gain their support towards their sponsorship, provision, development and maintenance of ICTs in school which will encourage their utilization.
- e. The government and other education stakeholders like the PTA, private individuals and investors should support schools in the procurement of ICT facilities for their utilization in the UBE programme. (Jegede, Ebio and Iroegbu, 2019) opined that the government should also subsidize ICT facilities for teachers and students to enable them to buy their personal systems. Also, school administrators should ensure that they upgrade ICT facilities and resources in the school for their elasticity and durability.

Conclusion

It has been established that ICT assists to facilitate both instructional and learning process and has great influence on the teaching and learning processes in Vocational and Technical Education. It provides opportunity for personalized, flexible and asynchronous learning and shifts the learning from teacher centred to student centred and hence is a catalyst for reforms about classroom, educational institute, community and system. It enhances the learning of the students, helps the students to learn new skills set, promotes social mobility, helps the students to compete in a worldwide economy, and thus has a multiplier effect across the education system (UNESCO, 2014), (Youssef & Dahmani, 2008).

Therefore, incorporating information and communication technology (ICT) into vocational and technical education and the educational system has a vast range of consequences for teaching and learning. ICT has enormous potential in developing vocational and professional teaching and learning content. Therefore educators have to be mindful in incorporating ICT into the educational transfer framework. However, this may result in typical guidance problems that come with reform, as it is, after all, an invention. Therefore, educators must be able to balance the advantages and disadvantages of embracing ICT as a tool.

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CHALLENGES AND OPPORTUNITIES IN THE USE OF NEW MEDIA FOR TEACHING AND LEARNING HOME ECONOMICS EDUCATION

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Abstract

This paper assays to bring to the fore the challenges and the opportunities available for the use of new media for teaching home economics education. New media is a means of mass communication using digital technologies such as the internet. The emergence of the internet has birth changes in the mode of conceiving ideas and getting things done in different spheres of life including the home, the society, different industries and education. The major areas of Home Economics Education are poised to benefit immensely from the use of the internet with evolution of modern trends that transcends food/nutrition, clothing/textiles and home management. The internet is presented as a driver and a tool for effective information delivery but this is not necessarily the case as the use of the new media is not optimal due to the challenges that accompany this positive development. These challenges range from low internet access affordability and technology utility limitations. Teachers and learners alike are liable to these challenges. On the other hand, the new media presents an array of opportunities that range from accessing simplified teaching and learning strategies to self-development. While there are challenges to overcome, the use of new media in Home Economics Education provides numerous opportunities to enhance learning experiences, promote engagement and facilitate real-world applications of knowledge. By addressing the challenges and leveraging the opportunities, teachers and learners can harness the power of new media to create a more dynamic and inclusive learning environment.

Key words: New Media, Challenges, Opportunities.

Introduction

New media is an all-encompassing term used for various kinds of electronic communication means that can be imagined due to innovation in computer technology. New media is a means of mass communication using digital technologies such as the internet. Unlike the “old media” which is comprised of newspapers, magazines, books, television and other non-interactive media, new media includes websites, online video and audio streams. Other tools of mass media communication include virtual world, social media platforms, online social environments, online communities, electronic mail, blogs, internet telephone calls, online forums, website advertisements, blogs, vlogs and online education (Nagle, 2018). The use of new media in learning is a means of collaboration and interactivity whereby teaching and learning could be interesting and fun filled. Home economics is a culturally dependent and socially determined subject area and as with other subjects has gone through several transformations within the more than a century of its existence (Anyakoha & Eluwa, 1996). These changes have been forged by cultural, globalization, environmental and technological influences. In addition, researchers are beginning to understand and appreciate the learning designs and value that integrating new media tools adds to formal education (Czerkawski, 2016).

The emergence of the internet has birth changes in the mode of conceiving ideas and getting things done in different spheres of life including the home, the society, different industries and education. Emerging innovations are making virtual and remote learning desirable (Martins, & Ungerer, 2015). Technologies like artificial intelligence and social media

are becoming an indispensable part of education both in and out of the classroom. Not only are forms of new media viewed as sources of entertainment but are an excellent form of learning (Nagle, 2018).

Home Economics, being a multi-faceted subject with relevance in almost endeavor may become ineffective if there is no conscious effort to be acquainted with these futuristic realities (Antonio & Tuffley, 2015). The major areas of Home Economics Education are therefore, poised to benefit immensely from the use of the internet together with these innovations and evolution of modernistic trends that transcends food/nutrition, clothing/textiles and home management. Guloba, Wokadala, & Bategeka, (2010) are of the opinion that teaching and learning in the classroom will be effective when the computer and other forms of modern technologies are deployed to teach Home Economics. Hence, the role of the new media in alleviating education systems cannot be overemphasized.

The internet is presented as a driver and a tool for effective information delivery but this is not necessarily the case as the use of the new media is not optimal due to the challenges that accompany this positive development (Ayaga, 2016). These challenges range from low internet access affordability and technology utility limitations. Teachers and learners alike are liable to these challenges. On the other hand, the new media presents an array of opportunities that range from accessing simplified teaching and learning strategies to self-development.

CHARACTERISTICS OF NEW MEDIA

The following characteristics below describe the features of new media:

i. It is interactive

Old media was usually a one-way occurrence, with professionally produced content being broadcast to audience or users who, for the most part, could do little else other than passively consume it as they were merely viewers or spectators. New media on the other hand, is a much more interactive form of communication in comparison. People can participate, engage and interact with the media as active audiences, customize it, and produce their own content. Members of the new media audience are able to directly change the images or texts they desire to access. Many websites now rely almost entirely on user-generated content and as such tend to only suggest user preferences.

ii. It is hypertextual

Hypertext, which may also be referred to as links, is a common feature of the internet that allows users more ease and freedom over how they browse different sources of information. This is in contrast with old media, which is inflexible.

iii. It is globally networked

The world wide-web, corporate intra-nets, virtual worlds, social network sites, e-mail distribution lists, blog networks and online forums are all networks of different scales. They are connected in a vast, dense and global network. New media has led to cultural globalization, people can now interact with others globally and form connections virtually rather than locally. This network is no longer necessarily accessed at fixed desktop work stations, but also in wireless and mobile forms whereby individuals are always on the move with them like the smart phones, laptops, personal digital assistants (PDAs) and GPS devices. This feature gives credence to the saying that “the world is a global village”. These wider networks enable collective intelligence in that they allow people to share and combine resources, data, skills and information for any given purpose of their interest and in real time too.

iv. It is virtual

New media presents a very different reality than our daily, physical reality. It comprises a virtual environment constructed with computer graphics and digital video. Welch, Napoleon, Hill & Rommell, (2014) opine that, users have control over their experience in the world but

are also subject to many different types of information, opinions, interactions and products that they would not come across in reality.

v. It is simulated

Simulations surpass the virtual nature of new media and create an immersive, artificial life. Welch, *et al.*, 2014 opines that this may be well experienced in computer games, which provide opportunities for users to experience a 'virtual life' that is simulated through digital technology. Examples include online role-playing games, driving, flight and ship-steering simulations.

vi. It is digital

Digital media technologies do not represent a complete break with traditional analogue media but they are rather a continuation and extension of a principle or technique that was already in place. In a digital media process, the physical properties of the input data, light and sound waves are converted into numbers or codes (1 or 0). Manca and Ranieri, (2016) observed that digitalization has also resulted in technological convergence, i.e., merging different forms of information (text, audio and visual) into one single but entirely new converged system. The after-effects of shifting from the old media's analogue to new media's digital form are that media texts are now separated from their physical form such as books and prints and can now be compressed into small spaces and carried about. An entire library building full of books can be compressed into a single flash drive. They can be readily accessed at high speeds in real time and can be manipulated far more easily than in their analogue state.

Majumder (2017); Manca & Ranieri (2016); Ranieri, Rosa & Manca (2016); Pangrazio (2016); Jenkins (2008); Hong & Joan (2006); Dan & Haoda (2001) and Xioning (2001);

Significance of Research

In higher institutions of learning, especially in developing countries, there has been the introduction of various forms of policies to facilitate the integration of new technologies in teaching and administration of new curricula. The people who teach Home Economics may imagine that the course has adequate hands-on experiences as a result of the number of practical activities coupled with the in-class and after classroom project component imbedded in the curricula. They may therefore not see the need to include new media as a necessary academic practice. Whilst technology is not the elixir to education, it can aid and increase the scope of teaching and learning through activities which offer new and interesting ways of developing skills (Pangrazio, 2016). New media encourages the creative use of modern information technologies to construct learning environments which are rich, varied and facilitate the development of student-centered learning practices (Kimmerle, Moskaliuk, Oeberst, & Cress, 2015).

Life in contemporary society is almost at all times influenced by media. Affordable personal computers and mobile phones are technologies that have facilitated new types of communication. As people existing in an increasingly advanced world, with technology promoting globalization, there are high chances of utilizing new media daily to keep in touch with family and associates, keep abreast with latest happenings in the world while engaging in and discovering new interests. It is not out of place that people engaged in education as teachers or learners may use it to study for academic purposes.

Available Opportunities in the Use of New Media

Technology has played role in the way domesticity has changed in the last two centuries. There have been great advances in sciences that, through their application the amount of time and the extent of labor required for many domestic tasks have greatly reduced. The most innovative technology that has appeared in the last 20 years is undoubtedly the internet. The internet has birthed skills that range from writing, oral communication to coding. The skills also provide opportunities to enhance the process of teaching and learning home economics education. The

following are opportunities available in the use of new media for teaching and learning home economics education:

1. Access to information: The internet makes it very simple and easy to access a wide range of information on practically every topic, from everyday issues to academic research. People can find information online regardless of their location and sometimes for free, this makes new media a very valuable source of information (Antonio & Tuffley, 2015). Home Economics educators and students may access information on nutrition topics, current clothing practices/patterns and management guides with practical demonstrations on websites like YouTube, Pin-interest, Instagram, Facebook and various other search engines.

2. Enhanced Learning Resources: New media offers a wide range of multimedia resources that can enhance the learning experience (Kimmerle, *et al.*, 2015). Students can access interactive simulations, virtual labs, video tutorials, and online databases, providing a more dynamic and comprehensive understanding of home economics concepts such as food cookery and service, diversification in food utilization, recipe development, food storage, processing and preservation. Other concepts that could be made clearer by utilizing new media include: basic and decorative stitches, clothing designs, body measurements, clothing construction and modification and ward robe planning and money management.

3. Personalized Learning: new media optimized platforms can provide personalized learning experiences by adapting media content and activities based on students' individual needs and progress (Pimmer, Mateescu, & Gröbhiel, 2016). This allows students to learn at their own pace and receive tailored feedback, thereby fostering a more effective and personalized learning experience.

4. Collaboration and Communication: New media tools enable collaboration and communication amongst students, teachers, and subject experts beyond the confines of the classroom. The global internet makes it easier for individuals to make connections that would not be possible at the local level or through traditional (old) media (Dron, & Anderson, 2014). New media channels such as social networks also make it easier than ever for people to stay in contact with their mentors and team mates anywhere in the world, not just through messaging but by video calling, and online meetings. Students can engage in online discussions, work on group projects remotely, and connect with professionals in the field, thereby expanding their learning networks (Hu, Gu, Liu, & Huang, 2017).

5. Real-World Application: New media can facilitate real-world application of home economics education. Students can explore and interact with practical examples, such as virtual cooking demonstrations, budgeting simulations, pattern drafting or sustainability projects, bridging the gap between theory and practice (Czerkawski, 2016).

6. Lifelong Learning Opportunities: Online platforms and resources offer opportunities for lifelong learning in home economics. Students can access educational content beyond the classroom, engage in self-paced learning, and stay updated on emerging trends and research in the field seeing that knowledge and information is constantly evolving (Czerkawski, 2016).

Potential Challenges Involved in the Use of New Media

The use of new media, such as digital technology and online platforms, also presents challenges in the field of teaching and learning home economics education. Some of these challenges include but are not limited to:

1. Access and Equity: One of the primary challenges teachers and students of home economics education would face is ensuring equal access to new media tools and resources for all students

(Bilandzic, & Foth, 2013). Not all students may have access to reliable high speed internet connections, computers, or mobile devices, which can create a digital divide and limit their ability to engage in online learning. There are a lot of activities requiring the attention of the resources available to the students and the teachers as well. Optimal use of new media may only be possible if there are subsidized data access plans and rates for campus vicinities or free internet facility within the campus.

2. Digital Literacy: Both students and teachers need to develop digital literacy skills to effectively navigate and utilize new media tools. Some individuals may struggle with using technology, which can hinder their ability to fully participate in online learning activities (Ashiona, Mwoma, & Murungi, (2018). It is not uncommon for both teachers and learners to struggle to adapt to new digital technologies. Learning new digital platforms, where to find certain information or who to ask for assistance may contribute to reducing participation or create confusion (Nagle, 2018). It could be overwhelming to the teachers and the learners and may make the academic process less interesting.

3. Quality of Information and Information Overload: The internet provides a vast amount of information, but not all of it is accurate or reliable. With the abundance of content available on new media platforms, users often face information overload. Content creators compete for visibility, potentially compromising the quality and depth of their work to garner immediate attention. Differentiating between credible and unreliable sources becomes challenging, leading to the spread of misinformation and fake news. Students need to develop critical thinking skills to evaluate and discern credible sources of information from misinformation or biased content. Alagbela, (2022) is of the opinion that the increased variety of media delivery systems, particularly digital television, has led to a decline in the standards of media produced. Many website and information channels are filled with generic, cheaply produced data heavily laden with unnecessary advertisements which may be distracting and constitute a nuisance culture devoid of creativity or uniqueness. According to Martins and Ungerer, (2015) the democratized nature of the internet can harm the quality of media content. For instance, Wikipedia, a public-produced website, can sometimes be filled with poorly written, uninformed, or false information

4. Engagement and Motivation: Maintaining student engagement and motivation can be a challenge when using new media for teaching and learning. The fast-paced nature of new media can lead to shortened attention spans among users (Czerkowski, 2016). On line platforms and digital resources need to be designed in a way that captures students' interest and encourages active participation while disabling distractions. With an endless stream of content available at their fingertips, individuals may quickly move on to the next piece of information, making it challenging for creators to capture and retain their audience's interest for extended periods (Yar, 2018).

5. Commercialization and surveillance: The commercialization of the internet has caused considerable privacy concerns. Many companies that sell products and services on the internet now also sell their customers' data by engaging in consumer surveillance (Wall, 2018). New digital technologies, e.g., in the form of cookies, can track and monitor data generated by users to further target potential audiences, thereby enhancing the company's profits (Pelton, 2018). As new media thrives on data collection and user interactions, privacy and security concerns have become paramount. Instances of data breaches, hacking, and unauthorized access to personal information have raised questions about the safety of online platforms (Zuboff, 2015). Educators and students must be cautious about sharing sensitive data, while content creators and businesses must prioritize data protection to maintain trust with their audiences.

6. The lack of regulation: Some sociologists believe that new media, particularly the internet, should be regulated by the state. Since all views, opinions and content can be freely expressed and accessed on the internet, measures should be taken to combat potentially harmful content e.g., racist and terrorism-inciting comments and websites (Wall, 2018). Additionally, malicious actors may exploit new media to disseminate misleading or harmful content, compromising the credibility of the entire medium (Yar, 2018). For campus use, it would be suitable to regulate free internet services to block distracting social media, porn sites and online dating site.

Recommendations for Effective Utilization of New Media

The effective utilization of new media to enhance Home Economics Education could benefit both teachers and students of the course. The following recommendations may be helpful for effectively using new media:

1. The teacher or student should have clearly defined goals and objectives about what they intend to achieve through new media. Whether it's sourcing for educational materials or current pattern draft trends or building a community by networking with likeminded peers, having clear goals would guide the strategy to be used.
2. It is important that the teacher understands and can connect with their student's level of knowledge assimilation. This would help the teacher to tailor their new media content and lesson approach to resonate with the students and choose the right platforms where they are most active.
3. There are numerous new media platforms available, such as social media, blogs, podcasts and video streaming platforms. It would be beneficial for the teacher to choose the platforms that align with their goals and where the students are likely to interact more.
4. It would be necessary to create high-quality content as "content is king" in new media. Produce high-quality, relevant, and engaging content that adds value and which the students can relate with. The teacher may use a combination of formats such as videos, infographics, articles, and interactive content to keep the students engaged.
6. Home Economics teachers may engage with their students online: New media provides an opportunity for two-way communication and interaction with one's audience. The teacher may respond to comments, messages, and feedback promptly. The teacher may also encourage discussions, ask questions and involve the student audience in conversations that would help boost their understanding of lesson concepts.

Conclusion

The use of new media is beneficial to every individual irrespective of purpose of use. While there are challenges to overcome, the use of new media in Home Economics Education provides numerous opportunities to enhance learning experiences, promote engagement and facilitate real-world applications of knowledge. Education has the chance to monitor and improve its own practices. Home Economics educators are afforded new ways to connect with students and, also importantly, a means to monitor and intervene in student learning so as to increase the efficacy of both teaching and learning. Students on the other hand are privileged to have a means to have ways to find, retrieve and share their learning products and opportunities. By addressing the challenges and leveraging the opportunities, teachers and learners can harness the power of new media to create a more dynamic and inclusive learning environment.

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EFFECTIVE TEACHING OF ENGLISH LANGUAGE IN NIGERIAN SCHOOLS: CHALLENGES AND THE WAY FORWARD

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Abstract

English language occupies a prestigious position in the educational sector in Nigeria. It is the language of instruction from upper primary, secondary and tertiary education. Despite the unique and significant roles the English language plays, its teaching in Nigerian schools is a daunting task. Teachers in Nigerian schools are still faced with many challenges that militate against teacher's education. This paper discussed the challenges which English language teachers face in the teaching of English language that militate against teacher education. Furthermore, the factors which make teaching of English language a serious challenge are also discussed. Recommendations to make language teaching less burdensome were also made.

Keywords: Teaching, Teacher Education, English Language, Nigerian Schools

Introduction

It is common to describe the action of teaching as the art of imparting information or skills to another. Teaching can also be referred to as the profession of those who give instructions, especially in an elementary school or a secondary school or a higher institution. (Britannica, 2023) teaching can be referred to as both an art or science, as an art it lays importance on the imaginative and artistic qualities of a teacher in creating a worthwhile learning environment. As a science, it stresses on the logical, mechanical or procedural steps to follow that would lead to achievement of goals.

There are different educationalist who hold different ideas on the concept of teaching Nwankwo (2019) asserts that teaching is an intimate contact between a more mature personality and a less mature one which is designed to further the education of the latter. On the other hand, Oforjebe (2018) opined that teaching is an arrangement and manipulation of a situation in which there are gaps and obstructions which an individual will seek to overcome and form which he will learn the course of doing so. The main aim of teaching is to produce learning.

Teaching is the world's largest profession as measured in terms of its members, there were about 80 million teachers estimated throughout the world in the 21st century. The roles and functions of teachers do vary from country to country and the nature of the activities that constitute teaching depends more on the age of the persons being taught. Primary or elementary school teachers happen to be the most numerous all over the world while teachers at the higher institutions make the smallest group.

This would lead us to the question who is a teacher'? In modern usage, the words "teaching and teacher" are interwoven with schooling and schools. A simple way to approach the question "what is teaching?" is to look at what those that are called "teachers" do and then draw out key qualities that set them apart from others. Offorma (2017) asserts that a teacher is a professionally trained person who is knowledgeable in theory and practice of education. Lassa in Iji and Uka (2012) buttresses this point that if we do not have well trained, qualified and motivated teachers, we may not achieve the desired goals in implementing the curriculum.

Nigerian schools system comprises basic/elementary education, senior secondary school and higher institutions. In Nigeria, the English Language has risen to the prestigious status of a lingua-franca due to the multi-ethnic groups that speak different languages, English is the prescribed language of communication among the various ethnic groups. In social gatherings, English is used among people for social interaction. In education, English language is used as means of instruction in Nigerian schools and it is also introduced as a school subject. English language is the language of education in Nigeria, it is the medium of instruction in all subjects from upper primary education, secondary and tertiary education.

A credit pass in it is also a requisite for admission to higher institutions. Given its communicative, academic and professional value, it is important that, in all stages of learning English Language is adequately taught by teachers. This is because, as a second language, proficiency in English among Nigerians is greatly tied to the quality of its teaching. Teachers of English in Nigeria must therefore as a matter of fact possess linguistic knowledge and communicative competence.

The standard of the English language is rapidly falling in our schools, it is observed that despite the prestigious position the English language holds, many school students are unable to communicate in the language. They neither speak in simple correct English nor write well in essays without making a lot of grammatical blunders. The present inadequate knowledge of English language by the Nigerian students present an impediment to national development and educational goals. Zimmerman, (2007) states that English language is a set of words that are the basic building blocks used difficulty of the English language, lack of textbooks government policies. In the generation and understanding of sentences. This makes it pertinent that English language teachers should teach this very important language efficiently and effectively to arrive at bringing a positive change on the learners. English language teachers have been faced with several challenges such as our English teachers are not well trained, a situation where a teacher of language has no mastery of its grammatical categories does not mean well for the system. Other challenges are methods of instruction. difficulty of the English language, lack of textbooks, government policies. This paper therefore attempt to examine the challenges faced by English language teachers in the effective teaching of English language in Nigerian schools.

Concept of English language and objectives of teaching English language

The English language originated from the North Western Europe. The language was first spoken by the greatest number of people, tribes in Denmark and Northern German, Eneh (2008) observed English language was the name for all the inhabitants of England, Since Nigeria gained independence from the British people, English has been enjoying a high status within the Nigeria society. English language was the heritage left behind in Nigeria society. English language was the heritage left behind in Nigeria by the British at the end of their stay. English language is used as a means of instruction in schools and introduced as a school subject. Incidentally, English language become a second language, official language, language of commerce and Western education. It is therefore impossible to relegate it to the background.

English language has four basic skills-listening, speaking, reading and writing, these skills have to be well developed in learners for them to be termed competent in the language.

Listening: the teacher can develop the listening ability of learners by involving them in activities such as storytelling, conversations drills, dictation etc. Teacher should teach learners how to take down notes while listening Adejumola and Omolape (2013) opined that through enriching activities and exercises in the classroom, mostly in the form of repetition, good pronunciation, habits can be formed.

Speaking: Speaking is another important skill that teachers of English should develop in learners Oyinloye (2012) defined speaking as a production of meaningful utterances in an attempt to communicate ideas, thoughts and feelings. Speaking entails pronunciation, social variation with language, grammar etc. A good English language teacher must pay attention to the Supra segmental features such as stress, rhythm and intonation as well as vowels and consonants.

