

Managing Education in Nigeria and The Emerging Technologies in the 21st Century Classroom

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Abstract

Education serves as a cornerstone for individual and national development, and the integration of emerging technologies in 21st-century classrooms has the potential to transform teaching and learning processes. This study examines the management of education in Nigeria, focusing on the challenges and opportunities associated with integrating emerging technologies into classrooms. It highlights the significant role of tools such as ICT, AI, and VR in fostering personalized, collaborative, and efficient learning. Despite the benefits, Nigeria faces substantial barriers, including inadequate infrastructure, limited teacher training, and socioeconomic disparities, which exacerbate the digital divide. The study proposes strategic approaches to enhance technology integration, such as strengthening infrastructure, comprehensive teacher training, and developing clear policy frameworks. By addressing these challenges, Nigerian classrooms can better align with global standards, equipping learners with the skills required for success in a digital age.

Keywords: *Emerging Technologies, ICT Integration, Teacher Competency, Digital Literacy and Educational Infrastructure*

Introduction

Education is a vital instrument for fostering individual and national development, serving as the bedrock of progress and innovation. In Nigeria, the effective management of education has become increasingly critical in the face of technological advancements that are reshaping the landscape of teaching and learning. Every human being by nature is a teacher. Teaching takes place once an activity, formal or informal, leads to change in an experience or behavior in someone else from unknown to known. The traditional African society prior to the advent of colonialism had forms

of teaching and learning system in which the parent or elders inculcated societal norms and values on the younger generation or to one another. The system was moralistic, simple and pragmatic. The traditional African teaching process depended on every day experiences using tangible and intangible materials found in the environment such as artifacts, crafts, natural resources, festivals, folklores, arts, idioms etc, to aid teaching and learning, which is still in use today to preserve and transfer our cultural heritage even though it was informal. Today, education vis-a-vis teaching has taken a new dimension as some persons are versed with the right and responsibilities to carry out teaching functions, otherwise called a teacher. Consequent, such individual must pass through some specific and specialized training through designated platforms and specialized programmes and process called Teacher Education. In tandem with the above and given the specialized teachers' roles in the developmental process of all individual and the nation, it is observed by the writer that, the Federal Government of Nigeria presently places emphasis on the teaching profession as enshrined in the National Policy on Education which states amongst the goals of teacher education is to produce highly motivated, conscientious and efficient classroom teachers for all levels of the educational system, provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to changing situations (Federal Republic of Nigeria, 2013)

The 21st-century classroom, characterized by digital tools and innovative pedagogies, demands a shift from traditional practices to technology-enhanced approaches. This transformation aligns with global trends that prioritize interactive, learner-centered, and activity-based instruction, as advocated by the Federal Republic of Nigeria's National Policy on Education (2013). Consequently, managing education in this new era requires deliberate strategies to integrate emerging technologies, improve infrastructure, and equip educators and learners with the necessary skills to thrive in a digital age.

Historically, the Nigerian education system relied heavily on face-to-face interactions, with limited incorporation of technology in the classroom. Teaching was largely teacher-centered, with educators acting as the primary source of knowledge and students as passive recipients. However, advancements in Information and Communication Technology (ICT) have introduced a new dimension to education, offering tools such as interactive boards, multimedia devices, and virtual reality platforms that enhance the teaching and learning experience (Etim, 2006; Onyia & Offorma, 2011). These tools not only make learning more engaging but also foster critical thinking, creativity, and collaboration among students. Despite these benefits, the integration of emerging technologies in Nigerian classrooms faces significant hurdles, including inadequate infrastructure, limited funding, and a lack of technical expertise among educators.

The National Policy on Education (FRN, 2013) highlights the importance of equipping teachers with the skills and knowledge required to utilize ICT effectively. Teacher education programmes are structured to include ICT training, aiming to produce professionals who can adapt to the demands of the 21st-century classroom. Nonetheless, the implementation of these policies is often hindered by systemic challenges such as poor policy enforcement, insufficient professional development opportunities, and resistance to change among educators. Studies have shown that even when ICT tools are available, many teachers lack the confidence or competency to integrate them into their teaching practices effectively (Harris, Mishra & Koeler, 2009).

Furthermore, disparities in access to technology, particularly in rural and underserved areas, exacerbate the digital divide, creating inequities in educational outcomes. While urban schools may have access to modern facilities and internet connectivity, many rural schools struggle with basic infrastructure, making it difficult to adopt emerging technologies. This disparity calls for strategic planning and targeted interventions to bridge the gap and ensure that all learners, regardless of their location, benefit from the advancements in educational technology (UNESCO, 2008).