Reading: Reading is a matter of searching for the thought that was in the mind of the author and which now lies in the meaning of the words which are before the “reader” (Laedy, 2014). Teachers of English should encourage learners to read extensively as it facilitates learners interest in developing their reading skills to increase their vocabulary.

Writing: This skill comprises all the other three skills, and incidentally, the listening skills, speaking skills, reading skills all manifest their ways into the writing skill.

The objectives of Teaching English in schools the study of English language has been documented in the National Policy on Education (NPE) the 9 year Basic Education curriculum English studies for JSS 1-3 and WAEC and NECO Senior Secondary School syllabuses. The main objectives of the English Language at the senior secondary school level and beyond are to:

- Help students develop mastery in the four language skill of Listening, Speaking, Reading and Writing
- Help students become confident and competent in the use of spoken and written English
- Develop the language proficiency necessary for performing well in other school subjects
- Equip students with an adequate range of words and sentences that would enable students function effectively in everyday situation.

Teaching and the goals of Teachers Education in Nigeria

A teacher is a professionally trained person who is knowledgeable in theory and practice of education. Such a person must be dedicated and committed to the course of effective, efficient and competent learning of individuals (learners) under his care. Edegbo and Edegbo (2009) opines that any successful teachers is one who understands the learners and cares about them Osuji (2009) regards teachers educations as the professional education of teachers to equip them with right attitudes, skills, knowledge which would make them to embark on their responsibility efficiently and effectively.

The Goal of Teachers Education

The National Policy on Education (2004) states that the minimum qualification for entry into the teaching profession shall be the Nigeria Certificate of Education (NCE). The goals of teachers education are as follows:

- Produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational system.
- Encourage further, the spirit of enquiry and creativity in teachers
- Help teachers fit into social life of the community and the society at large and enhance their commitment to national goals
- Provide teachers with the intellectual and professional background adequate for their assignment and make them adaptable to changing situations.
- Enhance teachers commitment to the teaching profession.

Importance of English language in National Development

Education is a major tool in human development and it's of importance to note the language through which education is acquired. English language is the language of education in Nigeria. English language is the language of education in Nigeria, it is a medium of instruction and every form of education is expressed and acquired through English language. English language is a vital factor for national development and there are many benefits that are acquired through English language, such as:

- Allowing Nigerians to live peacefully together even in multi-ethnic and diversified nature, considering the multilingual nature of the country, communication crises that would have occurred among people from different linguistic background is bridged by the use of English. This peaceful co-existence engenders development either on individual or national basis.
- Advancing Nigerians economically, Locally, People engage in international businesses facilitated by the use of English such trading and other business activities to increase in their economic power and improve their standard of living.
- The states of English language as a secondary language in Nigeria has attracted foreign investment (FDI), inflows from English speaking countries such as UK and USA. These investments in turn create more Jobs and Career opportunities for Nigeria.
- Access to better health facility
- Higher productivity

Some Selected Methods of Teaching English Language in Nigeria Schools

Teaching methods are essential tools in the English classroom and they are an indispensable part of the teaching-learning process. There are many methods from which teachers can choose from when preparing a lesson.

A method is an overall plan for the orderly presentation of language materials and is based on the selected approach. Therefore the language teachers have to evaluate the methods he wants to use before making use of them. Some of the methods of teaching English language are as follows:

- Grammar-translation /(traditional method)
- Direct method
- Audio-Lingual Method
- Communicative language teaching (CLT)

Grammar-translation method (GTM)

The grammar translation method was first used in the teaching of classical language, Latin and Greek during the 19th century and later for the purpose of helping students read and appreciate foreign language literature. The idea of GTM arose from the fact that the L2 is logically and systematically explained followed by rules, copious examples, words to be learned by heart and translation exercises based on the portion of the grammar taught. In GTM, students are made to break down sentences and define parts of speech, this method is teacher-centered in that the teacher does the talking and deny students the active participation that is necessary in second language learning.

Direct method

A new method of teaching a foreign language was advocated for because of the ineffectiveness of the grammar-translation method. This method was known as the direct method (DM). This method means the creating of the environment similar to that in which the child learns his

mother tongue in the learning of L2 and that language learning is a natural process. It lays emphasis that language has to be learnt from the order of listening, speaking, reading and writing. The direct method discourages writing at early stage but makes use of gestures and miming.

Audio-lingual Method (ALM)

The audio-lingual method was developed in the United States of America to help people learn foreign language. The need for the choice of ALM was because of the exciting new ideas about language and learning from the descriptive linguist and the behavioral psychologist. The ALM which is based on structural linguistics emphasizes overt patterns of behavior of the learner to stimuli. The audio-lingual method lays emphasis on spoken language and the teaching of language as it is spoken by the native speakers. The ALM is learner centered and very effective in teaching listening and speaking skills.

Communicative Language Teaching

Communicative language teaching (CLT) CLT views language as a form of social behavior and language teaching as training learners to communicate fluently, appropriately and spontaneously in the cultural context of target language English.

Challenges Faced by English Language Teachers To Effective Teaching Of English Language

English language teachers in Nigerian schools encounter many challenges in their attempt to improve the teaching of English language. Such challenges include: lack of textbooks, teachers inadequacy, overcrowded classrooms government policies, methods of instruction.

- **Method of Instruction**

The choice of methods of teaching English Language in Nigerian schools has been made worse by the diversification in teaching methods. Teachers in multilingual setting as Nigeria are faced with the challenges of adopting the appropriate method(s). Though there is none of them that can be regarded as the best for every teaching situation. Many teachers base their teaching methods on assumptions because they are not conversant with the latest ways and appropriate trends of teaching English language. English teachers do not seem to realize that the teaching learning situation underwent a paradigm shift after communicative language teaching (CLT) came into existence in the late 1970s (Joy 2011)

- **Decline in the Quality of Teachers**

Teachers determine to a large extent what happens in the classroom. They need to have a solid understanding of the subject, the right skills and abilities of how to present instruction in the right way to make students successful. However, there is a huge decline in the quality of teachers, are not only well trained but also non-professionals. Onu Kaogu (2007) states that the government does not make provisions for the training of professional who are trained to teach it but English Language teaching has become an all comers affair.

- **Teachers Inadequacy to Teach Effectively**

There are so many areas of difficulties facing English language teachers teaching of English Language in Nigerian schools. In the teaching of concord-Agreement of subject and verb, most

teachers hardly teach this area and poses difficulties for students to understand this vital aspect of English grammar. Another challenge to teachers is on teaching comprehension passages to students. Agwu (2005) states that many students who fail the English language in public examinations admit their poor performance in the comprehension section. Teachers only read the passages and then answer the questions that follow.

- **Difficulty of the English Language**

English language is a second language (12) in Nigeria and is surrounded by its own features which makes its learning and teaching very cumbersome. Omigbo & Eyisi (2009) opines that second language is a technical representation of the functional position of that language rather than its position in sequential order of acquisition. The problems which is prominent in phonology, vocabulary, syntax and semantics are mainly as a result of language contact or Mother Tongue Interference.

- **Lack of Textbooks**

Most teachers face the problem of not having enough or current textbooks to teach English Language. This has rendered many teachers to teach outdated language, a child acquires the Mother Tongue, such that it becomes difficult for him to learn and speak a very good English with the interference of the mother tongue.

- **Absence of Modern Instructional Technologies**

The absence of modern instructional technologies such as computers, audio and videotapes in the classrooms has led students to only listen to their teacher's rhetoric and left to conceptualize the message of the lesson according to the capacity of their poor brains. With the application of modern instructional technologies in the classroom, instruction can be more student centered, stress-free and individualized.

- **Government Policies**

Government Policies have equally impeded English language teacher's effective teaching of English in classes. The frequent changes in prescribed textbooks, teaching methodology are always interrupted, altered and complicated.

Way forward

In order to solve these challenges encountered by English language teachers, the paper suggested: Establishment of language laboratories, adequate supply of educational facilities, improved conditions of service, employment of professional teachers, teachers exposure to ICT gadgets.

Establishment of Language laboratories

The establishment of language laboratories will help teacher improve their spoken English by developing proper pronunciation and intonation and invariably reduce fatigue or irritation that teacher face in their jobs.

Training and Retraining of English Language Teachers

Government should establish teacher training institutions with programmes and incentives to encourage would be teachers. There should be regular capacity-building workshops and professional development programmes for English teachers to help teachers to be updated with the ever-changing nature and structure of the English Language.

Provision of Educational Facilities

Federal government in collaboration with other stake holders in the education sector should ensure adequate supply of educational facilities, this facilities help prepare the teacher for skill acquisition for effective performance of their duties.

Employment of Professional Teachers

The government should employ highly professional and efficient teaches in the nation's schools. Those who are qualified to teach English language should be employed.

Conclusion

English language is the language of education in Nigeria, it is used as the medium of instruction from upper primary, secondary and tertiary education. However, the teaching of the English language in Nigeria schools has been suffering challenges and government neglect the choice of teaching methods, teacher's inadequacy to teach effectively, difficulty of the English language, lack of textbooks, government policies are all setbacks to effective teaching of English language. The paper suggested establishment of language laboratories, training and retraining of English language teachers, provision of educational facilities, as the way out of such challenges.

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THE ROLE OF DIGITAL CITIZENSHIP EDUCATION AND DIGITAL CITIZENSHIP BEHAVIOUR IN NIGERIAN TERTIARY SCHOOLS

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Abstract

The study focused on digital citizenship education and digital citizenship behaviour in Nigeria Tertiary Institutions. Digital Citizenship is important due to the rapid shifting of landscape of internet used. Students use digital tools extensively both in their schools lessons and at their home to enhance learning. So they need a safe behaviour when engaging in digital activities. Students need to understand the social involvement and dignity through responsive use of technology. Educators need to instruct students on how to respect, inform and defend themselves when using digital technologies. The study therefore considered the concept of digital education and citizenship behaviour, it also looked at the need for digital citizenship education in Nigeria Tertiary School and the role of digital citizenship in Nigeria School. The study recommended that there should be awareness and orientation for students and teachers on the need for digital citizenship education. There should be massive computer training for all teachers and students organized by government nationwide through in-service training or workshop and conferences.

Key words: Digital citizenship, Digital citizenship education, Digital citizenship behaviour.

Introduction

The need for a transition in educational effort from knowledge absorption to knowledge consumption and generation is driven by the growing inter connectedness of the world. Education no longer merely aims to prepare students for an effective life in their immediate society but to prepare them for life in a fast changing world driven by technology. The development of information and communication technology over the past few years has had a big impact on various sectors, including education. Technology has impacted education to the extent that teaching and learning can be done everywhere defiling the constraints of time, distance and space thanks to technological innovation. In terms of education, the pre ICT era's limitations on the time and location at which learning could take place for both students and teachers have been broken by increasing access to the internet and better availability of learning resources and technical tools.

Further-more, we are living in a time where people can receive news updates online at the swipe of a finger, social media activism is a way to reach and mobilize large parts of the population and information is constantly being created and is openly accessible by anyone with internet access. In fact, being a part of the community insist on an online presence, specifically through social networking and social media platforms.

Consequently in Nigeria and at the peak of the COVID 19 pandemic Tertiary Institutions School were encouraged to transition to online learning as an alternative to traditional face-to-face learning in a bid to limit physical contact in order to halt the spread of the coronavirus. Online learning is basically driven by the internet with lots of advantages but usually exposes students to the whims and caprices of the online digital space. Although students are digitally saucy, many risk are present in the digital world that they should be

protected from. These risk include sexual exploitation cyber-bulling, phishing, and identity theft, to mention but a few. Therefore, it is necessary for students in tertiary institutions to adequately equip themselves with appropriate digital citizenship behavioural traits that will able them to cope in digital space as they participate in their online learning classes. There should be no assumptions that students in tertiary institutions are fully equipped for online learning. This is because, it is crystal clear that digital immigrants, persons who were raised before the digital age, are the decision makers and the teachers of the digital natives are there might be some unintentional procedural gaps in the entire online teaching and learning processes of individuals who were born during or after the integration of teaching and learning processes of the digital natives. Digital natives are individuals who were born during or after the integration of technology within the classroom, or the “digital age”. The term digital native was originally defined as being born on or after 1990, however, some scholars define individuals born between 1980 and 1990 as the “first generation of digital natives” (Helsper & Eynon, 2009).

The digital natives can be lined to the natives of a country or geographical space who are expected to understand and speak the language of that country to get the full benefits on citizens. As aptly opined by Fomsi (2021) digital natives speak the digital language the language of computers, smart phones, tablets, the internet web 2.0 technologies and online video games, just to mention a few. They are required to follow the recommended code of conduct for that geographical space or region. This code of conduct contains vital information on the acceptable behaviour of the citizens that will enhance the mutual coexistence of all the stakeholders comparatively, looking at the digital world of the internet and online learning, there are vital pieces of information on the ethnics and affordances of the digital space. Such knowledge will help all the navigators in the digital environment to maximally benefit and mutually coexist. This is referred to as digital citizenship.

Concept of Digital Citizenship Education

As our contemporary cultures advanced and make greater use of technology, the idea of digital citizenship has expanded. New definitions of the appropriate use of technology have emerged in response to new uses and abuses of technology. Alberta Education (2012); referred in Jones and Mitchell (2016), defines citizenship as belonging to a social, political, or national community. This definition can help one to better comprehend the idea of digital citizenship. As a result, the concept has the community at its core; in other words, citizenship occurs within a community and entails both rights and obligations. Citizenship has historically be used to describe belonging to a geographic physical limit. Citizenship provides people living in a geographical region with civil, social, political and economic rights. Citizens are expected to obey the laws governing the geographical space they belong to. Citizenship is a legal status and an entity. Digital citizens recognize and value the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they engage in safe, legal and ethical behaviours. A digital citizen refers to a person utilizing information technology in order to engage in society, politics, and government. Haller, Li and Mossberg, (2011) defined digital citizen as those who use a concept which help teachers, technology leaders, and parents talk about what all users should know regarding appropriate technology use.

Digital Citizenship is more than just a teaching tool; it is a way to prepare students/technology users for a society full of technology. Too often we see technology users misuse and abuse technology because they are unaware of what is appropriate. The term “digital citizenship” describes citizenship in the digital sphere several authors have provided definitions of it. Digital citizenship, according to Ribble (2020), is the accepted standard of

conduct for using technology in daily life. Digital citizenship may also be referred to as a norms of behaviour with regard to technology use. According to Zook (2019), it involves using technology, computes, the internet, and other electronic gadgets responsibility to engage society's citizens. It implies that technology users should behave well when interacting online. Digital citizenship is a comprehensive notion that includes safe behaviours when engaging in digital activities. It means healthy technology use, as well as ethical technology use. According to digital Response – Ability (2020), "digital citizenship" is a broad term that encompasses a variety of topics, such as maintaining one's online health, participating in civic and political activities online, maintaining one's online, safety, having effective communication, and media literacy. It includes everything a person needs to know to perform responsibility in a world where technology is pervasive. As a way of understanding the complexity of digital citizenship and the issues of technology use, abuse, and misused, Ribble, (2020). Opined that the idea of digital citizenship came about because people will need to behave responsibly and respectfully as a good citizens since there will be more online activities. Ribble (2020), also asserted that many students utilize technology and might not be aware of certain behaviours that should be encouraged or discouraged. He further proposed the Digital citizenship framework for educators to follow to encourage digital citizenship behaviour in the classroom.

Concept of Digital citizenship Behaviour

Digital citizenship behaviour refers to the standards of proper conduct when using technology (ISTE, 2022). In order to practice forms of social involvement that are respectful of human rights and dignity through responsible use of technology, digital citizenship requires the capacity to engage constructively, critically, and skillfully in the digital environment: To illustrate digital citizenship education in more detail.

Ribble (2020) divided digital behaviour into three categories in order to adequately define digital citizenship behaviour: Treat others with respect, educate yourself and others, and safeguard yourself and others. Maintaining a secured online environment for instruction and learning is the responsibility of both teachers and students (Philips & Lee, 2019). Therefore, educators must understand how to instruct students on how to respect, inform, and defend themselves when using digital technologies. According to Ribble, respecting oneself and others means following digital law, digital etiquette, and access to the internet. Digital commerce, digital communication, and digital literacy are all parts of educating oneself and others. Digital Rights and Responsibilities Digital Health and wellness, and Digital security they are all parts of protecting oneself and other online.

The Need for Digital Citizenship Education in Nigeria Tertiary School

Digital Citizenship Education has become a priority for societies that see technology integration as a major teaching and learning strategy for preparing students to live and work in the 21st century. The concept aims to prepare students, who are new or immature in the digital world in which they live, for a society using technology. According to Ribble and Bailey (2007), the concept of digital citizenship education is gained from an early age. Evolve to suit the needs of young citizens and the social, political and communication worlds they live in (Bennet, wells & Rank, 2009). They. COVID – 19 pandemic that struck various parts of the world had a major impact in the form of changes in various sectors of life, including the education sectors. With the COVID-19 pandemic, learning that was originally always carried out face to face was transitioned online meaning that every young learners must use the internet and other digital tools to continue their learning. Also, the demand for higher education driven by technological innovation is expanding exponentially throughout the world and thousands of

young people in Nigeria seeking higher education E-learning has proved to be a viable option, especially in higher education though it is not a new phenomenon in promoting education in learning has proved to be a viable option, especially in higher education though it is not a new phenomenon in promoting education in some part of the world.

Presently, some schools in Nigeria are using it to promote distance education and lifelong learning. According to Ayodele (2010), many nations of the world have in recent applied the use of e-learning which means the use of wireless electronic technology to deliver and receive knowledge and skills. However, Nigerian tertiary schools can be said to be behind in the adaptation of these technologies as there is evidently an extremely low rate of diffusion of e-learning and as a consequence, a low rate of usage. There is also the concern of students having the analytical abilities they need to analyze, comprehend, and interpret material from the internet, which is extremely harmful. In addition to optimizing learning in the pandemic era, the application of the concept of digital citizenship through online learning is due to the increasing moral degradation in the use of technology.

Given the importance of digital technologies most countries have fashioned out a robust educational policy in their educational system hence they have to prioritize digital technologies. Nigeria is not an exception to this. It is realized by stakeholders or educational policy makers that digital technologies must be incorporated fully into the educational system. This is reflected in the policy on ICT by the Federal Government of Nigeria in their 9-3-4 educational policy which entitled National Implementation Guidelines for ICT in Education is henceforth called (NIGICTIE 2019). It has vision and mission, is to make education universally accessible, empowering, inclusive and enriching. “And the mission is to meet the human capital investment of the nation for attaining and enhancing sustainable socio-economic development, global competitiveness as well as the individual’s ability to survive in a contemporary environment” NIGICTIE, 2019).

The objective of ICT in education are spelled out in the educational policy on ICT these are:

- To facilitate the teaching and learning processes.
- To promote problem – solving, critical thinking and innovative skills.
- To promote lifelong learning and advance knowledge.
- To enhance the various teaching/learning strategies required to meet the need of the population.
- To foster research and development.
- To support effective and efficient education administration.
- To enhance universal access to information
- To widen access to education and the range of instructional options and opportunities for any-where, any-time, any-place and any-path learning.
- To promote the commercialization of ICT in education.
- To develop and support technical infrastructure that maximizes digital creativity, sharing and innovation.

The Role of Digital Citizenship Education in Nigeria schools.

It is the responsibility of educators to guide and teach students how to be digital citizens in the rapid – moving world of the internet. A digital citizen is a person who has the skills and knowledge to use the internet effectively and responsibly and they participate in society Ribble & Park, (2019), students of today need to be prepared for their future, but also for what is currently happening. Teaching students and families about digital citizenship and how to use online tools to impact their communities should be at the forefront for all educators.

Technology has been present in the majority of schools across the country as took to enhance learning and engage students, but the role of technology shifted in 2020 to the COVID-19 pandemic. In May 2020, “48 of 50 state had closed their schools or recommended that all schools in their state be closed (and shifted) from primarily face-to-face, in classroom instruction to digital learning facilitated over the internet from home” Evans J. A. (2020) concluded that virtual communication is the only way to communicate and teach. It is trrier than ever that we live in a world open to the endless possibilities of the internet Roquet 2019). What is made possible today through this global connection will only grow and become more encompassing as we step into digital citizen.

Another role of digital citizenship education in tertiary schools in that educators should educate students about digital citizenship education which involves teaching them how to use technology responsibility, safety, and with good behaviour both inside and outside of the classroom. It is the capacity to communicate effectively in ways that respect human rights and the online environment which participating critically, positively, and ethnically in the digital sphere. Digital citizenship play a vital role in Nigeria tertiary schools thereby it ensure the safety of the students online.

- It promote respect in digital interaction.
- It teaches responsibilities in managing personal information and media consumption.

Conclusion

Young people have been reliant on the internet, computers and on digital technologies for learning and communication in recent aims but it seems that policy makers in education rely on parents more than curricula or raising awareness among students regarding the use of technology. Based on the scholarly literature reviewed in this paper, it is significant to merge efforts between tertiary schools and universities to bridge the gap between technologies as a life tool and as an academic proper usage. Thus, this paper sheds light on the education of young learners on the concept of citizenship and how to use technologies appropriately.

Recommendations

In this paper, an overview of digital citizenship education in tertiary schools was the focus and the following suggestions:

- 1 Awareness training and orientation should be periodically organized for students and teachers on the concept of digital citizenship education and the safe use of technology.
- 2 Education policy makers in Nigeria should restructure the existing curricula to include technology – based practices to enhance students’ technological expertise and facilitate the appropriate use of technology as an effective learning tools.
- 3 Massive computer training for all teachers and students should be organized by the government nationwide through in-service training of workshops and conferences.
- 4 Ensure that all educational institutions and establishments are interconnected to create a common platform that will facilitate the sharing of resources and reduce duplication.

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AVAILABILITY AND UTILIZATION OF DIGITAL TECHNOLOGY IN THE TEACHING/LEARNING OF CHRISTIAN RELIGIOUS STUDIES: A CASE STUDY OF FEDERAL COLLEGE OF EDUCATION OBUDU.

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Abstract

This study was aimed at determining the availability and utilization of digital technologies in the study of Religious Instruction at the Federal College of Education Obudu. The population comprised about 120 years one to three students offering religious instruction in the 2022/23 academic session. A researcher constructed questionnaire titled “Digital Technology Availability and Utilization Assessment Questionnaire” (DTAUAQ) was used to obtain information from the respondents. The obtained data were analyzed using frequency count and simple percentage. It was found that many of the technologies are not available to the students. Also, a good number of the students do not make frequent use of the available technologies in their study of Religious Studies. It was therefore inferred that with the status quo, the realization of the empowering role of ICT enhanced education will remain a mirage to students who specialize in Religious Studies. Consequently, it was recommended among other things that heads of institutions should ensure that all the recommended digital technologies be made available to every department in their colleges whereas the Heads of Departments should ensure their integration in teaching and learning.

Keywords: Digital Technology, Information and Communication Technology, ICT Enhanced Education.

Introduction

The strategic use of digital technology in almost every field of human endeavor since the second half of the 20th century has necessitated the integration of such technologies in the classroom. This is especially the case in the advanced nations of the world. The developing nations are however not completely left behind in this innovation. A case in point is Nigeria where the federal government has observed that education is facing the severe shortage of ICT skills and personnel necessary for attaining an education that is universally accessible, empowering, inclusive and enriching. This observation has also led to government’s emphasis on “ICT Enhanced Education” which among other things is said to be empowering. According to the Federal Ministry of Education (2019) it is empowering in the sense that:

- Teachers and trainers use technology to support all learning across the curriculum, functioning as coaches mentors, advocates and managers of information,
- Through on-going and professional development, all teachers and trainers acquire the knowledge and skills to integrate technology into a challenging and interdisciplinary curriculum which addresses specific needs, developmental levels and leaning styles of learners;
- The teachers and trainers are transformed through technology from authority-experts to facilitators guiding the students/learners to use technology to find answers online;
- The students/learners are empowered to find their own answers, making the learning process to become more interesting

- The students/learners are transformed from passive recipients of the knowledge of the teachers/trainers to active participants in knowledge seeking and knowledge construction, with the teachers/trainers often learning new technology programmes along with them.

These expected functions of ICT enhanced education must have accounted for the inclusion of such facilities as typewriter, computer, projector, slides of Bible lands cameras, radio video cassettes among the facilities needed for the teaching and learning of Christian Religious Studies (NCCE, 2012). It also justifies the inclusion of Introduction to Computer Studies I and II among the General Studies courses for years one and two students respectively in Colleges of Education who do not offer Computer Science as their major course of study. Ordinarily speaking, one would not expect such a course to be made compulsory for students offering Religious Studies which was initially construed to be concerned with the investigation of basic components of human society and culture and the impartation of morals. Contrary wise, a look at the goals of Arts and Social Science courses (of which Christian Religious Studies is a component) at the National Certificate of Education level proves otherwise. Among the said goals is to help students acquire basic knowledge and values needed to enhance the quality of their lives and the life of the nation. Another goal of Arts and Social Science is to help the students acquire the spirit of self-reliance, positive image and balanced personality.

One of the guaranteed means through which a Christian Religious Studies student can acquire basic knowledge and values needed to enhance the quality of life after being exposed to the rudiments of computer science through the General Studies courses in this 21st century is through the application of digital technology (i.e. electronic tools, devices, systems and resources which generate, store or process data) in his course of study. Hence, the inclusion of the above mentioned facilities for the teaching and learning of this course.

The importance of technology to the teaching of Religious Education in particular is aptly captured by Tuyizere (2020) when she noted that in the 21st century, the teaching of religious education is no longer concerned with imparting morals and passing of national examinations as it has traditionally been but that the teaching of religious education ought to be concerned with empowering learners with lifelong skills that enable them to meet the new demands of development and market economy that are driven by technological innovations. Continuing, Tuyizere said that if one must survive and succeed in today's fast changing world, it is necessary that the person acquires a breadth of skills rooted in academic competencies such as literacy in technology... Okoro and Ekpo (2016) also believe that implementing ICTs in the process of teaching religion can improve students' interest as well as enhance creative thinking. Other benefits of digital technology include enabling students to associate concrete and tangible facts with abstract concepts, promotion retention as well as exposing students to practical skills. The integration of digital technology in the study of religion will also make students to participate actively in the class rather than being passive listeners to whatever the teacher has to offer.

It is against this background that this study is designed to find out the extent to which Religious Studies students of the Federal College of Education Obudu utilize digital technologies in learning their course of study.

Statement of the problem

It is a well-known fact that despite the above advantages of digital technology, many students seem not to know how to use them to maximize their learning of religion. Thus, irrespective of the number of hours they spend on the internet and social media per day, most of them can hardly use these technologies to find answers to simple questions in their field of study. Whereas some students indulge in different forms of fraudulent practices using these

technologies, others use them basically for recreational activities to the point that they constitute a major source of distraction to their studies. This seemingly ignorance of appropriate use digital technologies in learning by students in this 21st century constitutes the problem of this study.

Purpose of the study

The purpose of this study is to find out the extent to which Religious Studies students of the Federal College of Education Obudu understand the importance of digital technologies in learning Christian Religious Studies as well as to determine the extent to which they use the available technologies to enhance their learning of the subject. Specifically, the study will:

- (i) Identify what digital technologies are available for students use in their learning of Christian Religious Studies in the Federal college of Education Obudu,
- (ii) Determine the extent to which the students make use of the available technologies in learning their course of study
- (iii) Examine what the students perceive as the benefits of applying digital technologies in the study of Christian Religious studies.
- (iv) Identify the factors affecting students' use of digital technologies to learn Christian Religious Studies.

Research questions

The following research questions will guide the study:

1. What digital technologies are available for students' use in learning CRS at the Federal College of Education Obudu?
2. To what extent do the students utilize the available digital technologies to study CRS?
3. What do students perceive as the benefits of using digital technologies to study CRS?
4. What factors limit students' use of digital technology in learning CRS?

Significance of the study

The findings of this study is significant in that it will expose both students and lectures of Christian Religious Studies to the importance of integrating digital technologies in both the teaching and learning of the course and thus challenge them to do so. This, it is hoped will make them seek ways of overcoming whatever obstacles they may be facing in their bid to make effective use of these technologies in their subject area. Such a move will hopefully enhance the capacity of the lecturers and thus, make them more competent in handling their subject. The students themselves will equally be equipped with the skills needed to function effectively in the 21st century through utilizing digital technologies in learning their subject.

Literature Review

It is necessary to start this review by firstly clarifying the relationship between Information and Communication Technology (ICT) and digital technology. According to Lisedunetwork (2023), Information and Communication Technologies is a common term referring to the technologies used for collecting, storing, editing, and communicating information in various formats. It includes any communication device or application encompassing radio, television, cellular phones, computers and network, hardware and software, satellite systems and so on and the various associated services and applications. Digital technology on the other hand is defined as the branch of scientific or engineering knowledge that deals with the creation and practical use of digital and computerized devices, methods, systems e.t.c (Random House, 2023). Digital technologies enable immense amount of information to be compressed on small

storage devices that can be easily preserved and transported. It encompasses various technologies that operate based on digital data, such as computers, smart phones, digital cameras, digital audio players, etc. It also quickens the speed of data transmission. As a subset of ICT digital technology focuses on the use of *digital data* and *electronic systems*.

Goodman (2023) has identified the following 20 examples of digital technologies: Websites, Buying and Selling Online, Smartphones, Digital Televisions, Video-streaming, eBooks, Digital Music, Geolocation, Blogs, Social Media, Computers, Printers, Self-Scan Machines, ATMs, Digital Cameras, Cars and Other Vehicles, Clocks, Robotics, Banking and Finance

Springer Nature (2022) identifies the benefits of digital technologies to include: the opportunities to develop a range of skills (e.g. subject related skills, communication skills, negotiation skills, emotion control skills, organizational skills, creativity, metacognitive skills, life and career skills), opportunity to develop digital skills (e.g. information skills, media skills, ICT skills), positive attitudes and behavior towards ICTs, positive emotions (e.g. increased interest, motivation, attention, engagement, confidence, reduced anxiety, positive achievement emotions, reduction in bullying and cyberbullying. Commenting on the benefits of the internet, Okoro and Ekpo (2016) remark that it provide many kinds of information and learning tools in educational lines and that by using multimedia activities, teachers can attract students' interest in learning process and that students understand more if they learn by using something that will attract their interest. They further opine that by implementing ICT in religious teaching process students interest and creative thinking will be improved and that it will enable them associate between concrete, tangible facts from the abstract ones, to help promote students retention and to facilitate the simulation and recovery faces. Other benefits they highlighted include making them active participants rather than spectators in teaching and learning process.

Pertaining specifically to Religious Instruction, Utkarsh-Lockesh and Fokide (as cited in Tuyizere, 2020) opine that technology is a tool to aid Religious Education teaching-learning process and should not be used as a separate tool but should be integrated in all subjects taught in all classrooms. Continuing, they say that using technology enhances in Religious Education students' critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate tools and resources.

Aikonen (as cited in Okoro and Ekpo, 2016) observed that the use of ICT in Religious Education was comparatively a later development with churches, students and religious education instructors showing little interest in it. He went further to remark that since ICT has entered the classroom over the decades, pedagogical development should be encouraged through training of teachers in the use of ICT in religious instruction. The fact that religious education scholars in general did not initially see a relationship between religious education and technology is evident in the words of Marcus (2018) when he posits that despite concern about the impact of online education on the higher education landscape, few scholars of religion and education have published research on the subject and that there is in fact a paucity of research on the relationship between religious studies education and technology in general. Marcus supported his viewpoint by noting that one scholar reviewed more than 400 articles in a journal of religious education and found no articles on digital technologies.

The benefits of the use of technology in learning is highlighted by Newton (as cited in Marcus, 2018) when he proposed that instructors have the responsibility to help students understand technology especially smartphones as a tool that can facilitate study habits (e.g. note taking and oral processing), collaborative intellectual exchange (e.g. backchannel conversations during class via shared notes), online research and identification of reference works, and the production of new knowledge and resources through nontraditional assignments. Tulinayo, Ssentum and Najjuma (2018) also found the mobile phone to be mostly

used by students as those of them who cannot photocopy or print out their class note, use their mobile phones to access, read and store these class notes. Moreover, mobile phone results in increased cooperation among students and between students and lecturers, instant communication, downloading audio and video facilities, flexibility associated with storage and replay of stored files (Kaliisa and Picard, 2017). Digital technologies are also used for developing course materials, delivering and sharing contents, communication among learners, lecturers, and the outside world, creation and delivery of presentations and lectures, academic research, administrative support and students' enrollment Rumanyika (2015).

As advantageous as digital technologies are to teaching and learning, Oye, Noorminshah, & Rahim (as cited in Tulinayo, Ssentume & Najjuma, 2018) have identified high cost involved, socioeconomic and technological conditions, lack of systemic approach to teaching and learning, awareness and attitude towards digital technologies, administrative and technical support, staff development, limited infrastructure and limited expertise in the use of digital technology tools as some factors that create barriers to their adoption. Similarly, Israel and Israel (2019) reported absence of greater number of ICT tools as a factor militating against effective implementation of computer education in Cross River State secondary schools. Also, Wheller (2011) sees higher education as resisting the adoption of technology when he remarks that while industries such as music, newspapers, film and publishing have seen radical changes in their business models and practices as a direct result of new technologies, higher education has so far resisted the wholesale changes that have seen elsewhere. The extent to which these factors affect the use of digital technologies in learning Religious Studies by students of the Federal College of Education Obudu will also be investigated in this study.

Methodology

This study adopted the case study research design because it is focused on a particular institution. According to McCombes (2019), a case study is a detailed study of a specific subject, such as a person, group, place, event, organization or phenomenon. Case studies are commonly used in social, educational, clinical and business research.

The population of the study comprises all the NCE students offering Christian Religious Studies at the Federal College of Education, Obudu. The span years one to three. Their total number is about 120. Given the few number of students offering Religious Studies in the institution, sampling was not done and hence, every member of the population within the reach the researcher at the study period was included.

The research instrument is a questionnaire entitled "Digital Technologies Availability and Utilization Assessment Questionnaire" (DTAUAQ). It was constructed by the researcher in conjunction with a lecturer with sound knowledge of research. This instrument consisted of two sections. The first section dealt with students' gender and year of study whereas the second section has four parts that dealt with accessibility, extent of use, perceived benefits, and hindrances to regular use of the technologies respectively.

The research instrument was validated by an expert in Educational Measurement and Evaluation coupled with sound knowledge of ICT. The research data were analyzed using frequency count and simple percentage.

Results

The results are presented in tables 1-4 according to the research questions

Table 1

Frequency of Respondents Indicating the Availability of the Mentioned Technologies

Digital Technologies	Frequency
Computer	22
Internet	23
Smartphone	42
Digital Television	16
Video Streaming	3
Electronic Books	6
Social Media	20
Printer	2
Scanner	5
Digital Camera	10
Digital Clock	19
Digital Music	13
e-mail	13
Power point Projector	4
Smart Board	3
You Tube	17
Flash drive	2
Discs	3
Blogs	0

Table 1 shows that Computer, Internet, Smartphone, Digital television, Social media, Digital camera, Digital clock, Digital music, e-mail, and you tube are some of the technologies available to between 10 and 42 students for learning Christian Religious Studies whereas others are available to very few number of students. This data show that comparatively, few number of the respondents agree to the availability of digital technologies.

Table 2: Extent of Utilization of the Indicated Technologies in Learning CRS

Digital Technologies	Frequently		Rarely		Never	
	No.	%	No.	%	No.	%
Computer, CD, and Flash Drive	27	31.1	29	33.3	31	35.6
Printer	19	24.1	22	27.8	38	48.1
Scanner	19	23.2	22	27.8	38	48.1
Smart Phone	63	75	15	17.9	6	7.1
e-mail	32	38.1	20	23.8	32	38.1
Blogs	11	15.3	9	12.5	52	72.2
Smart Board	16	19.8	13	16	52	64.2
Digital Television	45	55.6	18	22.2	18	22.2
Social Media	53	61.6	21	24.4	12	14
Websites	35	41.7	28	33.3	21	25
Average		38.6		23.9		37.5

Table 2 shows the number and percentages of respondents indicating their extent of use of the indicated technologies in learning Christian Religious Studies. It could be seen from the table that smartphone, social media, and digital television are the only technologies that are frequently used by more than half of the total respondents, whereas 31.1%, 38.1%, and 41.7% of the respondents frequently use computer, e-mail, and websites respectively in learning their subject. On the other extreme, 35.6%, 48.1%, 48.1%, 38.1%, 72.2%, and 64.2% have never made use of computer, printer, scanner, e-mail, blogs, and smart board respectively in their study of Christian Religion. On the average, 38.6% of the respondents frequently use the technologies, 23.9% rarely use the technologies and 37.5% never use the technologies in learning Religious Studies. This shows a low extent of utilization of available digital technologies by the students.

Table 3: Perceived Benefits of Learning CRS Using Digital Technologies

Benefits	Strongly Agree		Agree		Disagree	
	No.	%	No	%	No	%
Helps us develop interest in CRK	48	56.5	27	31.8	10	11.8
Helps us read relevant topics from the internet	42	51.2	32	39	8	9.8
Helps us find answers to assignments	51	66.2	16	20.8	11	14.3
Helps us download free eBooks	23	31.5	24	32.9	26	35.6
Topics read from the internet are better understood	37	45.1	36	43.9	9	11
Helps to discover new facts beyond what lecturers taught in the classroom	50	58.1	26	30.2	10	11.6
Social media helps us share knowledge with others	32	41	36	46.2	10	12.8
Helps us record and play back lecturers' teachings	32	37.6	34	40	19	22.4
Helps us acquire basic ICT skills	30	39.5	23	30.3	23	30.3
Listen to Religious messages from You tube and TV	45	51.1	26	29.5	17	19.3
Average		47.8		35.5		17.9

Table 3 shows the percentages of the respondents that either agree strongly, agree, or disagree with the indicated benefits of using digital technologies to learn Religious Studies. The table shows that on the average, 47.8% strongly agree to the indicated benefits, 35.5 just agree, and only 17.9 disagree with the stated benefits. This means that aggregately speaking, about 82% of the respondents agree with the stated benefits of learning CRK with digital technologies.

Table 4: Factors Militating against Frequent use of Digital Technologies in Learning CRS

Perceived Factors	Frequency
Non-availability to students of digital technologies	27
Lack of knowledge of how to use digital technologies	24
Lectures do not use the technologies in teaching CRS	13
Our lecturers do not encourage us to use digital technologies for learning	7
Lack of money to purchase the technologies	30
Lack of regular electricity	21
Social media distracts us from concentrating on our studies	13
Digital technologies encourage examination malpractice	17
They make us unserious with lecture attendance	12
They expose people to many bad things	11

Table 4 shows that 27, 24, 30, and 21 respondents respectively identified non-availability of digital technologies, lack of knowledge of how to use digital technologies, lack of money to purchase the technologies and lack of regular electricity as factors militating against their frequent use of the identified technologies. Very few number of respondents identified the other factors mentioned as responsible for their infrequent use digital technologies.

Discussion of Findings

The first research question sort to find out the digital technologies that are available for students' use in learning CRS at the Federal College of Education Obudu. The data in table 1 shows that Computer, Internet, Smartphone, Digital television, Social media, Digital camera, Digital clock, Digital music, e-mail, and you tube among others are available to a few students. A critical look at the table however shows that beside smartphone which are available to 42 out of 86 respondents, few number of students see the other technologies as available. This finding agrees with Tulinayo, Ssentume and Najjuma, (2018) who mentioned limited infrastructure and limited expertise in the use of digital technology tools among other things as some factors that create barriers to their adoption. It also supports Israel and Israel (2019) who reported absence of greater number of ICT tools as a factor militating against effective implementation of computer education in Cross River State's secondary schools.

The second research question was aimed at finding out the extent to which the students utilize the available digital technologies to study CRS? The finding in this regard was that CRS students of the Federal College of Education, Obudu utilize the available technologies to a very low extent. This corroborates with Wheller (2011) who sees higher education as resisting the adoption of technology. The finding is also in agreement with Arenyeka (2012) when he submits that Nigerian students seem to be languishing in the dust behind the moving train of the 21st century as a result of poor computer education in many secondary schools across the country.

The third research questions which investigated students' perception of the benefits of using digital technologies to the study of CRS led to the finding that more than three quarter of the respondents agree with all the benefits indicated in table 3. This is without prejudice to the low level of utilization of these technologies as found from responses to research question two. These benefits are among those identified by Tulinayo, Ssentum and Najjuma (2018) and Kaliisa and Picard (2017).

Research question 4 was meant to reveal why most of the respondents do not utilize digital technologies in learning Christian Religion. The finding identified lack of knowledge of how to use digital technologies, lack of money to purchase the technologies and lack of regular electricity, failure of lecturers to use the technologies in teaching CRS, as some of the factors militating against their frequent use of these technologies. This finding is in consonant with Tuyizere (2020) who noted that barriers to technological adoption in Religious Education teaching may include lack of enabling factors such as availability of technology equipment, knowledge, skills, lack of trained personnel; limited resources for staff, cost factors, management issues, reliability of technology systems and networks, software; disruption of energy; time security and infrastructure.

Implications

The implication of the above findings is that the realization of the empowering role of ICT enhanced education (as highlighted in the introductory part of this paper) will remain a mirage to students who specialize in Religious Studies. It also implies that graduates of Religious Studies may find it difficult to get employed in the present technology driven world.

Conclusion

There is no gain saying the fact that the Federal Government of Nigeria and the Ministry of Education have formulated sound educational policies bordering on technology. Most of these policies however are drowned at the shore of implementation. The students' inability to make effective use of digital technology in learning as found in this study is partly due to government's failure to provide the needed technologies to the departments where they are needed. An investigation of available technologies will authenticate this assertion. Also, the absence of competent teachers who should make use of the available technologies in teaching limits the extent to which students can utilize them in learning. This is evident in the fact that the available technologies where they exist are locked up in the college stores for many years due to the absence of competent manpower to utilize them. There is therefore every need to match policies with action as far as the pursuit of ICT enhanced education is concerned.

Recommendations

Consequent upon the findings and conclusion of this study, we hereby recommend as follows:

1. The Heads of institutions should do their best to ensure the provision to every department in their college of all recommended learning facilities.
2. The Heads of Departments and Deans of Schools should draw the attention of their head of institution to the absence of any prescribed equipment in their departments and ensure that every equipment is effectively utilized.
3. The NCCE should deny accreditation to any department that lacks the needed teaching/learning materials.
4. ICT capacity building courses should be organized for lecturers to acquaint them with the use of technology in teaching.
5. Lecturers should encourage students to make effective use of available technologies in learning by giving them learning tasks that involve the use of technologies.

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DIGITAL LEARNING INNOVATION: A CATALYST FOR LANGUAGE, PEACE, AND CONFLICT MANAGEMENT THROUGH TEACHER EDUCATION IN NIGERIA

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Abstract

Digital learning innovation has emerged as a catalyst for language, peace, and conflict management in the field of teacher education in Nigeria. This paper examines the potential of digital learning innovation in transforming teacher education and its impact on language development, peace, and conflict management in Nigeria. This paper, also, aims to explore the significant impact of digital learning innovation in Nigeria and how digital learning initiatives have reshaped the landscape of teacher education, language development, and conflict resolution in the Nigerian context. Also, it examines the transformative impact of digital learning in fostering a culture of peace and equipping learners with the necessary skills to address conflicts effectively. The paper also, discusses that through the integration of technology, digital learning provides a platform for educators to develop peacebuilding initiatives and create inclusive learning environments. The paper, also, highlights the importance of digital learning innovation as a catalyst for language development, peace promotion, and conflict management in Nigeria, specifically through teacher education. This paper explores how digital learning innovation serves as a catalyst for language development, peacebuilding, and conflict management through teacher education in Nigeria. By examining the formal use of digital learning techniques, we can uncover the transformative power it holds in addressing linguistic barriers and promoting harmony within Nigeria's diverse society.

Key words: digital innovation, conflict resolution, peace building, teacher education.

Introduction

In today's digital age, innovation in learning has become a catalyst for language, peace, and conflict management, particularly in the context of teacher education in Nigeria. The integration of digital tools and technologies in the educational system has revolutionized the way knowledge is imparted and acquired, leading to enhanced language skills, improved understanding of conflict resolution, and the promotion of peacebuilding efforts in communities. Imagine a world where every teacher in Nigeria is equipped with the necessary tools and resources to effectively educate students in multiple languages, foster a culture of peace, and actively manage conflicts. This is not a utopian dream but a reality that can be achieved through digital learning innovation. Nigeria, as one of the most linguistically diverse and conflict-prone countries in Africa, can greatly benefit from leveraging technology in teacher education. By delving into the following sections, we will uncover how digital learning innovation can pave the way for a brighter future in Nigeria. Digital learning innovation has the potential to be a catalyst for language, peace, and conflict management through teacher education in Nigeria. According to UNESCO, digital innovation has demonstrated powers to complement, enrich, and transform education, and has the potential to speed up progress towards Sustainable Development Goal 4 (SDG 4) for education and transform modes of provision of universal access to learning. In a study conducted by Agnihotri (2017), it was found that language is fundamental to strategies for keeping, making, and building peace.