The management of education in Nigeria must address these multifaceted challenges to fully harness the potential of emerging technologies. Effective management strategies include investing in infrastructure, providing continuous professional development for teachers, and fostering a culture of innovation and adaptability within the education system. Additionally, collaborations between government agencies, private sector stakeholders, and international organizations can play an important role in driving the integration of ICT into Nigerian classrooms.

The integration of emerging technologies in the 21st-century classroom has transformed global education systems, fostering innovative teaching and learning practices. However, in Nigeria, the adoption and effective management of these technologies face significant challenges. These include inadequate infrastructure, insufficient teacher training, limited access to digital tools, and disparities in technology availability between urban and rural areas. Furthermore, while government policies such as the National Policy on Education (2013) emphasize the inclusion of ICT in teacher training programmes, the implementation of these policies remains weak. As a result, many educators lack the competency and confidence to effectively utilize emerging technologies, and learners are deprived of the benefits these technologies offer. The problem is further compounded by systemic issues such as poor funding, resistance to change, and inconsistent monitoring and evaluation frameworks. These factors hinder the ability of schools to create technology-enhanced learning environments, ultimately limiting the potential of Nigerian classrooms to align with global educational standards.

This study aims to examine the management of education in Nigeria with a focus on the integration of emerging technologies in the 21st-century classroom. It seeks to identify the challenges impeding the effective adoption of these technologies and propose strategies for improving their utilization to enhance teaching and learning outcomes. The specific objectives of this study are to: assess the availability and accessibility of emerging technologies in Nigerian classrooms, identify the challenges hindering the effective use of emerging technologies in classrooms and propose strategies to enhance the management of education through the adoption of emerging technologies. By addressing these issues, this study aims to provide practical insights into how educational management can be redefined to meet the demands of modern classrooms and contribute to national development goals.

Conceptual Review

The Concept: Emerging Technologies in Education and Classrooms

Emerging technologies in education refer to the new and innovative tools, systems, and approaches that are reshaping the way teaching and learning take place. These technologies are not only enhancing the educational process but also revolutionizing traditional classroom environments by offering more engaging, personalized, and efficient learning experiences. As the global educational landscape shifts towards digital transformation, it is essential to explore the role and impact of these technologies in modern classrooms. In this context, emerging technologies include Information and Communication Technology (ICT), Artificial Intelligence (AI), Virtual Reality (VR), Augmented Reality (AR), interactive whiteboards, mobile learning devices, and online learning platforms, all of which are transforming how teachers teach and students learn. Emerging technologies in education encompass a broad range of digital innovations that are being integrated into the learning process to enhance its effectiveness. These technologies offer tools and systems that support not only content delivery but also the engagement of students through various interactive and immersive techniques. For instance, ICT tools like computers, smartphones, and the internet provide teachers and students with access to a wide array of learning resources. Similarly, AI technologies enable personalized learning by adapting content to meet the needs of individual learners, creating a more customized educational experience (Harris et al., 2009). Virtual and Augmented Reality (VR/AR), on the other hand, enable students to explore real-world environments or imaginary scenarios that would otherwise be inaccessible. These immersive experiences deepen students' understanding of complex concepts by making learning more interactive. Interactive whiteboards allow for dynamic lesson delivery, combining multimedia elements that appeal to multiple learning styles (UNESCO, 2008). Mobile learning devices offer the flexibility for students to learn anywhere, anytime, allowing education to become more accessible and flexible, especially in remote and underserved regions (OECD, 2016).

Role of Emerging Technologies in the 21st Century Classroom

In the context of the 21st-century classroom, emerging technologies play several pivotal roles. First, they promote **interactivity** in the classroom. Tools like interactive whiteboards, clickers, and audience response systems foster real-time student participation and feedback. This dynamic interaction encourages students to engage actively with the learning material, transforming the teacher from a sole knowledge provider into a facilitator of learning (Onyia & Offorma, 2011). Such tools increase student involvement in the learning process, helping to create a more engaging and productive classroom environment.

Second, emerging technologies facilitate **personalized learning** by offering solutions that cater to individual students' needs. Adaptive learning technologies and AI systems assess students' strengths and weaknesses and tailor the learning experience accordingly, ensuring that each learner receives content that suits their learning style and pace (Yang, 2008). This ability to provide individualized learning pathways is especially important for students with diverse learning abilities

and preferences, allowing them to progress at a comfortable rate and receive targeted support where needed.

Moreover, emerging technologies enhance **collaborative learning** through digital platforms such as Google Classroom, Microsoft Teams, and various learning management systems (LMS). These platforms allow students to collaborate on projects, share ideas, and communicate with peers and instructors in real time, irrespective of geographical boundaries (Mormah & Bassey, 2019). Such collaborative environments mimic real-world workspaces where teamwork is essential, preparing students for future professional collaboration. Furthermore, these tools foster the development of digital literacy, which is becoming increasingly important in today's workforce.