Therefore, digital learning innovation can be used as a tool to promote language learning and understanding among students from different backgrounds.

The Nigerian education system has long been grappling with challenges such as language barriers and conflict management. With over 500 ethnic groups and more than 500 languages spoken across the country, educators face the daunting task of catering to the linguistic needs of a diverse student body. Additionally, Nigeria has experienced numerous conflicts, ranging from tribal and religious tensions to violent extremism. These challenges necessitate a paradigm shift in teacher education, which can be effectively addressed through digital learning innovation.

Digital learning innovation: An overview

Digital learning innovation refers to the development and integration of new technologies and strategies into the field of education, with the goal of enhancing and improving the learning experience. This can include the use of interactive online resources, data analytics, virtual reality, artificial intelligence, gamification, and more. The aim is to leverage technology to create more engaging, personalized, and effective learning opportunities for students. (Johnson 2017). Digital learning innovation according to Usman and Udedi (2018). refers to:

the development and implementation of new and creative approaches to teaching and learning using digital technologies. It involves leveraging technology to enhance the educational experience, improve accessibility, and increase engagement and collaboration among learners.

The position of Usman and Udedi (2018) agrees with the view of Maduabuchi (2019) and Johnson 2017) that Digital learning innovation encompasses a wide range of strategies and tools, including online courses, virtual classrooms, interactive multimedia resources, gamification, mobile learning, adaptive learning platforms, artificial intelligence, and data analytics. These innovations aim to transform traditional teaching methods by creating dynamic, personalized, and immersive learning environments. The goal of digital learning innovation is to address the diverse needs and preferences of learners, promote active and meaningful participation, and foster critical thinking, problem-solving, and creativity. It also enables flexible and lifelong learning opportunities, allowing individuals to access education at their own pace and convenience. Overall, digital learning innovation revolutionizes the way knowledge is acquired, shared, and applied, providing learners with engaging and effective educational experiences in the digital age

Digital learning innovation has revolutionized the education sector worldwide, offering new opportunities for effective teaching and learning. In the context of Nigeria, a country characterized by linguistic diversity and occasional conflicts among ethnic groups, digital learning holds immense potential for enhancing language skills and fostering peace and conflict management. In today's rapidly evolving digital age, the realm of education has witnessed a profound transformation. The advent of digital learning innovations has opened up new horizons, offering unprecedented opportunities for leveraging technology to enhance language acquisition, promote peace, and facilitate conflict management. This is particularly crucial in Nigeria, a country known for its linguistic diversity and occasional inter-ethnic tensions. By harnessing the power of digital learning, teacher education in Nigeria can become a catalyst for fostering language proficiency, nurturing peaceful coexistence, and equipping educators with the necessary tools to manage conflicts effectively.

Nigeria, with over 250 distinct ethnic groups and more than 500 languages as mentioned earlier, represents a rich tapestry of multilingualism. However, this linguistic

diversity can also be a source of tension and conflict if not managed properly. Language barriers can hinder effective communication and contribute to misunderstandings and mistrust among different communities. Hence, it becomes imperative to explore innovative approaches that leverage digital learning to bridge these gaps, promote language skills, and foster understanding among diverse linguistic groups in Nigeria. Digital learning innovations offer a plethora of tools and resources that can revolutionize teacher education in Nigeria. Online platforms, educational apps, virtual classrooms, and multimedia resources can enhance language teaching and learning processes, allowing educators to reach a wider audience and engage students in interactive and immersive language experiences.

Significance of digital learning innovation to teacher education

By incorporating technology into teacher training programs, educators can acquire the skills and knowledge required to utilize digital tools effectively, ensuring that students receive a high-quality education that promotes linguistic competence and intercultural understanding. Moreover, digital learning can serve as a powerful instrument for promoting peace and conflict management in Nigeria. By integrating peace education into the curriculum and utilizing digital platforms, teachers can instill values of tolerance, empathy, and respect for diversity. Digital learning can facilitate dialogue between students from different linguistic backgrounds, encouraging them to appreciate each other's cultures, traditions, and worldviews. Through virtual collaborations and joint projects, students can develop cross-cultural communication skills, empathy, and conflict resolution abilities, fostering a peaceful and harmonious coexistence in Nigerian society. Digital learning innovation has the potential to act as a catalyst for language development, peace promotion, and conflict management through teacher education in Nigeria. By embracing technology and incorporating it into teacher training programs, educators can equip themselves with the necessary tools to enhance language proficiency, bridge linguistic divides, and foster intercultural understanding. Additionally, digital platforms can provide avenues for promoting peace education, enabling students to develop the skills needed to navigate conflicts peacefully.

Benefits of digital learning in teacher education

Digital platforms, such as online learning modules, virtual classrooms, and interactive educational resources, in enhancing language teaching methodologies, promoting cross-cultural understanding, and fostering conflict resolution skills among teachers are significant to address the language-related challenges, promote peace, and enhance conflict resolution skills among teachers in Nigeria, contribute to the development of sustainable and inclusive educational practices that foster linguistic diversity, cultural understanding, and peaceful coexistence in a multicultural society like Nigeria.

The potential benefits of digital learning innovation in teacher education are vast. By providing educators with the necessary tools and resources, it is possible to overcome linguistic barriers, promote language proficiency, and pave the way for a more inclusive and diversified educational experience. Additionally, Badejo and Adegbile (2019) posit that the integration of conflict management and peacebuilding strategies equips teachers with essential skills to effectively address conflicts and contribute to the sustainable peace and development of Nigeria. In Olatundun and Adeoti (2020), Digital learning provides teachers with a plethora of resources and tools to engage students in language learning. Educational platforms, interactive software, and online language courses offer unique opportunities for teachers to enhance their own language proficiency and consequently facilitate effective language learning among students. Moreover, the integration of multimedia resources, such as videos and audio

recordings, enables language educators to create immersive and interactive learning experiences, further boosting students' language acquisition skills.

Furthermore, Banks (2020) agrees that digital learning platforms can equip teachers with essential knowledge and strategies for conflict management and peace building. Through specialized modules and courses, educators can gain a deeper understanding of conflict dynamics and develop skills to mediate and resolve conflicts in educational settings. This knowledge empowers teachers to foster a peaceful and inclusive classroom environment, where students learn to respect diversity, appreciate different perspectives, and cultivate dialogue instead of resorting to violence.

Digital learning innovation as a catalyst for peace and conflict management in Nigeria.

Digital learning innovation can indeed act as a catalyst for peace and conflict management through teacher education in Nigeria (Folarin and Adu 2019). Thus,

1. **Access to Quality Education:** Digital learning provides teachers with access to high-quality educational resources, including online courses, webinars, and virtual classrooms. By enhancing their knowledge and teaching skills, teachers can provide quality education to their students, promoting understanding, empathy, and tolerance.
2. **Multicultural Awareness:** Through digital learning, teachers can connect with educators and students from diverse backgrounds within Nigeria and across the globe. This exposure helps them develop multicultural awareness and understanding, which can be instrumental in promoting peace and resolving conflicts within their classrooms and communities.
3. **Collaborative Learning:** Digital platforms enable teachers to collaborate with their peers, sharing best practices, innovative teaching methods, and conflict resolution strategies. By engaging in collaborative learning, teachers can enhance their skills in addressing conflicts effectively and creating peaceful learning environments. (Islam 2020).
4. **Engaging Teaching Methods:** Digital tools and technologies provide teachers with a wide range of engaging teaching methods, such as interactive videos, simulations, and gamified learning. These methods can help foster critical thinking, problem-solving, and empathy among students, reducing the likelihood of conflicts and promoting peaceful interactions. (Islam 2020).
5. **Addressing Sensitive Topics:** Digital learning can assist teachers in addressing sensitive topics such as religion, ethnicity, and diversity in a safe and neutral environment. By utilizing online resources and interactive platforms, teachers can facilitate open and respectful discussions, promoting understanding, tolerance, and conflict resolution.
6. **Continuous Professional Development:** Digital learning allows teachers to engage in continuous professional development, staying updated with the latest research, pedagogical approaches, and conflict resolution techniques. This ongoing learning helps them become more effective educators and peace advocates within their communities.

Overall, by leveraging digital learning innovations, teacher education in Nigeria can play a vital role in promoting peace, fostering conflict resolution skills, and creating a harmonious learning environment for students.

Examples of digital learning innovation.

1. **Digital readers and tablets:** Digital readers and tablets are becoming increasingly popular in classrooms around the world. They provide students with access to a wide

range of books and other educational materials, which can be updated and customized to meet their individual needs .

2. **3D printing:** 3D printing is a technology that allows students to create physical objects from digital designs. This technology has the potential to revolutionize the way students learn about engineering, design, and other subjects . (Egbule and Oko2018).
3. **Virtual reality:** Virtual reality is an immersive technology that can be used to create realistic simulations of real-world environments. This technology has the potential to transform the way students learn about history, science, and other subjects .
4. **Gamification:** Gamification is the use of game design elements in non-game contexts, such as education. It can be used to make learning more engaging and fun for students .
5. **Cloud technology:** Cloud technology allows students and teachers to access educational resources from anywhere with an internet connection. This technology has the potential to make education more accessible and equitable .
6. **Artificial intelligence:** Artificial intelligence can be used to personalize learning experiences for individual students based on their strengths, weaknesses, and learning styles .
7. **Mobile technology:** Mobile technology such as smartphones and tablets can be used to deliver educational content to students anytime, anywhere .

Strategies for learning a new language through digital innovations

1. **Set goals:** Setting achievable goals is a great way to stay motivated and track progress. For example, you can set a goal to learn ten new words every day or to have a thirty minute conversation with a native speaker once a week .
2. **Immerse yourself:** Immersing yourself in the language is one of the most effective ways to learn. This can be done by watching TV shows, movies, and videos in the target language, listening to music, reading books, and speaking with native speakers .
3. **Use language learning apps:** Language learning apps such as Duolingo, Babbel, and Rosetta Stone are popular digital tools that can be used to learn a new language. These apps provide interactive lessons, quizzes, and games that make learning fun and engaging .
4. **Take an online course:** Online language courses are another way to learn a new language. These courses are often self-paced and can be accessed from anywhere with an internet connection. They provide students with access to a wide range of resources such as videos, audio recordings, and interactive exercises .
5. **Find a conversation partner:** Finding a conversation partner who speaks the target language is a great way to practice speaking and listening skills. This can be done through language exchange programs or by connecting with native speakers online.
6. **Practice regularly:** Regular practice is essential for learning a new language. It is important to practice reading, writing, listening, and speaking skills every day ¹².

Use flashcards: Flashcards are a great way to memorize vocabulary words and phrases. You can create your own flashcards or use digital flashcard apps such as Anki or Quizlet

Conclusion

The paper has discussed the roles of digital learning, noting that through the integration of technology, digital learning provides a platform for educators to develop peace building initiatives and create inclusive learning environments. Also, the paper has highlighted the

importance of digital learning innovation as a catalyst for language development, peace promotion, and conflict management in Nigeria, specifically through teacher education. Thus, from the study, Digital learning innovation has proven to be a catalyst for language, peace, and conflict management in teacher education in Nigeria. By leveraging on technology, educators can overcome language barriers, enhance language skills, and promote conflict resolution strategies that lead to a more peaceful and inclusive society. The realization of this potential requires a strong commitment from all stakeholders to embrace, invest, and integrate digital learning innovations into the Nigerian educational system. Embracing the power of digital learning, Nigeria can forge a path towards a brighter future for all its citizens. Thus, digital learning innovation has revolutionized education worldwide, playing a significant role in enhancing language acquisition, fostering peace, and managing conflicts among educators and students.

Recommendations

- i. It is imperative for the Nigerian government, educational institutions, and stakeholders to realize the immense potential of digital learning innovation and invest in its implementation in teacher education.
- ii. Adequate funding, infrastructure development, and capacity-building programs need to be put in place to ensure that educators are equipped with the necessary skills and resources.

By taking proactive steps to integrate technology in teacher education, Nigeria can spearhead a transformative change in its educational landscape, leading to improved language skills, enhanced conflict management, and a more peaceful society.

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THE ROLE OF DIGITAL PEDAGOGY IN ENHANCING TEACHER EDUCATION IN NIGERIA

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Abstract:

In recent years, digital technologies have revolutionized various sectors, including education. This paper explores the role of digital pedagogy in enhancing teacher education in Nigeria. As the country strives to improve its educational system, it is essential to understand how digital tools and techniques can support the professional development of teachers. Furthermore, this paper will identify potential challenges faced by teacher educators and policymakers in integrating digital pedagogy into teacher education. This paper also highlights some of the challenges such as limited infrastructure, lack of digital literacy skills, and resistance to change. Recommendations will be provided to address these obstacles and ensure the effective implementation of digital pedagogy in Nigeria teacher education.

Keywords: Digital Pedagogy, Teacher Education, Technology and Educational Outcomes.

Introduction

The digital age has increasingly ushered in the growing need for Information and Communication Technology (ICT) application in all facets of life. In fact, technology plays a vital role in teacher education. It is penetrating every nook and cranny of human existence. No wonder Akabogu (2016) stated that the computer technology will remain a key component to almost everything one does in this 21st century. The use of modern technology is not left out in teacher education. In the classroom, the usual instructor-learner based approach (face-to-face) is gradually changing with the advent of ICT to collaborative learning or e-learning environment where learners interact with learning materials, their instructors and other learners from various locations at different times using network technologies in an online environment. It is also believed that the use of Educational Technology (ECT) in hardware and software's like: computers, instructional Aids projectors, video clips and models.

According to Cope and Ward (2017), will provide positive effect on learners achievement, and makes teaching and learning more effective. With the rapid expansion of knowledge and the challenges teaching and learning is facing in our society, the need for teachers to incorporate modern technologies (digital technology) becomes necessary. These challenges tend to ask teachers to continuously retrain themselves and acquire new knowledge and skills while maintaining their jobs Carlson & Gadio, (2015). This however, placed more demand on colleges of education to learn how to use these modern technologies in training their teachers because they can provide more flexible and effective ways of connecting both teachers and learners to the global teacher community.

Digital pedagogy is the use of contemporary digital technologies in teaching and learning. This has its origins in distance learning which took the form of correspondence courses delivered by mail during the early twentieth century. Digital pedagogy looks critically at digital tools as potential means for teaching and learning. Carter, (2014). Digital pedagogy considers digital content and space as valuable sites for information and knowledge, in addition to traditional medium such as books or classroom. With the current rise in use and high application of technologies, pre-service and in-service teachers undergoing teacher education training should be provided with learning opportunities that help them to understand and

practice the skills of pedagogic planning and the evaluation of the educative possibilities using technological tools available. Digital technologies are electronic tools, systems, devices and resources that generate, store or process data. Well known examples include social media, online games, multimedia and mobile phones. Digital learning is any type of learning that uses technology. It can happen across all curriculum learning areas. Digital Pedagogy is not only about using digital technologies for teaching and learning but rather approaching digital tools from a critical pedagogical perspective. So, it is as much about using digital tools thoughtfully as it is about deciding when not to use digital tools, and about paying attention to the impact of digital tools on learning

Teacher training in Nigeria Education all over the world is seen as a process of transmitting the cultural heritage, stabilizing the present and improving or changing the future of the people. The school system in this regard is generally accepted as a major agent of education Adaka, (2017).

The paper is mainly centered on the role of digital pedagogy in enhancing teacher education in Nigeria. Attempts were made to review the brief history of digital pedagogy, concept digital pedagogy, concept of teacher education and the role digital pedagogy plays in teacher education. The knowledge that will be obtained from this study will be of great relevance to student-teachers, teacher preparation institutions and researchers in the field of education.

Brief History of Digital Pedagogy

Digital pedagogy has evolved significantly over the years. Here's a brief history according to Fouts, (2002).

1. Early Adoption (1950s-1970s): The use of computers in education began in the 1950s with mainframe computers. Early efforts focused on computer-assisted instruction (CAI) which used punch cards and late interactive terminal to deliver educational content
2. Emergence of personal computers (1980s-1990s): The introduction of personal computers in the 1980s brought new opportunities for educators. Software like word processors and educational games became prevalent in school.
3. Internet Era (1990s-2000): The advent of the internet in the 1990s led to the development of online learning platforms and digital resources. Distance education and e-learning started gaining traction.
4. Learning Management System (LMS) (2000s-2010s): LMS platforms like Blackboard and module allowed educators to create and manage online courses. This era saw the rise of blended learning, combining traditional and digital teaching methods.
5. Mobile and Apps (2010s): The proliferation of smart phones tablets led to the growth of mobile learning apps. This made education more accessible and personalized, with platforms like Khan Academy and Duohngo becoming popular.
6. Gamification and Virtual Reality (2010s-Present): Gamification techniques and virtual reality (VR) started to be integrated into education to engage students in immersive learning experiences.
7. Remote Learning Boom (2020s-Present). The COVID-19 Pandemic accelerated the adoption of online and remote learning worldwide. Video conferencing tools like Zoom and Google meet became essential for virtual classroom
8. Adaptive Learning and AI (2020s-Present). Artificial Intelligence and machine learning are being used to personalize learning experiences, offering tailored content and assessments to students.

9. Augmented Reality (AR) and mixed Reality (MR) 2020s-Present. AR and MR technologies are being explored to enhance hands on learning through virtual overlays and interactive simulations.

Digital pedagogy continues to evolve with a focus on accessibility inclusivity and the integration of emerging technologies to meet the diverse needs of learners in the 21 century.

Concept of Digital Pedagogy

Digital pedagogy is the study and use of contemporary digital technologies in teaching and learning. Digital pedagogy may be applied to online, hybrid, and face-to-face learning environments. Digital pedagogy also has roots in the theory of constructivism. Digital pedagogy is the application of technological media to facilitate teaching and learning. It is also considered as the use of technological tools for exploring knowledge, support learning by construction to improve the effectiveness of teacher education Januszewski, (2015). The Association for Educational Communication and Technology (AECT, 2017) describe Digital pedagogy as complex, integrated process involving people, procedures, idea, devices and organization, for analyzing problems, devising, implementing, and evaluating teaching and learning. In another dimension,

Wodi, (2012) stated that Digital pedagogy include various techniques of shaping behavior applied to material use on audio records, computers, and video disk which increases the overall impact in teaching and learning that takes place in the classroom. Albert, (2016) described Digital pedagogy as the application of appropriate Information and Communication Technology (ICT) tools, which facilitate learning by stimulating the sensory, and cognition to enhance of the learner. It has a multi-faceted nature comprising a cyclical process using an a collection of tools (both physical and conceptual), and a multiple-node relationship between learners and facilitators of instruction, as well as between learners themselves. This definition according to Aziz has five components namely: Considered application, appropriate tools, techniques, or processes, facilitates the application of senses, memory, and cognition, enhance teaching practices, and improve learning outcome. Digital pedagogy therefore involves the application of ICT facilities in the teaching and learning which stimulates learners' interest, and promotes self-paced learning. These technologies involve numerous media that deliver text, computer-assisted instruction, software like word processors and educational games, internet, smart phone, video conferencing tools like zoom and Google, computer-based learning, as, web-based technologies, Artificial intelligence (AI) and so on.

Based on the different submissions on the definition of digital pedagogy, it can briefly stated that digital pedagogy is powerful instrument that can help improve education in various ways, such as making it easier for instructors to generate instructional materials and providing new methods for people to learn and collaborate

Concept of Teacher Education

Teacher education refers to policies and procedures aimed at providing prospective teachers with the knowledge, attitudes, behaviours, and skills they will need to perform their duties effectively in the classroom, school, and community (Yusuf, Afolabi & Oyetayo, 2014). Teacher education can also be defined as a programme of education, research, and training for people who want to teach at all levels of education, from pre-primary to higher education (Westbrook, et al., 2013; Akindutire & Ekundayo, 2012).

It is a programme aimed at improving teacher proficiency and competence in order to enable and empower teachers to meet the demands of their profession and face the challenges that they encounter. Teacher education is often divided into three stages: initial teacher training/education, induction, and teacher development or continuing professional

development (Yusuf, 2012a; Ronald, 2009). Although it should ideally be conceived of and organized as a seamless continuum, it is often divided into these stages. Initial teacher training/education encompasses teaching skills, sound pedagogical theory and professional skills (Ronald, 2009). Teachers will benefit from an induction programme that includes mentoring and is designed to provide support, guidance, and orientation to new teachers as they begin their careers in the classroom.

These programmes assist new teachers in their first year of teaching by encouraging ongoing dialogue and collaboration among teachers, which improves the effectiveness of new teachers and improves students' achievements. It is critical to conduct an orientation programme (induction) for new teachers prior to the start of the instructional term, which should be supervised by the mentor teacher; the mentor observation of the beginning teacher's classroom teaching skills; and weekly meetings between the mentor and the beginning teacher to discuss the beginning teacher's performance and any needed improvements should be prioritized (Fareo, 2013).

Teacher development, also known as continuing professional development, refers to activities that improve a teacher's skills, knowledge, expertise, and other characteristics (Yusuf, & Dada, 2016; Jekayinfa, 2000). It is important to remember that development can come in a variety of forms, from formal to informal. It can be made available through external expertise in the form of courses, workshops, or formal qualification programmes, a collaboration between schools or teachers across schools (e.g. observational visits to other schools or teacher networks), or collaboration within the schools where teachers work.

In this last case, development can be provided through coaching/mentoring, collaborative planning and teaching, and the sharing of good practices. If teacher preparation was to meet global best practices and have a positive impact on the quality of curriculum transaction in classrooms, as well as pupil learning and larger social transformation, the focus of teacher preparation has to shift from training to education. The aspects that need greater emphasis are; the length of academic preparation, the level and quality of subject matter knowledge, the repertoire of pedagogical skills that teachers possess to meet the needs of diverse learning situations, the degree of commitment to the profession, sensitivity to contemporary issues and problems and the level of motivation. This would be impossible if teacher preparation was solely focused on training because holistic teacher development is required, teacher education must take precedence over mere training.

Role of Digital Pedagogy in Enhancing Teacher education in Nigeria.

There is emerging evidence that the use of digital pedagogy can help improve instructional delivery and raised standards of teacher education in Nigeria. Some of role digital pedagogy play in enhancing teacher education in Nigeria according to Frederick, (2015) are as follows;

1. **Access of Resource:** It can provide access to a vast array of educational resources including online courses, videos, and research materials making it easier for teachers in Nigeria to stay update with the latest teaching method and content.
2. **Interactive Learning:** Digital pedagogy encourages interactive and engaging learning experiences, allowing teachers trainees to actively participate in lessons, collaborate with peers and develop practical teaching skills.
3. **Flexibility:** It offers flexibility in learning, enabling teachers to access educational content at their own pace and convenience which is particularly valuable in a diverse country like Nigeria with varying access to traditional educational institution
4. **Global Perspective:** Through online platforms and resources, teacher trainees can gain a broader, global perspective on education, which can help them adapt teaching methods to local contexts and incorporate innovative approaches.

5. **Teachers Collaboration:** digital platforms can facilitate collaboration among teachers, both within Nigeria and internationally, enabling the exchange of ideas, best practices and experiences.
6. **Assessment and Feedback:** Digital tools can provide efficient assessment and feedback mechanism, helping teachers educators in Nigeria assess the progress of trainees more effectively and tailor their support according.
7. **Cost-Effective Training:** Online teacher education programs can be cost-effective, reducing the financial burden on both trainees and institutions, potentially increasing access to quality education.

There are several challenges associated with the implementation of digital pedagogy in enhancing teacher education in Nigeria. These challenges according to Albert (2016), are as follows:

1. **Divide Digital:** Access to technology and the internet is not uniform across Nigeria, with significant disparities between urban and rural areas. Many potential teacher trainees may lack the necessary infrastructure and devices to engage in digital learning effectively.
2. **Limited Internet Connectivity:** Even in areas with internet access, the quality and reliability of internet connections can be inconsistent, leading to disruptions in online learning
3. **Infrastructure and Power support:** Inadequate electricity support and unreliable power grids can hinder the use of digital tools and online platforms for teacher training.
4. **Digital Literacy:** Many teacher trainees may not be proficient in using digital technologies or may lack basic digital literacy skills, making it challenging to navigate online learning platforms.
5. **Content Quality:** Ensuring the quality, relevance and appropriateness of digital educational content can be a challenge. Low- quality or outdated materials can negatively impact the effectiveness of teacher education
6. **Teacher Preparedness:** Teacher educators themselves may not be adequately prepared to effectively integrate digital pedagogy into their teaching method limiting the impact of technology on teacher education
7. **Cost:** Implication: while digital pedagogy can be cost effective in some ways, there are initial costs associated with acquiring and maintaining technology infrastructure and creating high quality digital content.

Conclusion

The importance of using digital pedagogy in enhancing teacher education in Nigeria cannot be over emphasized. The use of digital pedagogy in the delivery of instruction in teacher education in the 21st century in Nigeria is a sure way of thinking of the future by providing knowledge-based education in line with international best practices for a competitive workforce. However, much need to be done on human capital building for teachers though continuous professional development training workshops, seminars, and course collaboration with National and international institutions. Although providing these avenues for professional development of teachers is costly, the benefits are much felt in improving the quality of teaching, enhancing the image of the institution and making learning more effective.

Recommendations

Despite the role digital pedagogy played in enhancing teacher education in Nigeria. It is yet to fully adopt this innovation for teaching and learning. Effort should be made toward integrating digital pedagogy in our Teacher training institute in the country through the following measure:

1. Lecturers in the teacher training Institute should be encouraged to go for ICT training and capacity building workshops rather than just possess the qualification on paper for promotion sake.
2. Government should wake up to her responsibility by ensuring that digital pedagogy Policy statement are translated and necessary funding provided.
3. All teacher training institute in Nigeria should be made to benefit from the ICT project regardless of location and ownership through procurement of ICT facilities and providing the enabling environment for ICT integration.
4. The government should work towards stabilizing power supply in Nigeria rather than paying lip service to it to fast track ICT facilities installation in most of the teacher training institute so as to function effectively.

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ROLE OF DIGITAL LEARNING FOR EFFECTIVE EDUCATION OF STUDENTS WITH DISABILITIES IN NIGERIA

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Abstract

The role of digital learning in the education of the students with disabilities cannot be overemphasized. The various devices of digital learning used by the sighted should also be adapted to suit those with the different categories of special needs such as visual impairment, hearing impairment, hearing disabilities, intellectual disabilities, multiple impairments, speech and language impairment, gifted and talented among others. These impairments usually pose learning difficulties to the learners which can be adequately managed using digital devices. The paper now titled: role of digital learning for effective education of students with disabilities in Nigeria; have discusses, digital learning policy framework in Nigeria, digital and special needs education, forms of digital technology, National Information Technology Development Agency (NITDA) ICT policies, role of digital learning tools for students with special needs, challenges confronting the effective use of digital learning tools for students with special needs in Nigeria, prospects for the effective use of digital devices in meeting the needs of students with special needs in the classroom, and the way forward to the challenges confronting the use of digital learning devices respectively. Conclusion was drawn extensively therefore, for effective use of digital learning devices to be provided in all the assistive special need schools to improve their digital learning.

Keyword: Digital learning, Effective Education, Students with Disabilities, Challenges and Way forward and Role.

Introduction

Digital learning has become a new paradigm and a new philosophy in library services as well as educational sector with a mission to serve as a development platform for present day society based on knowledge. According to Olaniyi (2006) in Torruam (2012), digital learning is all about learning that occurs with the computer. In our contemporary world, the learning through the aid of a computer simply means digital or online knowledge acquisition through the internet or offline through CD-Rom etc. In other worlds, it is the use of network technologies to create, foster, deliver, and facilitate learning, anytime and anywhere. Dikusar (2018) define digital learning as the use of internet and e-learning technologies to create experiences that educate the learners in various sectors of learning. Digital has the potential to revolutionized the way we learn (Torruam, 2012).

An advances in digital learning have really revolutionized the way we learn in many ways; for instance, increasing access to post-secondary learning, improving the availability of educational resources and facilitating meaningful interaction among learners. Harnessing the power of digital learning (ICT) has become a critical strategy among institutions eager to offer an affordable, efficient and flexible learning environment for rapidly growing and diverse communities of learners. Many scholars have viewed digital education as alternative, sometimes inferior, education for people with limited access to traditional education or those who do not committed to deep learning (Rich, 2008).

In essence, the importance of digital learning and Assistive Technology in the education of the persons with disabilities cannot be overemphasized. The various devices of ICT used by the sighted should also be adapted to suit those with the different categories of special needs

such visual impairment, hearing impairment, learning disabilities, intellectual disabilities, multiple impairments (eg. deaf/blind), speech and language impairment, gifted and talented etc. However, it is no longer the technology which restricts people's access to information and communication but our ability or inability to take advantage of it (Michael, 2002 in Gomwalk & Abdulkareem, 2018). This means that adequate exposure to such assistive technology would help students with special benefit maximally from classroom instruction, enable them to compete with their peers and also equip them to be able to face challenges of work life in the large society after school. Students with special needs are learners who have physical/sensory impairments, behavioural as well as intellectual impairments. These impairments usually pose learning difficulties to the learner which can be adequately managed using digital devices.

As enumerated by Byant, Bryant and Raskind (1998), digital learning provides opportunities for students with special needs to participate fully through promoting access to communication, learning and leisure regardless of the disability. Digital learning provides tools that deliver suitably challenging opportunities for all students if used creatively by the teacher (changing the way lessons are delivered). Students with special needs have unique learning needs that can only be accommodated (meeting the unique needs) through effective use of digital devices.

However, regular and continuous assessment of students with special needs is required to ensure that digital learning tools or devices provided are suitable and appropriate. Training and support are inevitable for students with special needs as well as their teachers for effective use of these devices. To provide equal opportunities for students with special needs just like students without special needs, there is therefore a need to take advantage of this evolving digital trend.

Today, technology enhanced learning, including distance and online instruction, is recognised as a viable tool necessary for preparing citizens to participate in the technologically driven global environment. A multidisciplinary approach to digital learning pedagogical research recognizes the value of technology enhanced teaching and learning as critical in the mist of diverse strategies. Its centrality in the global marketplace has been enhanced by a new culture shared by many educators. A culture diametrically opposed to elitist views of education as a privilege. A culture rooted in the belief that a more open education system enables increased contribution to the global marketplace of ideas in the world of students with disabilities (SWDs). This new culture empowers SWDs (Students with Disabilities) of the world to share knowledge globally where diverse voices are often underrepresented. The culture has been exemplified by an open movement, with diverse champions from remote village classrooms to ivory towers. Therefore, this paper particularly dwells on the role of digital learning for effective education of students with disabilities in Nigeria.

Digital Learning Policy Framework in Nigeria

For a very long time successive governments in Nigeria have consistently formulated Policies which were directed towards ensuring that there are equal and adequate educational opportunities at all levels.

As far back as 1977, Government began searching for alternative models to the traditional conventional system, which was rather restricted and limited in scope. In response to the need for a more elastic and accessible model of education, Government opted for a semblance of digital learning educational system. Thus, it can be said that the foundation of digital learning educational system in Nigeria was laid through the National Policy on Education of 1977, subsequently revised in 1981.

The current National Policy on Education (NPE) recognizes the place of digital or e-learning educational system in achieving lifelong education and affirms that lifelong education shall be the basis of the nation's education policy. It went further to state that at any stage of the educational process after junior secondary education, an individual shall be able to choose between continuing full-time studies, combining work with study, or embarking on full time employment without excluding the prospect of resuming studies later. This envisaged the development of e-learning educational programs in the country. The NPE defined digital learning educational system as the mode of learning in which learners are removed in time and space from the teacher. It uses a variety of media and technologies to provide and/or improve access to good quality education for large number of learners wherever they may be.

According to the NPE, the goals of digital learning educational system are to:

- Provide access to quality education and equity in educational opportunities for those who otherwise would have been denied.
- Meet special needs of employers by mounting special certificate courses for their employees at their work place.
- Encourage internationalization especially of tertiary education curricula.
- Ameliorate the effect of internal and external brain drain in tertiary institutions by utilizing experts as teachers regardless of their locations or places of work.

Digital and Special Needs Education

The term digital as persee is generally accepted to mean technologies that allow people and organizations to take advantage in the global world. It is sometimes used synonymously with Assistive Technology (AT). However, digital is used to represent a comprehensive list of the components related to computer and technological devices than AT (Ferguson and Pratt, 2017). Students with special needs usually have unique learning needs due to their physical and sensory disabilities, learning difficulties and also those with emotional and behavioral difficulties. According to United Nations Educational Scientific and Cultural Organization (UNESCO) asserts that the keyways in which digital learning can support educational opportunities for students with special needs are as follows:

- Identifying preliminary level of personal development (experiences and skills) that is to say the starting point of a student.
- Assisting in personal development by shaping new skill or updating existing ones.
- Improving access to information
- Over-coming geographical or social isolation via communication support and networks and also improving the image/perception of an area by enhancing motivation and awareness regarding the digital learning benefits in special needs education.

According to Lindstrom, Granlund and Hemmingsson (2012), students with special needs should be placed on an individual plan that would be beneficial to each student and focus on the aim of digital learning usage. In addition, there is need to examine students' needs in terms of computer-based devices and also ensure students digital skills are fully utilized.

National Information Technology Development Agency (NITDA) Digital Learning Policies

Nigeria started implementing its digital learning policy in April 2001 after the Federal Executive Council approved it by establishing the National Information Technology Development Agency (NITDA), the implementing body. The policy empowers NITDA to enter into strategic alliances and joint ventures and to collaborate with the private sector to realise the specifics of the country's vision of, "making Nigeria an IT capable country in Africa and a key player in the information society by the year 2005 through using IT as an engine for sustainable development and global competitiveness" (Torruam, 2012). This vision is yet to be fulfilled. Outlined below are some of the objectives of Nigeria's digital learning policy:

- To ensure that ICT resources are readily available to promote efficient national development
- To guarantee that the country benefits maximally, and contributes meaningfully, by providing the global solutions to the challenges of the Information Age.
- To empower Nigerians to participate in software and ICT development
- To encourage local production and manufacture of ICT components in a competitive manner
- To establish and develop ICT infrastructure and maximize its use nationwide
- To empower the youth with ICT skills and prepare them for global competitiveness
- To integrate ICT into the mainstream of education and training
- To create ICT awareness and ensure universal access in promoting ICT diffusion in all sectors of national life.
- To create an enabling environment and facilitate private sector (national and multinational) investment in the ICT sector.
- To encourage government and private sector joint venture collaboration
- To develop human capital with emphasis on creating and supporting a knowledge-based society.
- To build a mass pool of ICT literate manpower using the NYSC, NDE, and other platforms as a train-the-trainer scheme for capacity-building.

Forms of Digital Technology

The various digital learning devices available can be adapted to suit the unique learning needs of students with different disabilities including physical/sensory disabilities, visual and hearing impairment. These devices can be used separately or in combination with other products, computers and other information and communication devices. According to Dikumar (2018), some categories of special needs don't allow students to use handwritten test that is an integral part of traditional education. Therefore, using human speech recognition and synthesizing can avoid the necessity to use paper and pen during lessons especially for students with visual impairment due to vision loss. According to Lidstrom & Hemmingson, (2014), due to the diversity of students with special needs, there are variety of custom-made digital solutions designed according to the requirements of a particular group of students.

Similarly, students with visual can use screen reader applications such as JAWS along with specially designed braille keyboards to use the computer. Digital learning tools and devices that can be used by students with learning disabilities enables them manage some learning difficulties such as spelling, frustration in reading and writing, increases self-worth

and promotes self-esteem. Due to the fact that students with learning disabilities may have dyslexia, limited literacy and numeracy skills, digital learning can be a great motivator that will enable students with learning disabilities acquire skills in reading, spelling and also mathematical skills. E-learning or digital learning tools for students with physical disabilities include communication aids, computer access devices and switches, software for alternative input options, talking word processors, wooden puzzles, etc.

- Digital learning tools and devices for students with visual impairment uses large clear font, adjust colours that can enable them get speech feedback for students with low vision and total blindness. These tools include screen magnifiers, screen readers, electronic braille, closed circuit television, voice recognition software, braille embossers. Talking calculators and refreshable braille displays etc.
- Digital learning tools for students with hearing impairment include word processors, concept keyboard, word list, clipart to illustrate writing, spell checkers and grammar checkers, etc.
- Digital learning tools for students with physical impairment include wheelchairs, adapted car seats, hand held GPS units, touch screens (Lindstrom, Granlund & Hemmingsson 2012).

Moreso, other e-learning tools and devices include Closed Circuit Television (CCTV), Optical Character Scanner (OCR), Braille Embosser, Modified Cassette Recorder, Fuser, Electronic note-taker, adapted paper (raises surfaces, highlighted lines etc.), large monitors with increased font for ease of electronic text reading) E-book readers (provides text to speech with adjustable font size e.g. Amazon kindle, tablet, iPad etc.), concept keyboards, Text to Speech (TTS), wands, joysticks amongst others. Screen magnifiers can be attached to desktop computers, desktop monitors, laptops and televisions. Text to speck and Speech to text software such as JAWS are programmes that convert text to speech (voice). Computer programs such as the Kurzweil Too converts text on the computer or from scanned pages to speech. In addition, electronic telescope (a system that allows the user to view enlarged images. It is a handheld visible video telescope which looks like a small camcorder. These devices, aids and tools promotes effective instruction, facilitates reading, writing, memory listening, mathematical organization, building access (environment, educational), physical mobility as well as social interaction amongst others.

Roles of Digital Learning

The roles of digital learning for students with various special needs cannot be overemphasized. Students with intellectual, hearing or reading disabilities, impaired sight, dyslexia and other forms of special needs are now able to benefit maximally form digital or e-learning or tools and devices by improving communication and language development, writing, enhance texts, symbols and pictures, access whole words, aid expression, recognize and organize ideas, enable students follow educational courses via digital and audio libraries (students can connect from home and read or hear the relevant books, without having to go to the local university or library), accessing their materials in various formats and well as resources via the internet. However, the following are the roles of digital leanring to students with special needs:

- Stimulating more active classroom participation amongst students with special needs
- Enables disabled students to gain access to the curriculum and support learning and provides a platform for disabled trainers to promote their skills.

- Provides learners with special needs the opportunity to learn at their own pace. Provides feedback (encouragement of praise) and provides motivation to students with special needs at all level of education.
 - Support student with special needs in developing their problem-solving skills.
 - Helps to support students to access the whole curriculum through the provision of a wide range of software that can help specific difficulties in learning
 - It helps provide a medium for differentiated activities/instruction.
 - Enhance pupils with special needs to practice skills, perform drills and assignment in an enjoyable way.
 - Make tasks manageable, interesting, motivating as well as provide satisfying outcomes.
- Similarly, according to Dikusat (2018) ICT provides greater flexibility for instructors, allows increasing the independence of students and freeing him/her from the constant need for direct teacher involvement. Moreso, it improved academic achievement of students with special needs. Several research studies.

Challenges Confronting the Effective use of Digital Learning Tools for Students with Special Needs in Nigeria

Despite the fact that digital learning can benefit the persons with disability, only a small percentage of curriculum materials are currently available in alternative formats accessible to those with special needs (Worth, 2001 in Gomwalk & Abdulkareem, 2017). There is minimal awareness by stakeholders on the immense benefits of digital technology in teaching and learning for students with special needs in Nigeria. A study demonstrated that teachers were less willing to accept the technology if they believed that its use would require them to alter their teaching style (Dorman, 1998). Moreso, special teachers are not trained to use digital devices and find it difficult to make available adaptations in improving teaching and learning for students with special needs in the classroom. In addition, the cost of digital learning devices is a major challenge affecting the availability and effective use of ICT in teaching and learning in Nigeria. These devices are expensive and not easily available and accessible by parents, teachers and students with special needs.

Moreso, funding is not readily available for schools to purchase, manage and maintain existing e-learning devices in a developing country like Nigeria. In addition, the absence of consistent and adequate power supply in Nigeria is also another major challenge affecting the effective use of digital devices. Several digital devices require electricity for their effective usage and main channel for use and when this is not available or adequate it affects the use and maintenance of such devices.

Michael (2002) observed that it is important to create more awareness on ICT among the students with special needs, their parents, special education teachers, school administrators in special and inclusive schools, curriculum developers, the government, nongovernmental organizations as well as other stakeholders in the education of students with special needs. This is necessary because special teachers and other stakeholders lack knowledge about ICT training and is not engaged in special efforts in acquiring ICT skills.

Similarly, according to Williams, Jamali and Nicholas (2006), there has been a surprising lack of research into the usability of the various applications in ICT. Similarly, there is lack of attention on the application and usability of digital tools in teaching and learning for students with special needs as compared to other groups of students without special needs in Nigeria.

Some hurdles militating against the effective use of the digital learning tools in Nigeria, by Torruam (2012) are:

- Lack of qualified teachers to teach digital technological skills in schools: The demand for ICT learning has been tremendous and the number of teachers who are trained to teach ICT cannot meet the demand. There are more students willing to be taught computing skills than there are teacher to transfer the skills.
- Lack of computers: Computers are still very expensive and despite spirited efforts by the government agencies, NGO, corporate organizations and individuals to donate computers to as many schools as possible, there still remain a big percentage of the schools unable to purchase computers for use by their pupils.
- Lack of electricity: Many schools are still not yet connected to electricity; Nigeria being a developing country, the government has not been able to connect all parts of the country to the national electricity grid. Consequently those schools that fall under such areas are left handicapped and may not be able to offer computer studies.
- Cost to purchase: In a country with high rate of inflation, majority of the individuals and schools cannot afford to buy a computer and consider it as a luxury item, more expensive than a TV.

Prospects for the Effective use of Digital Devices Meeting the needs of Students with Special Needs in the Classroom

Digital devices can contribute significantly to the teaching and learning of students with special needs irrespective of their unique learning needs. It is essential in providing students with special needs with the ability to perform specific tasks that would otherwise be impossible for them to perform. Several studies have shown that digital devices is a valuable and effective tool for effective instruction in teaching and learning.

Brodin and Lindstrand (2013) in a study revealed that there is a great need of education in ICT field and the lack of time, training and financial resources affects its effective usage. Stakeholders in special needs education are expected to understand the potential of ICT in supporting learners with special needs and also explore ways to provide adequate training in the effective use of ICT devices. More awareness on ICT among the students with special needs, their parents, special education teachers, curriculum planners and school administrators to ensure that the use of digital devices is adopted is teaching students with special needs at all levels if education.

Therefore, policies in special needs education should recognize the potentials for ICT to offer new opportunities, increase awareness as well as enhance effective use of digital devices in schools that accommodate students with special needs. According to Noo-UI-Amin (2006) in Dikusar (2018), learning approaches using contemporary digital tools provide many opportunities that favour the curriculum and promote competency and performance. Therefore, digital learning have an important role in changing and modernizing educational systems and also teaching and/or learning strategies for students with special needs.

Way Forward

The application of digital learning for education of students with disabilities in Nigeria cannot be far from the following especially in consideration of the onset proposal for redesigning the minimum standard for Nigerian schools. This can be however, redeems as follows:

- The adoption of effective use of digital devices for students with special needs should be encouraged at all levels of education.
- There is need to carry out in-depth research studies on the use and application of digital devices for various categories of students with special needs.
- Government should train every special education specialist in computer applications and teacher training institutions should make computer literacy a compulsory requirement for special teachers in the regular schools.
- Adequate funds should be provided and made available for proper procurement and maintenance of already existing digital devices
- The government, school administration, NGOs, professionals in special needs education as well as other stakeholders are expected to collaborate and work as a team to identify the various areas of needs of different categories of persons with special needs and also select technologies that will be appropriate and beneficial to them.
- Special education teachers should be adequately trained to understand the use and applicability of digital devices to various categories of persons with special needs, make appropriate adaptations, make useful suggestions and recommendation on best digital devices to parents, provide maintenance services as well as adapting instructional strategies that will promote effective learning.
- Efforts should be made by Ministry of Education (at Federal and State levels) to post teachers skilled in ICTs to each school to impart digital learning skills to the students. Also the Federal Ministry of Mines and Power should work towards stabilizing electricity supply in Nigeria, and all schools should be made beneficiaries of ICT projects.
- The accreditation teams of the National University Commission (NUC) as well as the National Commission for Colleges of Education (NCCE) and the National Board for Technical Education (NBTE) should revise the syllabus of the Nigerian Universities, Colleges and polytechnics respectively to include virtual courses that will be internet based through a well established Learning Management System (LMS) tools such as Moodle and Blackboard.
- Government should provide special need schools with adequate information-technology facilities.