In addition, emerging technologies are crucial for **improving access to educational resources**. The internet and digital platforms provide access to a vast range of resources, from eBooks and research papers to videos and online lectures. This has democratized learning, making educational materials available to students regardless of their geographical location.

Impact of Emerging Technologies on Teachers and Teaching Practices

Emerging technologies also have a significant impact on teaching practices. Teachers can use these technologies not only to enhance their teaching methods but also to manage their classrooms more effectively. For example, digital tools allow teachers to easily track student progress, identify learning gaps, and modify instructional plans accordingly. Additionally, technologies such as virtual and augmented reality help teachers create immersive learning experiences that make abstract concepts tangible and relatable (UNESCO, 2008). These tools help teachers move away from traditional, lecture-based teaching to more interactive, student-centered learning approaches, where students actively participate in the creation and exploration of knowledge.

The ability to integrate technology into pedagogy requires a shift in the way teachers approach instruction. Teachers are no longer just transmitters of knowledge but facilitators who guide students through interactive and collaborative learning experiences (Paniagua & Istance, 2018). This transformation necessitates ongoing professional development and continuous learning to ensure teachers are equipped to use emerging technologies effectively in the classroom. Emerging technologies in education represent a paradigm shift in the way teaching and learning occur in the 21st-century classroom. They offer immense potential to enhance interactivity, collaboration, and personalized learning while also improving access to educational resources and transforming assessment methods. However, the integration of these technologies faces significant challenges, including infrastructure limitations, teacher competency gaps, the digital divide, and resistance to change. To fully harness the potential of emerging technologies, educational managers, policymakers, and teachers must work collaboratively to address these challenges and create an environment conducive to the effective use of digital tools. By embracing technology as an integral part of the educational process, Nigerian schools can better equip students with the skills and knowledge needed to thrive in a rapidly changing world.

Availability and Accessibility of Emerging Technologies in Nigerian Classrooms

The successful integration of emerging technologies into the classroom is highly dependent on their availability and accessibility. In Nigeria, the extent to which these technologies are incorporated into educational settings is influenced by several factors, including infrastructure, government policy, economic resources, and regional disparities. While some schools, particularly in urban areas, have access to cutting-edge digital tools and resources, many schools in rural and underserved regions continue to face significant barriers to adopting and utilizing these technologies effectively.

The availability of emerging technologies in Nigerian classrooms refers to the presence of the necessary physical and digital tools required for modern teaching and learning. In an ideal scenario, classrooms would be equipped with devices such as computers, tablets, interactive whiteboards, projectors, and access to high-speed internet. Additionally, educational software and learning management systems (LMS) that support digital content delivery, collaborative work, and assessment would be readily available to both teachers and students.

However, the reality in many Nigerian schools is quite different. While some urban schools in Nigeria have benefited from initiatives aimed at improving ICT infrastructure, such as the Nigerian Communications Commission's (NCC) efforts to promote broadband penetration, many schools in rural and semi-urban areas are still grappling with basic infrastructure issues. These schools often lack reliable electricity, internet connectivity, and sufficient digital devices, which significantly limits their ability to incorporate emerging technologies into teaching and learning processes. Furthermore, even when technology is available, it is often outdated or poorly maintained, which impacts its effective use in the classroom.

According to the Federal Ministry of Education (2013), there have been efforts to bridge the digital divide in Nigerian classrooms through policies that promote the provision of ICT infrastructure, such as the National Policy on Education. The policy advocates for the inclusion of ICT training in teacher education programmes and for the development of e-learning facilities in schools. However, the implementation of these policies remains inconsistent, and many schools still struggle with the lack of up-to-date technology, limiting teachers' ability to integrate these tools into their lessons effectively.

Accessibility of Emerging Technologies

Accessibility refers to the ability of schools and students to not only have physical access to emerging technologies but also to be able to use them in a meaningful and productive way. Even when the technology is available, accessibility remains a significant issue in Nigeria. Several factors influence this, including geographical location, socioeconomic status, and government support.