Conclusion

The education of students with special needs should be given the opportunity to maximally benefit from teaching and learning instructions. The use of digital learning is designed to establish equal access to learning opportunities and to support those with special learning problems. With the daily and continuous expansion of ICT in Nigeria, there is need to make these devices accessible to students with special needs. Digital learning will foster enhanced teaching and learning experiences as well as improving the general academic performance of students with special needs in Nigeria.

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AN EXPLORATION OF TEACHERS' PERCEPTION ON THE USE OF DIGITAL RESOURCES IN SOCIAL SCIENCES AND ARTS EDUCATION IN KADUNA STATE COLLEGE OF EDUCATION GIDAN WAYA

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Abstract

Digitization is the drive of modern society. Individuals, corporate organizations, social institutions and governments are steadily incorporating digital resources into their daily activities to remain visible in the ever evolving tech-driven world. This study explores the perception of teachers on the use of digital resources in teaching and learning and also, investigates the accessibility of digital resources to teachers. Through a multi stage sampling procedure, the school of secondary education arts and sciences program of Kaduna State College of Education Gidan Waya made up of eight departments was purposively selected. A calculated sample size of 52 was drawn from a population of 181 using Yemane's formula with a margin of error (0.05). Questionnaires were used to collect data and bar charts were used for presentation and analysis. Findings revealed that teachers believe that incorporating digital resources in their teaching is advantageous to learning outcomes. Majority are also somewhat confident of their ability to navigate digital resources. However, a significant number of teachers are not currently using any digital resource in their instruction delivery. Inability to afford high speed internet connections, inadequate digital literacy training, unreliable power supply were identified as major challenges to accessing digital resources. It was recommended that educational institutions should step-up provision of supportive infrastructures to facilitate incorporation of digital resources in teaching. Staff training on use of digital resources should also be intensified.

Keywords: Perception, Digital resources, Teachers, Accessibility

Introduction

The advent of digitization in education can be described as one of the most exciting 21st century gifts to the world. The 2010s witnessed the rise of Massive Open Online Courses (MOOCs) offering free and open-access courses from top universities, attracting millions of learners across the world (Koller, Ng, Do & Chen, 2013). More so, the COVID-19 pandemic quickened the adoption of digital education, compelling educational institutions worldwide to adapt rapidly (Hodges, Moore, LockeeTrust & Bond, 2020). Today, virtual classrooms, video conferencing, and collaborative online tools have become essential components of education (Hrastinski, 2018).

The use of digital resources in education has transformed the traditional learning landscape across the globe. With the widespread use of technology, particularly the internet, education has become more accessible and flexible (Educause Review, 2020). Digital education has revolutionised learning, making it more accessible, flexible, and technology-driven. Digital resources provide students with round-the-clock access to learning materials, granting them liberty to study at their own pace and convenience (Hollands, & Tirthali, 2014). Digital tools make learning more engaging through multimedia, simulations, and

gamification. Digital assessments and quizzes also provide instant feedback to students, helping them to monitor and evaluate their progress and areas for improvement (Mayer 2009, Tew & Bouldin, 2017). Digital resources often come in handy, in portable formats which are convenient for use on-the-go thus, reducing the need for physical textbooks and materials, which leads to potential cost savings for both students and institutions (Allen & Seaman 2017). Overcoming geographical boundaries and offering learning institutions opportunities to reach a global audience thereby fostering international collaboration is also made possible through digital education (Altbach & De Wit, 2017).

Digital learning resources include:

- Openly licensed materials like textbooks, videos, and courses that are freely available for anyone to use, modify, and share.
- Learning management platforms that facilitate course management, content delivery, assessment, and communication between educators and learners such as Moodle, blackboard, Canva, google classroom and adobe captivate prime.
- E-Libraries and Digital Archives that serve as repositories of digital books, scholarly articles, historical documents, and other resources for research and reading.
- Video Lectures and Multimedia content utilized for presentations to help convey complex concepts (Mayer, 2009)
- Educational Games and Gamification used to captivate learners' attention, provide motivation, promote skill development, enhance subject mastery amongst other benefits.(Deterding, Dixon, Khaled & Nacke,2011)

Educational applications cover a variety of software programs designed with age appropriate features and cutting across various disciplines, to enhance the teaching and learning process. Examples include Khan academy, wyzant, reading rocket, google expedition, merge cube, zoom online meetings and learning, Duolingo for language learning, prodigy, scratch, Quizlet etc (Khan academy 2021).

In spite of the aforementioned benefits of using digital resources to which the advanced nations of the world have since mastered and are improving upon, developing nations are still struggling to acclimatize to the global digital ecosystem. It is acknowledged that despite the variety and number of technology available to teachers, utilization during teaching-learning process especially as a transformative resource has remained disturbingly low. This can be attributed to the beliefs teachers hold about usefulness of digital resources and ease of usage which directly affects attitudes and behaviours in incorporation of new technologies. In a study conducted among early childhood and primary teachers on teachers' beliefs about the role of digital educational resources in educational practice, it was found that teachers were favourably disposed towards digital resources and also highlighted various benefits they believed to be derived from using digital resources which are similar to those mentioned earlier. However, the challenges associated with digital resources such as poor network connectivity, dearth of requisite digital literacy skills, time demands in preparing lessons with DR etc (Alberola-Mulet, Iglesias-Martínez & Lozano-Cabezas, 2021). Other challenges associated with the use of DRs are identified as follows:

- vii. Inadequate infrastructure and access to the internet which limits the availability and accessibility of learners to digital resources (UNESCO, 2017).
- viii. The cost of digital resources is beyond the reach of most learners in developing countries, affordability and availability of devices such as computers and smartphones poses a significant drawback for students and schools (World Bank, 2020). Accessibility of digital resources to low-income and/or remote areas also creates disparities in educational opportunities in developing nations (Warschauer & Matuchniak, 2010). Furthermore, the cost of acquiring digital learning materials and maintaining technology infrastructure can

be inhibitory for educational systems already suffering resource-constraints (UNESCO, 2020).

- ix. Another major constraint to the utilization of digital resources is fluctuating electricity which can interfere greatly with learning and the use of digital resources. Interruptions in power supply can create frustrations to both teachers and learners who may be unwilling to try again and again thereby slowing the pace of progress in digital learning (World Bank, 2020).
- Digital literacy gap is also a challenge to digital learning. Insufficient digital literacy among students and teachers can hinder the effective use of digital resources for learning. Developing countries are largely left to catch-up with advancements in technology. Related to this is the absence of training and ongoing support for teachers to enable effective integration of digital resources into their teaching practices (Chansa-Kabali & Anamuah-Mensa 2016; Karsenti & Fievez, 2013).
 - Since digital resources are often developed with a global perspective, teachers and course instructors may encounter difficulties in trying to localise resources and align content to suit local curricula and needs. This whole process of trying to fit-in creates a condition of maladroitness (Ongugo et al., 2017).

The digital transformation of education is a dynamic and ongoing process that continues to shape the future of learning. Embracing and integrating digital resources in social sciences and arts education is no longer optional or a matter of disposition but, a case of necessity for relevance in the present time.

Statement of the problem

The integration of technology into every sphere of human endeavor has become the order of this age and consolidating the same into social sciences and arts education has become imperative. However, there are issues constraining application of technology in education particularly in social sciences and arts education some of which bother on the following:

Perceived effectiveness of digital resources such as interactive simulations, multimedia content and online textbooks on teaching and learning as well as the impact of these resources on students' comprehension and engagement with educational content.

Secondly, the accessibility of digital resources to students and teachers with varying socio-economic backgrounds in view of barriers and disparities is also a hindrance to successful integration of digital resources in teaching.

Also, teacher preparedness in terms of possessing the requisite digital skills for effective adoption and incorporation of digital tools and resources in instruction delivery is another access-related challenge.

This study seeks to provide insights into perceptual and accessibility issues associated with the use of digital resources in social sciences and arts education and contribute to the development of strategies for enhancing both acceptability and accessibility to these resources.

Objectives

The following objectives guided the study:

- To explore teachers' perceptions towards using digital resources in social sciences and arts instruction.
- To investigate the accessibility of digital resources in social sciences and arts education.
- To compare the effectiveness of digital resources with traditional teaching materials in social sciences and arts instruction.

Methods

The descriptive survey design is adopted for this study. Multistage purposive sampling technique was adopted. Kaduna state college of education Gidan Waya was selected amongst the tertiary institutions in the state. Among the seven schools in the college, school of secondary education arts and social sciences program was selected. A questionnaire comprising of both closed and open-ended items was designed to elicit responses surrounding the study objectives. Data was analyzed using simple percentages and presented in bar charts.

The population comprised of eight departments in the school of secondary education arts and social sciences programs with a total of 181 teaching staff. Yemane's formula for determining required sample size was applied to arrive at a sample size of 52.

Results and Discussion

Figure 1: Responses on currently using digital resources in classroom instruction

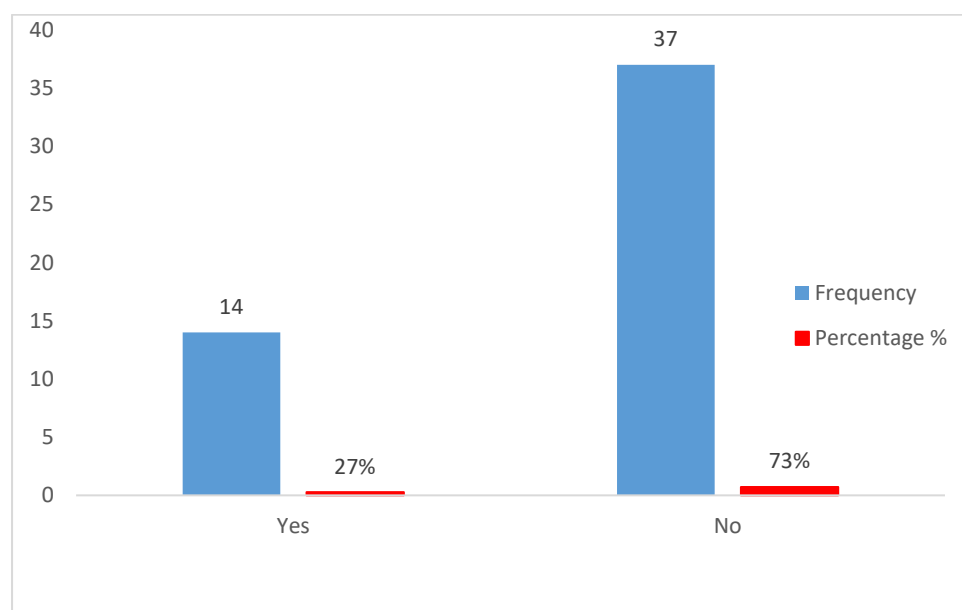
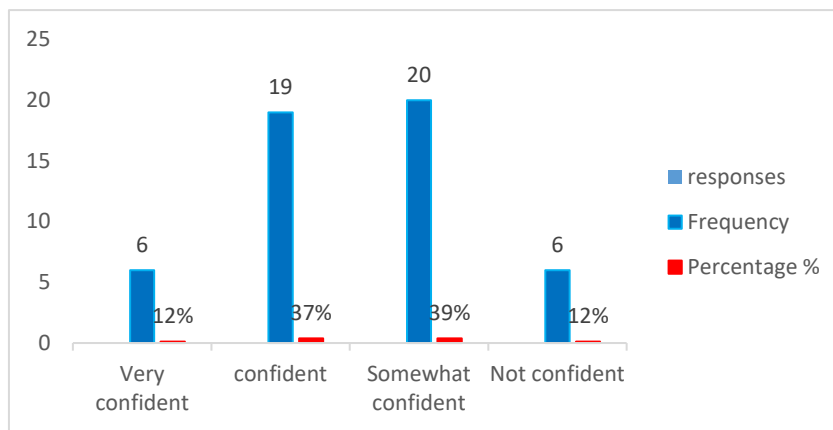
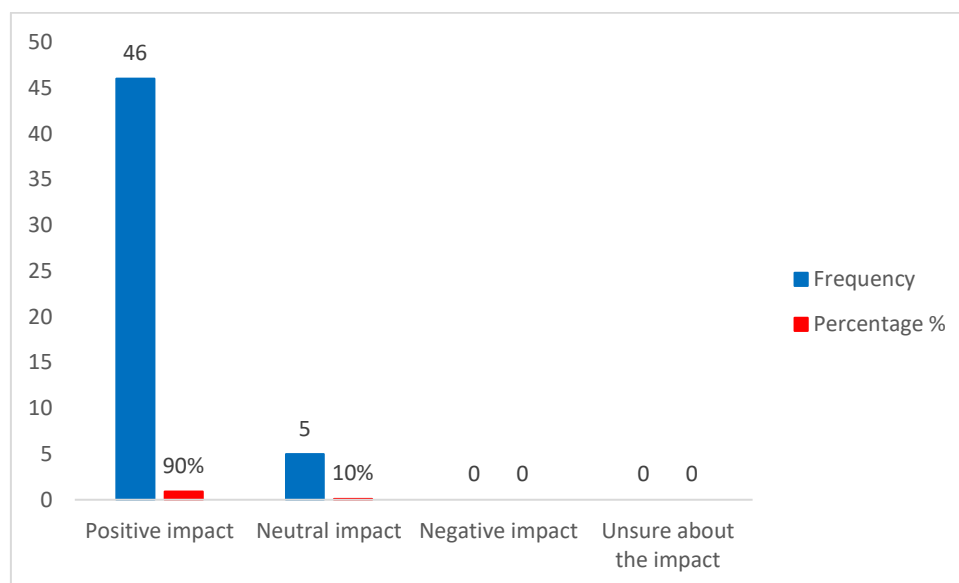


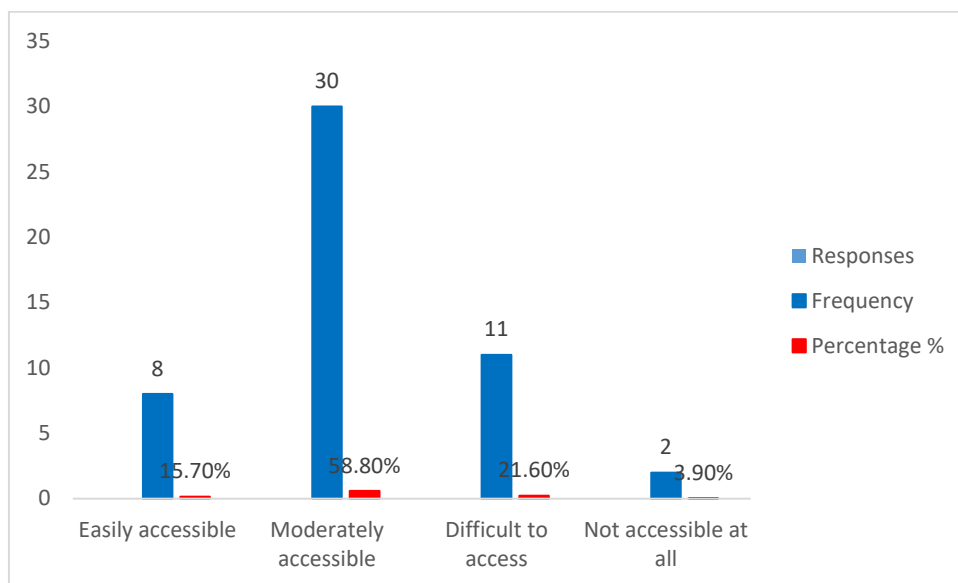
Figure 1 above shows that most of the respondents are currently not using digital resources in their classroom instruction, while only few of them are using it. This is an indication that majority of the teachers are still using traditional/printed materials for their class room instruction.

Figure 2: Responses on the confidence of the respondents in their ability to navigate and use digital resources effectively for teaching

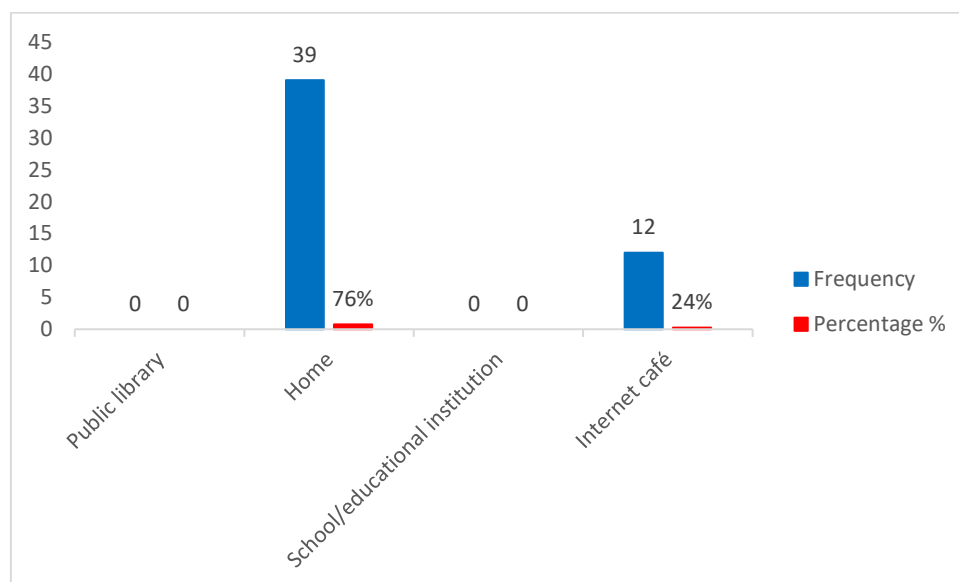
Responses in figure 2 above indicates that most teachers have some level of confidence in their ability to use digital resources while few are very confident of their ability to find their way around digital resources with little or no assistance at all. A little proportion expressed no confidence regarding use of digital resources.

Figure 3: Distribution of respondents based on their perception of the impact of digital resources on educational outcomes

From figure 3 above, teachers believe that digital resources would have a positive impact on educational outcomes. While a very few of them believe that the impact would be neutral, none of them believe that the use of digital resources would have either negative impact or an uncertain impact.

Figure 4: Responses on the rate of respondents' access to digital resources?

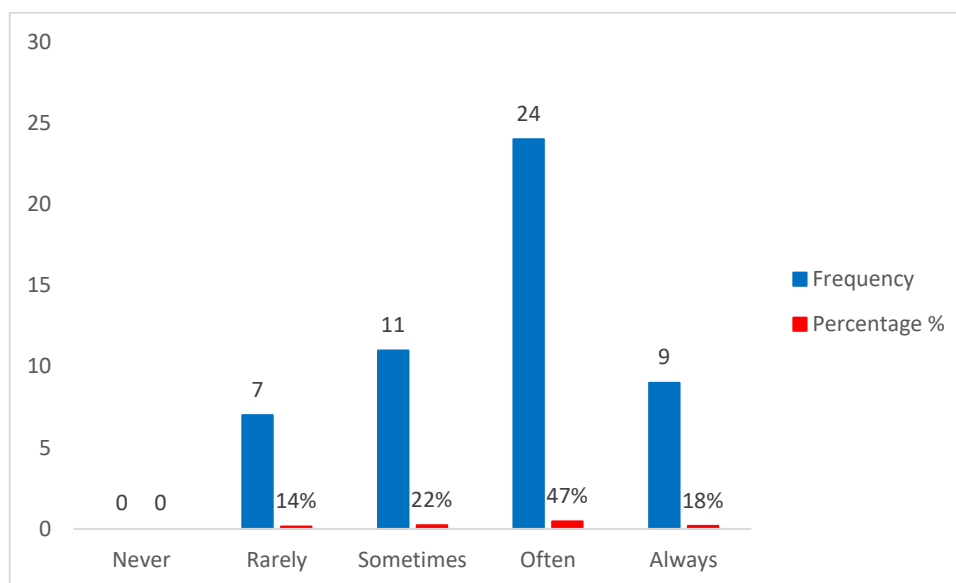
The responses displayed in figure 4 above reveal that digital resources are moderately accessible to majority of the teachers. While they are difficult to access and easily accessible by a considerable number of teachers, they are not accessible at all by an insignificant number of teachers.

Figure 5: Distribution of respondents based on where they access internet services

From the analysis in figure 5 above, most of the teachers access internet services at home, and only few of them access internet services from internet café. None of the teachers accesses

internet services from either public library or school/education institution as shown in the above table.

Figure 6: Responses on the frequency of the use of internet by respondents



There is no single teacher who never makes use of the internet as seen in figure 6 above. Some of them use the internet always or rarely, while most of them use it often or sometimes.

Figure 7: Preferred teaching and learning format by respondents

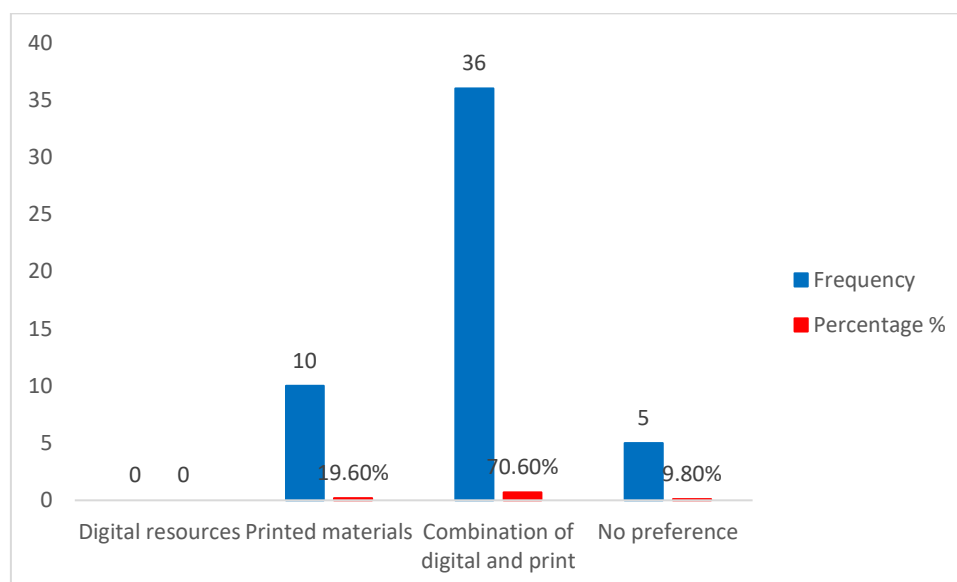


Figure 7 as shown above reveals that teachers prefer using a combination of digital and print materials in teaching and learning. Only a few of them prefer printed materials or have no preference. But none of them has preference for only digital resources.

Figure 8: The effectiveness of digital resources compared to traditional materials

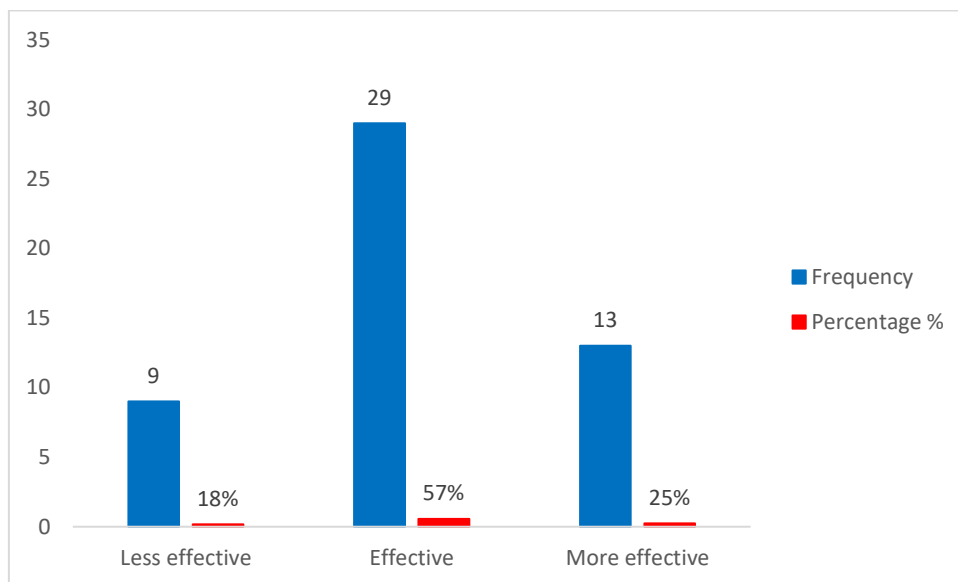


Figure 8 above reveals that more teachers agree that digital resources are effective in teaching compared to traditional materials. A good number also agree that digital resources are not just effective but more effective.

Figure 9: Responses as to whether digital resources can be more engaging and motivating compared to traditional resources

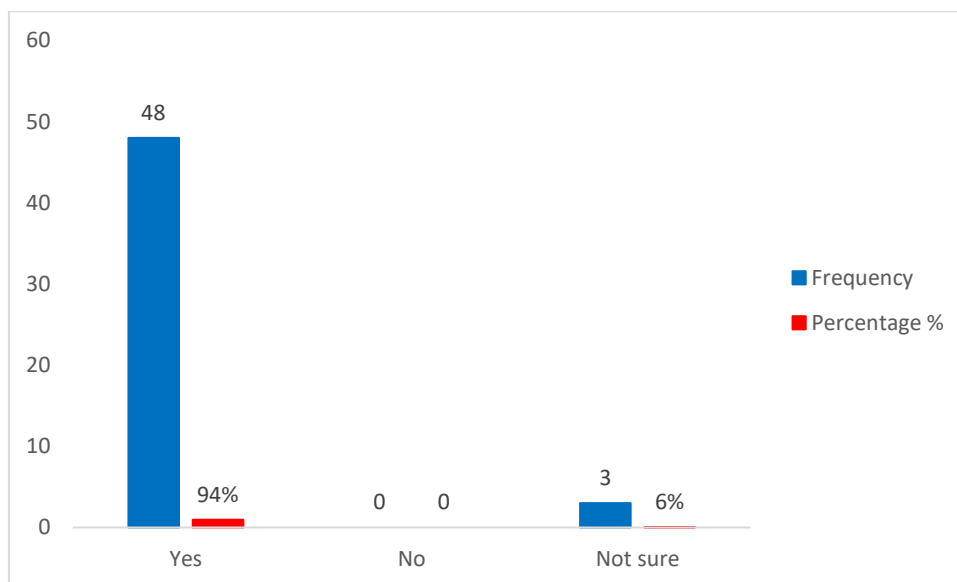
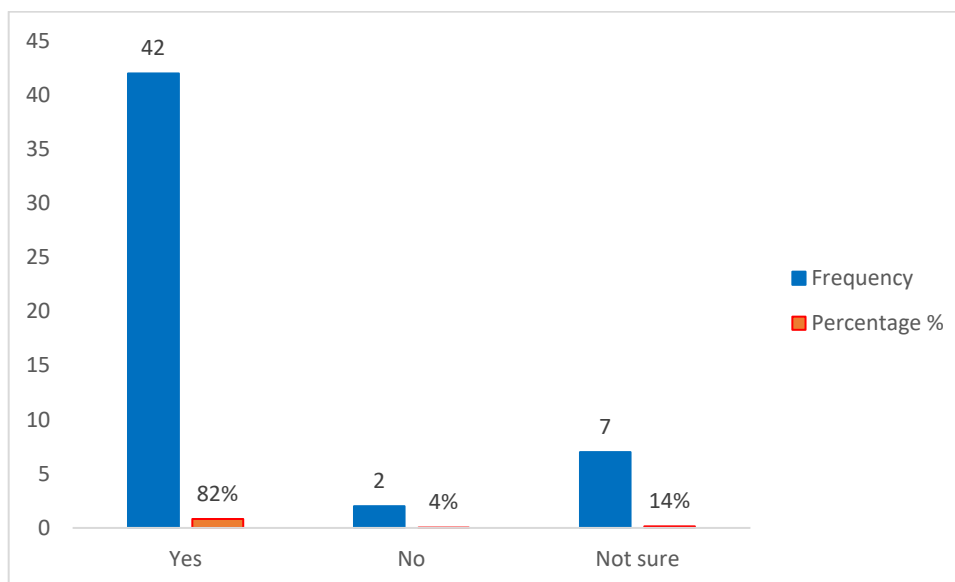


Figure 9 above shows that majority of respondents believe that digital resources holds potentials for more engagement and motivation of learners compared to traditional resources. While negligible number of them are not sure of their potentials (digital resources), none of them believe that the (digital resources) have no potentials compared to traditional resources.

Figure 10: Responses on the advantages of digital resources in terms of access and flexibility for learners



The responses displayed in figure 10 above reveal that majority of the respondents believe that digital resources offer advantages in terms of access and flexibility for learners. A few of them on the other hand are not sure of the advantages, and an insignificant number of them believe that they (digital resources) have no advantages in terms of access and flexibility for learners.

Discussion of findings

Findings of the study revealed that majority of the respondents are not currently utilizing digital resources though a significant majority perceive that digital resources positively impact educational outcomes. Also, most respondents access digital resources from their homes and describe their access rate as moderate though again, a good number of respondents do not use the internet always. Ironically too, no respondent acknowledged that digital resources alone was their preferred format of teaching and learning, instead majority preferred a combination of print and digital resources. A significant majority agreed that digital resources can be more engaging and motivating and also offer more advantages in terms of access and flexibility to learners. Challenges/ barriers identified by respondents in the use of digital resources include poor network connections, high cost of purchasing resources, limited digital education/ training and inadequate power supply. These corroborate the positions of UNESCO, 2017, World Bank, 2020 and similar studies that access to network, unstable electricity, and insufficient digital literacy are some challenges faced by users of digital resources especially in developing countries.

Recommendations

Institutions of learning need to provide facilities that support digital learning within the schools, to boost the morale of teachers towards incorporating these resources in lesson delivery as well as developing their digital literacy skills. There is also a need to organize regular training and retraining on digital literacy as well as having a technical support team to assist with ensuring smooth access to digital resources. This will go a long way in translating the positive perceptions of benefits derivable from digital resources utilization from ideologies to practical behaviours of incorporating in teaching and learning.

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THE ROLE OF TEACHER EDUCATION IN ECONOMIC GROWTH AND DEVELOPMENT IN NIGERIA.

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Abstract

This paper aimed at discussing the role of teacher education in economic growth and development in Nigeria. Education is the most grounded instrument used by man for his socio- economic growth and development. It is an instrument set up by the society for its progression. An uneducated man/woman is an unproductive and an economic liability. This in the manner takes off no other alternative to us for survival but through education, and education can as it were be maintained through teacher education which must be given due consideration so as to deliver a great and quality instruction framework that will in turn deliver quality graduates who will be specialists in their different areas as to contributed to the financial reconciliation of the country or nation for a solid standard of living. The different financial economic, social, political and regulatory deterrents within the way of a great and quality educator instruction regardless it is observed that the modern National Organisation on instruction, with its firm commitments and strong verbalization of Nigeria's collective instructive desires to correct the past ills within the framework, is the measurable reply for the country's financial reconciliation, restoration and self-reliance. It was seen that teacher education face a lot of challenges which include among others poor funding, lack of proper teaching practice, lack of teaching materials and quality teachers etc. It was concluded that there is no doubt that there is a need for much improvement and repositioning of the present day teacher education in Nigeria for economic growth and development. Recommendations were proffered among others that in view of the invaluable role of teachers in the life of any nation the government should increase the funding of teacher education sector for economic growth and development.

Keywords: Role, Teacher, Education, Economic, Growth, Development, Nigeria.

Introduction

There is no doubt that education is considered as express way to a higher life and also the upliftment of the society at large. Infact it is also seen as a reliable instrument for social, economic and political development of the education is a life-long process through which all the activities/features of man both (moral, emotional, physical and intellectual) development facilitated for him to be useful to himself and the nation/society into which he is born (Ijaiye & Lawal, 2004). It is a process through which the society/nation generates the knowledge and skills required for its survival economic growth and sustenance. It helps people's understanding of themselves and the whole world. It improves the quality of peoples lives and leads to broad social benefits to individual and society/nation, at large (Kazeem & Ige, 2010). Education, according to Osundare (2009), is the overall light-giver. It clears a path through the cage and; it is the instrument that takes man ashore from the rough clueless waters. This development has put lots of responsibilities on teachers who are the foremost operators of any education system. It's therefore not an overstatement that the professionalization of teaching and making the teacher the centre of educational programme in Nigeria, will enhance teachers' productivity, reduce the systematic problems within the educational sector, ensure effective service delivery, engage other sectors of economy/society similarly as placed education as instrument par excellence for national development (Okemakinde, Adewuji & Alabi, 2013).

However, teachers have obligation to the development of education and teaching as a profession and these noble objective can be realized by the training and retraining of teachers through in-service education (Eduwen & Osagie-Obazee, 2016). In the past, for example Nigeria has witnessed serious problems in the teacher education programmes. It is known that a well organized teacher education programme should strive to achieve the set objectives of societal demands and expectations. Teacher education is even rotating and dynamic and it is very important for the government at all levels to ensure adequate provision of competent teachers to face these challenges in a fast changing society such as Nigeria.

Teachers are indispensable in every nation, education opens the door to modernization and it is the teacher who is in-charge of the key to that door. However, if we have allocation to the sector, the best planning, policies and designs, the ultimate realization of any set of aims and objectives for education still depends on the teacher. Teacher education is an important driving wheel of economic, social and political development of a nation and the world at large. This brings about the absolute commitment of tertiary institutions to quality teacher education service delivery. Although we claim to have well-trained teaching staff, and implement adequate curricula for socially responsive teacher education and if education is to “prepare the individual for a happy and useful standard of its living within the society and the world at large, and this “useful living” can only be made possible in a reformed and reliable economy. This paper discussed the role of the teacher who is a product of the teacher education programme in enhancing economic growth and development in Nigeria.

Teacher education as an institution

Teacher education is an institution designed for the professional training of people who engage in the art and science of teaching. Osuji (2009) opined that teacher education is the professional education of teachers towards attainment of attitudes, skills and knowledge that will make them efficient and effective in their work/job in accordance with the need of the society/or the world at large. It includes training/education of service (pre-service) and education/training during service (in-service or on the job). Moreover, teacher education can be defined as the policies and programmes designed to equip prospective teachers with the knowledge, behaviour, attitudes, and skills they require to perform their tasks efficiently and effectively in the classroom and the society at large.

According to (Eduwen & Osagie-Obazee, 2016), opined that teacher education is therefore a formal programme designed to produce academically qualified and competent members of personnel who will continue the process of transmitting worthwhile knowledge to the present generation through the different levels of the school system. It is articulated by the Federal Republic of Nigeria (2004) in the National Policy of Education where the goals of teacher education were stated as follows:

- i. To produce highly motivated, conscientious and efficient classroom teachers for all levels of our education system.
- ii. To encourage further the spirit of enquiry and creativity in teachers.
- iii. To help teachers to fit into the social life of the community, and society at large and to enhance their commitment of national goals.
- iv. To provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to any changing situation not only in the life of their country, but in the wider world.
- v. To enhance teachers’ commitment to the teaching profession.

The Origin of Teacher Education in Nigeria

There are three basic systems of education in Nigeria which are as follows the traditional, the Islamic and the Western Systems. The traditional system is embryonic in organization and localized within the home and the village framework. Its emphasis is on character training, learning of the customs, traditions, values, skills and the traditional occupations, with the traditional religion occupying a prominent position. The Islamic system is aimed at turning out Islamic jurists and clerics, while the western (formal) type, organized in schools, colleges and allied institutions has English Language as the Language of Instruction, along with other aspects of the western culture like Christianity, a new political system, etc were introduced into Nigeria by the British.

The history of teacher education in Nigeria, according to Ejembi (2005) dates back to the 1880s when the missionaries were producing teacher evangelists. Initially, teacher evangelists. Initially, teacher education was informal with children recruited and trained basically to propagate the Gospel. The schools were built within the church premises and the students lived with the missionaries. Such “boarding house” systems had some obvious advantages of strict discipline and helping with the church chores, this system later developed into the apprenticeship system. They were there to serve the church but later the missionary bodies began to establish teachers training institutions to supplement the prevalent apprenticeship system. The C.M.S church took the lead with the opening of a teacher training college within the C.M.S Grammar School in 1859 at Lagos, a few months ahead of the Methodist Mission which opened her own teacher training Institution in Ibadan. The institutions continued to spread in numbers across the country till today.

Ejembi (2005) warns that any system of education that is religiously oriented is unlikely to generate any forward looking change. The traditional and the Islamic system fall into this group and therefore can never liberate their adherents from any socio-economic, scientific technological development and growth. If Nigeria is therefore to be developed and achieve any economic development and growth and become self-reliant, our best bet is the system that is secular and scientifically forward and not that which is based on the belief in a dogmatic, pre-ordained system of society. Science and Arts is the basis of modern technology and it gives that powers that changes for economic growth and development towards the end, the western formal Education is the answer-but its adoption to develop Nigeria and release her potentials for economic growth and development, it is necessary to develop a new educational system that has firm commitments. The new National Policy on Education represents Nigeria’s boldest attempt at articulating her collective educational aspirations aimed at correcting the previous ills of the system and building a progressive, economically reliant and politically united and peaceful Nigeria. Federal Republic of Nigeria (FRN,2013) posited that good life for the individual is very much dependent on a good society.

The good society can only come about through education. The new National Policy on Education and its integrated teacher education programme is capable of producing the educative process that can “integrate the Nigerian child into a sound and productive citizen” that would value the dignity of labour (FRN, 2013) This implies that the teacher must be given good quality education, to facilitate a good quality education system for a rapid economic emancipation and reliance.

The new national policy also provides among others that the system should produce teachers who should strive among other things to:

- a) Meet the manpower needs of the nation.
- b) Transform Nigeria from a consumer to a producer nation recognized among the industrial nations.

- c) Enthroned order in our morally deprived and socially violent society.
- d) Raise the standard of living of all Nigerians through new orientations on productivity and reward.
- e) Facilitate and sustain the unity, development and wealth of the nation. (FRN, 2013).
If these laudable plans are adequately implemented, there is no doubt that such a comprehensive teacher education programme will lead the nation to the desired economic growth, development and self-reliance which is the benchmark of our dream nation.

Preparing the teacher

In preparing the teacher for the great task, the teacher education programme should aim at relating the standard of the teachers to the socio-economic growth and development realities of the society. (Ejembi 2005) opined that, in appraising the worth of the teacher, the socio-economic and the personality variables should be considered although his/her technical competence. The programme should produce teachers who are eligible equipped with in-depth knowledge in their special areas and technical strategies, to enable maximum improvement in reacting to the strategies of development in an economically reliable Nigeria. The training of teachers should recognize the distinction between what Ejembi (2005) refers to as curriculum knowledge” and” pedagogical content knowledge” to be able to function well as follows:

The curriculum for teacher-education in Nigeria includes:

1. General studies
2. Foundation Studies –History, sociology, psychology, philosophy, Guidance and counseling,
3. Academic Disciplines (Any two Teaching subjects)
4. Teaching practice.

If these objectives and study areas are followed, the qualitative aspects of Nigerian education could be assured so that the Nigerian economy can be reconstructed and the nation made self-reliant in order to move towards becoming the best in the 21st century. Many institutions were established to provide professional training needed for self and societal economic growth and development. Some of these institutions are:

- The Grade III Teachers’ Colleges (Now extinct)
 - The Grade II Teachers’ Colleges (phased out)
 - The Advanced Teachers’ Colleges (phased out)
 - The Colleges of Education
 - The National Teachers’ Institute
 - The Institutes of Education affiliated to Universities.
 - The Faculties of Education in Nigerian Universities
- The professional bodies that handle teacher education include:
- The Curriculum Association of Nigeria.
 - The National Educational Research Council
 - The National Board for Technical Education
 - The National Association of Education Planners and Administrators.

However, all these institutions, Olugo, (2004) argues that, Colleges of Education are better for the preparation of teachers because according to her, at that level, teacher trainees are taught pedagogic content of knowledge while at the University level, they are concerned with “Lecturing”. She goes further to recommend that “the Universities should produce education graduates in administration, management, curriculum design, psychology, sociology, counseling etc. Her reason for this is her fear that “graduate” teachers from the universities

may emulate their lecturers by lecturing method instead of teaching by organizing and directing the pupils' learning activities.

Although the secondary school level has become the entry

Point for all the tertiary and professional institutions, infact there is a very large population and massive expansion of schools at that level nationwide. The high population of schools have their attendant problems

The high rate of delinquency, violence, cult groups and others in the schools – the same pool from where our teacher training institutions have no way to draw their intake. However, these delinquent behavior spreads over to the training institutions although is one of the problems of teacher education in Nigeria, indiscipline is one of the vices which can adversely affect all the efforts to bring the economy on the recovery way if not controlled. Infact with an improved teacher education programme, it can be controlled right to nurture a viable economy which Nigeria can rely for her way to economic growth and development.

Teacher Education and Economic Growth and Development

According to the words of Buxton (2004) a joined together Countries Association specialist, later posit that, books are the store of information, ethics, culture, science etc. in such event that you toy with books, you're tossing absent improvement, civilization and financial development. In the light of this manner, instructors, teachers, lectures are the transmitters of this "supply", and with a good faculty instructor instruction program the "supply" can be improved to create our dream "improvement, civilization and financial development" for economic growth and development in Nigeria.

Education raises the level of the financial prosperity of individuals and the country at large. (Ejembi 2005) opined that, "the educating calling is maybe the foremost vital and key of all callings for national advancement". It takes great and devoted instructors to create well qualified specialists, proficient medical caretakers, competent legal counselors, utilitarian engineers, constant bookkeepers, great pilots etc. It is through these over specified specialists and generators of thought that move the advancement of any country" that our country can be financially restored and all are items of the educators.

Educations is not as it is seen with the scholarly development of the nation, but with the totality of national improvement which support financial restoration. The unused instruction framework is created and organized particularly but different survival needs of the nation will be delivered. These specialists will in turn, go around the economy of the country in a great change for the great of each Nigerian.

One of the pre-requisite of nation mobilization for financial development is the creating of a mainly national awareness. To realize national awareness, there must be national integration and the key to national integration is instruction. Dependability to the country was essentially non-existent in spite of the fact that a lip benefit was paid to it. The unused approach of instruction satisfactory caters for these slips through its provisions for conferring national awareness with the students. The arrangement for learning, goes to assist, to cultivate national integration for ease of labour portability from one state to the another inside the nation to assist the economy to choose up and develop. The modern framework however encapsulates the instructing of unused body of ethical values able of supporting a cutting edge, common, deductively arranged and financially steady society like our dream Nigeria.

Furthermore, with the correct type of instructors created through the correct program of teacher education; doing the proper set of work by creating the correct set of labour that will differently do work. We should know that instruction is costly, quality instruction is more costly, but numbness is most costly we can attempt to manage instruction through a subjective

instructor instruction program, no matter what it takes for the solidarity and financial restoration of the nation Nigeria for economic growth and development.

The Problems of Teacher Education in Nigeria

Many years ago teacher education in Nigeria has suffered challenges emanating from socio-economic, political and technological advancements. The challenges affecting teacher education in Nigeria are as follows:

1. **Enrollment and Appraisal of students:** However, it has been said that it is as by a handle of disposal that the under studies select educator instruction as the shape of higher instruction he or she will seek after. In Nigeria today, there is over supply of trying instructors for most subject regions, the exemption being the sciences and specialized disciplines. The way to guarantee quality control and professionalism is to assess and survey the persons qualities or admissions characteristics of under studies as well as to center to programs on new skills, attitudes and values that enable them fit into the society and upgrade their knowledge for economic growth and development in Nigeria.
2. **Accreditation of Higher Institutions in Nigeria.**
The accreditation of teacher education programmes in Nigeria, all institutions and faculties leaves much to be desired. They are in the hands of the administration of the management. However it is sad to observe that present methods of accreditation of faculties in the higher institutions for the running of teacher education programmes is unbearable. There are so many uncoordinated and unorganised bodies and authorities involved such as University senates, the National Board for technical Education (NBTE), the National Universities Commission (NUC), Federal and State Ministries of Education through such bodies as the Joint Consultative Committee on Education (JCC) the National Council for Education Commission for Colleges of Education (NCCE) and the Teachers registration Council of Nigeria (TRCN) that maintains a national register and code of conduct for teachers.
- 3 **Lack Of Funding:** Teacher education is characterized by poor funding from all levels of government, this has resulted in the inadequate provision of teaching and learning facilities, obsolete textbooks, dilapidated school buildings, overcrowded classes and ill-equipped classrooms lacking in sophisticated information and communication Technology (ICT) system although, it is sad to note that the Nigeria Government gives less than 26% of her national budget to education which is very poor and below the standard prescribed by UNESCO. In fact the quality of products from this system is in doubt due to poor funding.
4. **The Quality of Teacher Education In Nigeria:** The quality of teachers is a very big problem in teacher education in Nigeria. This is because those that are teaching are not qualified to teach and those that are qualified to teach are not teaching well. The NCCE is there to accredit the teacher education by assessment. The quality of teacher education in Nigeria is very poor.
5. **Teaching Practice:** Teaching practice is an important part of teacher education programme. However, little attention is given in the effective organization of teaching practice in our teachers colleges. In short there is a wide variation in the amount of time that students spent in teaching practice. Some colleges, institutions, of higher learning organize teaching practice for whole term, some in six weeks and some in a whole year. The differences affects standard and quality of teacher education in Nigeria.
6. **Training in-Service Education:** The administrative organization and curricular proposals are made, changes in the educational system depends on teachers that concerns, it requires the hand work of well-trained and educated teachers in Nigeria school system who are

agents of civilization and teachers of the country. Infact improving the quality of teachers and establishing innovations in education are very important in in-service education.

Teaching as a profession

The need for the professionalization of teaching has become the talk of the day in view of the advent of new technology and knowledge explosion that demands better trained teachers at the various levels of our educational sector. However, professionalism should be seen as the ability of the practitioners of an occupation to enforce its rules and regulations in terms of the prestige, ethics, work conditions, admission into the fields, training, certification and registration. Although teaching in Nigeria is yet to be fully accorded the full accreditation as a profession because it has no direct method of control poor remuneration of teachers and lack of political stability will be on the part of teachers' registration council of Nigeria to enforce its code of ethics and standard of teaching Profession for economic growth and development.

Conclusion

This paper has explained the role of teacher education in the economic growth and development. However the challenges confronting teacher education in its demand for the economic growth and development is ranging from enrollment, intake and appraisal of students, quality control, teaching practice, in-service education, system of institutional accreditation. Poor funding to professionalization of teaching were uncontrollable. There is need for much improvement and repositioning of the present day teacher education in Nigeria for economic growth and development.

Recommendations

The recommendations made are as follows:

1. Government should increase the funding of teacher education sector by owning a minimum of 35% of its annual budget on the training and professional development of teachers through in-service training, seminars, conference, workshops on ICT programs and provision of infrastructural facilities for economic growth and development.
2. Also we need to re-organize the teachers Registration Council of Nigeria (TRCN) as to improve to be more proactive in enforcing the code of ethics and standard of the teaching profession in Nigeria
3. The criteria or qualification of candidates for training as teachers should be reviewed upward to a minimum of five credits including Mathematics and English. Therefore, education seize to be a dumping ground for candidates that regard teaching as the last opinion.
4. Government should be more committed to the welfare of teachers through regular promotions and recognition of teachers in decision making process on matters affecting their profession.
5. Teachers themselves should guide against unhealthy rivalry and disunity among its members. A major weakening force in the teaching profession today is the proliferation of organizations within the parent body of the Nigeria Union of Teachers (NUT) such as All Nigeria Conference of Principals of Secondary Schools (NACOPSS), Conference of Primary School head teachers of Nigeria (COPSHON), National Association of classroom teachers (NACT) and the latest being the Academic Staff Union of Secondary Schools (ASUSS). Improvement in all these will help in enhancing the economic growth and development in the 21st century.

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THE ROLE OF ART EDUCATION IN ENHANCING CREATIVITY IN THE DIGITAL AGE

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Abstract

This paper studies the role of arts education in enhancing creativity in the digital age, art activities on creativity with visual art, and, specifically, how this has been addressed within the psychology of art its importance to societal development, the importance of arts as essential components of a comprehensive education leading to the full development of the individual that will ensure full artistic creativity in digital to development and participation in social and artistic life. The teaching of art education through the use of digital technology and the creation of art forms leads to enhancement of aesthetic sense ability for basic level in schools. Computer technology positively changed the way art is taught and learned and it guided instructional reform in art education world. Moreover, despite the many possibilities of the new technology, few art programs embrace the new approach. It is noticed that art teachers are often reluctant to implement computer technology in art education, either because they don't have the resources or skills to use technology or because they prefer the traditional one. Furthermore, the paper emphasis the urgency of the emerging of technology modern digital teaching resources on art education to enhance creativity in the artistic productions, teaching/ learning and how it contributes to the development of art students in general. The Paper recommended to recognizing that art education brings the creative sense through engendering a range of cross-cutting skills.

Introduction

Arts in education is an expanding field of educational research and practice informed by investigations into learning through arts experiences. The arts include Performing arts education (dance, drama, music), literature and poetry, storytelling, Visual arts education in film, craft, design, digital arts, media and photography. Art education is not being so much about teaching art, but also focused on:

How to improve learning through the arts, how to transfer learning in and through the arts to other disciplines, discovering and creating understanding of human behavior, thinking, potential, and learning especially through the close observation of works of art and various forms of involvement in arts experiences such as Painting, Sculpture, Photography, Dance. And various form of dramas, movies in action catoons etc. (Visual Art Encyclopedia, 2019). The document added that Fine Arts typically denotes such expressions as drawing, painting, printmaking and sculpture. It deals with aesthetics and the intellectual stimulation of the viewer while Applied Arts creates utilitarian works, these include architecture, digital art, photography, industrial design, fashion design, interior design as well as decorative arts. Fine or Applied Arts are both visual in nature. Fine and Applied Arts is important for the growth of the individual and the nation at large. Fine and Applied Arts enhance the process of learning, nourishes the system, which includes our integral sensory, attentional, cognitive, emotional capacities, which are in fact, the driving force behind all other learning (Jensen, 2011). The author emphasized that the arts promote the understanding and creative skills in tems of production of the various forms in arts which also leads technological development, enhance the awareness and respect of other as well as perceptual and cognitive skills.

Art Education enables students to become creative arts practitioners (Ajekeye, 1982, 2-3). Students learn to develop the necessary imaginative, intellectual, theoretical and practical skills to equip

them for continuing personal development and professionalism (Ajibade, Enamhe and Oloidi, 2011,2006). Art informs and provides visual, tactile and more practical learning environments.

Artists have always been inspired to introduce or adopt new media technologies for their expressions. This pushes the boundaries of traditional medium and creates an influential voice which clearly reflects the views of the society about social, religious, political and other aspects of human life. Digital art has gained respect and understanding because it covers the historical movement of art and focuses on technologies especially conceptual strategies in the right direction. These technologies easily adopt and assimilate widespread changes in various art fields such as, video art, photographic skill, installation, graphics, and paintings.

It is stated in the National Policy of Education (NPE) Section 1:7 that, “Educational activity will be centred on the learner for maximum self development and fulfillment; and efforts will be made to relate education to overall community needs.” These goals and philosophies are meant to develop young people into effective citizenship but have proven difficult to achieve. In effect, through the practice of media art making, youth become more fluent at communicating their ideas to others.

Concept of art education

Art is a visual language whose statement records man’s response to a multiplicity of environmental stimuli. Such stimuli can be social, political, cultural or even religious in closed or open societies (Enamhe, 2007). Lazzari and Schlesier consider art as, “strictly human phenomenon” (2008).

Art education is an approach to teaching and learning that utilizes creativity, imagination, and artistic exploration to support student outcomes. It includes performing arts like dance, music, theater, and visual arts like drawing, painting, sculpture, and design works. Art education is also defined as the involvement in artistic and creative activities, such as dance, theater, music, painting, or sculpture. Art is an expression of ideas created by human imagination, skill, and invention.

Art education policy is crucial for the development and expansion of a country's creative and cultural capital. Art education functions and aims to build tolerance, democracy, civilization and harmonious living among diverse community. Other than that, it is also intended to widen students’ intellectual imaginative skill and expression through art. To ensure these, it is important to develop aesthetic sensibility and competency, as well as applying technology in creative process and in presentation and performance of artwork. Some use illustrations and experiments for clarity so the students need to know how to draw (Enamhe, 2001). Through art education, learners are trained to develop good manners and behaviours because art introduces norms and values of its community and practitioner to the learners. In that sense, teachers’ behaviour play a big role in teaching process and same goes to the material given to students as recipients of knowledge. (Suhaya, 2016). Yandwi (2016) in India found that many art teachers such as dance teachers in West Sumatera are still unable to grasp the concept of art education similar cases of Nigeria art teachers. These teachers liken their understanding of art education. It is to an extent where a school principal assigned an English subject teacher who can dance, or sing music to teach the art to students. In term of competency, the teacher has skills but theoretically does not understand the nature of true art education. This leads to ineffective learning of art creativity in educational aspect.

Concept Of Creativity

Creativity includes two dimensions. The first dimension is the novelty notion; it is a phenomenon in everyday life and therefore anyone can be creative as an essential aspect of his/her contribute to the business environment and everybody has to be involved in creative

processes. Although there is no an agreement about where creativity is situated in a process, a product, or a person, there is agreement about creative work involving both the concepts new and useful (Petrowski, 2000). Creativity means a belief in new ideas and making them into reality in the forms of new products or services providing by organizations in the marketplace. It is based on novel and useful ideas, regardless of the type of these ideas, the reasons behind their production or the commencing point of the process (Unsworth, 2001). Creativity can be seen as a mental process which produces novel and useful concepts or ideas, or it could be innovative relationships between existing ideas or concepts.

Creativity includes two principles ‘problem finding’, and ‘problem solving’, and creativity needs several skills and talents. Creativity can be divided into three types and they are: creating something new, combining things together, and improving or changing things (Mikdashi, 1999). It is regarded as a principal term in various fields ranging from the fine arts International Journal of Tourism & Hotel Business Management, 2 (1) 247 and architecture, to psychology, sociology, economics, science, engineering and lastly management. The application of creativity in marketing can provide added value to services or products, further than the tangible aspects or clear characteristics of these products or service (Sadi & Al-Dubaisi, 2008).

Creativity in Art

creativity in art involves the process of generating new ideas, concepts, and forms that evoke emotions, provoke thought, and communicate the artist’s unique perspective. Artists tap into their imaginations, emotions, and original ideas to create visually or conceptually engaging works of art. (Andriopoulos, 2000). The earliest definitions of artistic creativity were based on the concept of creative individual, when Guilford (1950) defined creativity as “the abilities that are most characteristic of creative people”. Creativity has been defined in various ways. Creativity is defined in as “the production of novel, appropriate ideas in any realm of human activity, from science, to the arts, to education, to business, to everyday life”, thus the ideas have to be new and appropriate to the opportunity or problem presented Appropriateness emphasises that the construction is considered fit for purpose and valued by a relevant community (Amabile, 2018). It can be defined as “a domain-specific, subjective judgment of the novelty and value.

Art Creativity, therefore can be defined as the capacity of reading through reality beyond its empirical data, and the artist, with the use of metaphor can be considered as a self-exiled, who keeps in touch with an over – reality, thus creating a universal world from little and common events. This capacity of creating is, in a certain way, the merging of the elaborated experience and the use of imaginary processes, and can be considered the only possibility for a society to produce innovation. Innovation in itself cannot emerge from nothing, as the axiom of Lavoisier in physics: “in nature nothing is destroyed and nothing is created from nothing, but everything is being transformed”. In a totally organized and bureaucratised society, as Horkheimer called it, creativity is the element that provokes dis-order and may act as a blocking agent of all the organized social system, enhancing change and proposing innovative and more adequate styles of life it is a cognitive process, which needs the active participation of the individual, in order to transform emotions, reactions, feelings, physical perceptions as well as visual and acoustic empirical data into a form which is intellectually organised. Creativity is commonly regarded as the production of novel and useful ideas or problem solutions (Sternberg & Lubart, 1999; Dewett, 2004; Amabile et al., 2005; Woerkum et al., 2007)

Digital art

Digital art refers to any artistic work or practice that uses digital technology as part of the creative or presentation process. It can also refer to computational art that uses and engages with digital media. Digital Literacy was first introduced by Paul Glistler in the year 1997, this is seen in his book titled “Digital Literacy”, thus described digital literacy as the ability to understand and use multiple formats of information in a wide range of sources when presented through computers or other forms of digital technological tools. The artist is usually concerned with emotions and logical distortion of the reality and all that takes place as a work of art. To create means to be able to “re-invent” reality from an empirical fact. The artist is that kind of human being that starting from a highly empirical and existential moment is able to create, in some sort of strange and mysterious way, a metaphor that connects everyday life events to a universal world of meaning.

Digital art consists of either two dimension visual information displayed on an electronic visual display or information mathematically translated into three dimension information, viewed through perspective projection on computer monitor. The two dimension computer graphics which reflect how you might draw using a pencil and a piece of paper. In this case, however, the image is on the computer screen and the instrument you draw with might be a tablet stylus or a mouse. What is generated on your screen might appear to be drawn with a pencil, pen or paintbrush. The second kind is three dimension computer graphics, where the screen becomes a window into a virtual environment, where you arrange objects to be "photographed" by the computer. Typically a two dimension computer graphics use raster graphics as their primary means of source data representations, whereas three dimension computer graphics use vector graphics in the creation of immersive virtual reality installations. The specific visual characteristics of a digital painting can be traced back to the software. They include transparency, symmetry, distortion, repetition, texture, embossing , mathematically perfect circles, ellipses, squares and other forms, and a flat surface due to the (up to now) technical impossibility to make the brush stroke visible

Art Creativity and Digital society

Technology in the Art classroom has the potential for improving the status of Art programs. Artists have always been inspired to introduce or adopt new media technologies for their expressions for fast and for the purpose of mass prodction. These technologies easily adopt and assimilate widespread changes in various art fields such as, video art, photographic skill, installation, graphics, and paintings. It has developed new thoughts that stimulate new idea within the society. Nigeria may not fit into the modern workplaces and art practices because they were not taught using the state of-the-art instructional facilities (e-technology) to move with the time, some of the graduate artists have to go through another computer-based training after graduation to meet up with the expectations of today’s clientele (Bassey and Nya, 2019). For instance, a graphic artist who depends on the manual production process of graphic work such as banners and other adverts cannot match up with the speed and precision of the computerized machines for the production of flex banners and other digital items. This assertion is in line with, Lehman (2001) who asserts that “evidence of the effectiveness of arts for instance, in embracing student’s creativity and producing more prepared citizens (artists) for the workplace for tomorrow, can be found documented in studies held in many varied settings from school campuses to the corporate world.

According to Arora (2019), “In today’s tech-savvy world, a drawing tablet is a graphic designer’s best friend”. The author analyzed that with thousands of features and functionality, a drawing tablet grants a vast spectrum of flexibility to designer, different artists performs differently with different kinds of drawing tablets, which includes; Graphic Tablets, Pen

displays and Tablet computer. Other emerging devices include Digital and 3D printers, Bluetooth and cloud storage use by graphic designers, digital painters and illustrators and cutters for sculptors.

The role of art creativity in education

Creativity in education has received global attention and recognition (Egan et al. 2017). Institutions such as the Organisation for Economic Cooperation and Development (OECD), the United Nations Educational, Scientific and Cultural Organisation (UNESCO), Program for International Student Assessment (PISA) and the Partnership for 21st Century (P21) are calling for its inclusion in teaching and learning as one of the twenty-first-century competencies (OECD 2019b). Countries such as the United States, Australia, Canada, England, Taiwan, Japan, Singapore, Scotland and Ghana have all added creativity as an essential component of their primary or secondary curricula (ACARA 2012; MOE 2019; Shaheen 2010; Tsai 2015). The inclusion of creativity in secondary curricula is linked to its role in empowering individuals and societies (Ershadi and Winner 2020).

In the early 1980s, when the Nation At Risk, review a report prepared by the National Commission on Excellence in Education, initiate concern for excellence in American education resulting in directives that buried reformers for the rest of the decade, technology made its entry into education. Since then, technological influence in education has affected the way teachers teach and students learn. Technological innovation is a worldwide paradigm shift all aspects of society, including the educational community, transform themselves and the way they operate. As computers became popular in education, they assumed a different role; they were used to acquire information, process, send, deliver, and serve as tool for teaching and learning. In those and other technology hold much promise to improve student's motivation and learning.

Creative programme places artists in the classroom to assist teachers in developing their pedagogical practice. Teachers are encouraged to move beyond their typical roles and routines to make sure that Creativity is widely acknowledged as vital for social and economic innovation and development as well as for individual well-being. Individuals and societies that embrace creativity and experimentation are more likely to realise the benefits of knowledge intensive societies (Michalski, 2011). Creativity is a priority for education and is central to the discourse on 21st century learning. The education system in Nigeria need to emphasise the importance of preparing learners for the unknown: jobs that do not yet exist, technologies that are yet to be invented, and problems that have not yet been anticipated. The Nigeria education system Innovation Strand also should includes a strong emphasis on nurturing creativity in education. The European Reference Framework on Key Competences identifies creativity as a transversal theme that is important for the development of basic skills.

Creativity in the 21st century Nigeria

21st century as defined by (Definitions.net, 2019), can be said to be the era we are in now, a time of freedom and technological advancement and it is a growing and flourishing field, which makes it an incredibly dynamic field get involved in. Art of the 21st century emerges from a vast variety of materials and means. As always, new technologies provide new opportunities and challenges and many artists regularly and freely mix media and forms, making the choices that best serve their concepts and purposes. These include the latest electronic technologies, such as digital imaging and the internet; familiar genres with a long history that continue to be practiced with great vigour, such as painting, materials and processes once associated primarily with handicrafts, re-envisioned to express new concepts.

Globalisation and the 21st Century African Art A key feature of the art scene in the 21st century (and of many sectors of 21st -century life) is the impact of globalization – the accelerating interconnectivity of human activity and information across time and space. Aided

by the internet and mass media, awareness of the vitality of contemporary art in localities around the globe has grown more rapidly (Robertson, 2014). Anyone with access to the internet can follow developments anywhere around the world that is why many modern African artists alienating their art from any element of cultural identification is the core of their practice. Thus, unlike the 20th century which portrayed individualism, the 21st century through the beauty of globalization has nations contributing and sharing their resources for the benefit of all. 21st century as posits by Annku and Adu – Agyem (2012), is a post-colonial/ contemporary period where synthetic and natural materials are used, designs are done on computers, and many other means. When describing the impact colonialism had on African contemporary art, it is described as art created in the time period of post-colonialism, into the 20th and 21st century.

21st century societies are in ever more need for innovative workforce that is more creative and flexible and can adapt to different conditions. Art and arts education helps children, youth and all lifelong learners in acquiring the necessary skills that are required in 21st century conditions based on information economy (IFCA, 2014). Art education has an important place in education. It adopts an approach that handles the individual in all aspects, enables him to perceive life well and increases his aesthetic sensitivity and provides intellectual equipment.

Importance of Digital Literacy

The Importance of Digital Literacy Digital Literacy goes beyond the traditional classrooms to creating new ways teachers can teach and learners can learn within the classroom. Students' are now discovering new ways they can interact, collaborate and engage with their mates using technologies and digital media. They are no longer comfortable being confined to physical texts when it comes to reading. As young people gain access to technological tools, they discover new ways they can interact with the content they like. This is why curriculum designers and policy makers should focus on incorporating digital literacy in the classroom.

Digital literacy helps in deeper learning. When teachers use different strategies and learning resources to foster students understanding, it leads to deeper learning. Hence, when students deeply understand the content of the instruction, they can think critically, communicate and effectively work with others. Bitter and Loney (2015) in their own findings discovered that Presently, technology plays an important role in scaffolding teaching and learning experiences in schools. Enhancing our teaching and learning with technology helps in improving students learning, it also gives teachers the opportunity to choose the right tool to achieve students learning goals. Lesley Hodgson (2001) said: "I will continue to think literally when it comes to applying computers to the various activities I introduce to my students and look for other software to extend their skills in visual interpretation and communication". Digital literacy also helps teachers to be creative and innovative. When they create instructional materials in class, innovate new ways students can learn, device ways of fostering instruction, they are innovative teachers.

Digital Literacy Resources

In the Classroom Digital literacy resources are learning resources that support the processing of information by helping students to develop mental representations through the media elements and other educational resources presented to them, (Eady and Lockey, 2013). These are materials that are added to an instruction, used by the teacher to support learner's achievement of a desired learning goal. They are made up of multimedia elements which include: video, images, texts, audio and photos used in the class to enhance information. Over the years, research carried out shows a positive outcome for learners who learn from resources that combine words, videos and pictures effectively, rather than those that have words alone.

Digital tools such as interactive white boards are used in the classroom to enhance students understanding of an instruction. It helps to integrate various learning styles into the learning experience; hence students can see, hear and interact with the white board through touching. It helps to display various media types using projector on the laptop. This ranges from video, photos, graphs, maps, illustrations; this helps to keep students engaged in class and improves their understanding of the concept. Other digital tools that can be used in the classroom to improve instruction are; laptops, mobile phones, tablets, computers etc. Educational Applications are digital resources used in the classroom to foster students learning and aid instructions. The use of educational materials in the classroom provides our students with multiple ways of engagement, representations and expressions. It is great for teachers to select materials that will help students retain information they are learning, because learning is not meaningful when students forget what they have learned. Voltz et al(2010) citing Rief (1993) accerts that students retain 10% of what they read, 20% of what they hear, 30% of what they see, 50% of what they see and hear, 70% of what they say and 90% of what they say and do. It is a combination of technologies, platforms and applications that impact teaching and learning. The internet improves the quality of teaching and learning, improves teacher's quality of teaching and improves student's learning ability and technological renovation through creativity. The internet is a powerful teaching aid, with the aim of transmitting audio, visual and audio-visual teaching and learning resources to students in class.

Conclusion

For us to get our students prepared for future work and life, there is need for new educational methods and pedagogical approaches which will help promote individual learning, collaboration and develop student's abilities. In Nigeria, there is need to reduce the emphasis placed on core academic knowledge and adopt more of the 21st century skills so that students can learn and apply their knowledge even outside the school. This will help Nigerian students even when they step into the society, they can make meaningful contributions and greater achievements. In a developing country like Nigeria, there is need for improvement in our educational system. Because of its uniqueness, art must be pursued with accurate concept. Today, technologies do the greater part of thinking and exploration for the artists. The spirits of creativity, skills, independence, cognition and psychomotor have been played down because of the "ever-readiness" of technological devices to carry out commands. Therefore, it is of utmost importance if Nigerian institutions should embrace this global change and become part of the digital culture with the rest of the world by introducing digital art in our school curriculum later than never.

Recommendation

1. Art should be encouraged by the government to develop creativity, innovation and skill development.
2. Effective use of skills should be encouraged to improve self-concept for self-sufficiency.
3. Art education in Nigeria, needs to change day by day, shows the renewed efforts to reach a contemporary art education. Art education should be noted for its structure, which takes shape and develops according to the dynamics of the country.
4. All necessary steps should be taken and their importance should be understood in order to focus on art education with a deep-rooted foundation to be in a parallel transformation with the developing-changing world.
5. Government at different levels should take proactive steps in providing e-technology devices to the department of Fine and Applied Arts in the Colleges of Education and also ensure the access and utilization of those facilities through implementation, monitoring and evaluation system.

6. Investigates in arts and culture-related industries to provide important economic benefits to local and regional economies.

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