1. **Geographical Disparities:** One of the major challenges to accessibility is the stark contrast between urban and rural schools in Nigeria. While urban areas may have access to high-speed internet, interactive whiteboards, and other digital resources, many rural schools face difficulties in accessing basic technology. Rural areas are often left behind due to inadequate infrastructure, including poor road networks, unreliable electricity supply, and limited internet connectivity. According to UNESCO (2008), these disparities contribute to a “digital divide,” where students in rural schools have fewer opportunities to engage with digital tools and resources compared to their counterparts in urban schools.
2. **Economic Barriers:** Accessibility is also hindered by economic factors. In many Nigerian schools, particularly public schools, there is a lack of funding to purchase or maintain modern technologies. Even in schools where technology is available, limited resources may restrict the number of devices available to students, resulting in overcrowded classrooms where students do not have personal access to digital tools. Additionally, the cost of high-speed internet and data services often places a financial burden on schools, making it difficult for them to sustain online learning or use the internet as an educational resource.
3. **Lack of Training and Support:** Accessibility to emerging technologies also depends on the ability of teachers and students to use them effectively. In many Nigerian schools, teachers have not received adequate training in how to integrate technology into their teaching. While some teachers may have basic computer literacy, they may not possess the skills needed to use advanced educational tools or software effectively. This lack of professional development limits the overall accessibility of technology in the classroom, as teachers are often unable to fully utilize the available tools (Harris et al., 2009).
4. **Policy Implementation and Government Support:** The Nigerian government has made strides in promoting ICT in education, but the execution of these policies has been slow and uneven. Various initiatives, such as the Universal Basic Education (UBE) Program and the National Information and Communication Technology Policy (NICTP), are aimed at providing technological access to all schools. However, the lack of consistent funding, political will, and a clear framework for implementation has hindered the progress of these initiatives. Moreover, schools that are supposed to benefit from such policies often face delays in receiving the necessary support.

Efforts to Improve Availability and Accessibility

Despite these challenges, there have been numerous efforts aimed at improving the availability and accessibility of emerging technologies in Nigerian classrooms. The government has introduced several programmes, such as the Digital Literacy Training Program for teachers and the E-School Initiative, to encourage the use of ICT in schools (Federal Republic of Nigeria, 2013). Through these initiatives, there has been an increasing emphasis on the provision of digital tools to schools and the training of teachers to use these tools effectively.

In addition, partnerships with private sector organizations, non-governmental organizations (NGOs), and international donors have contributed to improving technology access in Nigerian classrooms. For example, initiatives such as the Nigeria Education Sector Support Program

(NESSP) have provided grants for the provision of computers and internet access in schools, especially in underserved regions. NGOs have also played a role in bridging the technology gap by donating computers and providing training for teachers in rural schools.

However, while these efforts are commendable, there is still much work to be done. The availability of digital tools and the accessibility of these tools for all schools, especially in rural areas, require a more sustained and coordinated effort from both the government and private sector stakeholders.

Challenges to the Adoption of Emerging Technologies in Nigerian Classrooms

The adoption of emerging technologies in Nigerian classrooms holds immense potential to transform the teaching and learning process. However, despite the growing recognition of their benefits, the integration of these technologies into Nigerian schools faces numerous challenges. These challenges stem from a variety of factors, including infrastructural limitations, socio-economic barriers, resistance to change, and issues related to policy and teacher preparedness. Addressing these barriers is crucial to ensuring that emerging technologies can be effectively utilized to enhance educational outcomes in Nigeria.

1. *Inadequate Infrastructure*

One of the most significant challenges to the adoption of emerging technologies in Nigerian classrooms is the lack of adequate infrastructure. Many schools, particularly those in rural and underserved areas, struggle with poor or non-existent infrastructure, which hinders the effective use of technology. These schools often lack basic utilities such as reliable electricity, stable internet connections, and sufficient digital devices. Without these essential resources, even the most advanced technologies cannot be used to their full potential.

In urban areas, while the infrastructure may be better, schools still face challenges related to the availability of enough devices for every student, as well as the cost of maintaining and upgrading technology regularly. According to the Federal Republic of Nigeria (2013), although the government has initiated efforts to improve ICT infrastructure in schools, the pace of progress has been slow, and many schools still lack the resources necessary for effective technology integration.

2. *Limited Access to Technology*

Even when the necessary infrastructure exists, the accessibility of technology remains a significant barrier. In many Nigerian schools, access to digital devices such as computers, tablets, and interactive whiteboards is limited. This is particularly true in public schools, which often have limited budgets for purchasing and maintaining technology. As a result, teachers and students may only have access to outdated or insufficient devices, further hindering the adoption of emerging technologies (UNESCO, 2008). Additionally, the cost of internet data and connectivity is

prohibitive for many schools, making it difficult to fully integrate online resources into the learning process.

This disparity in access to technology also creates a digital divide between urban and rural schools. While urban schools in more developed regions of Nigeria may have better access to modern technologies, schools in rural areas often face challenges related to both the availability of infrastructure and the affordability of technological resources. This divide exacerbates educational inequalities, as students in rural areas may be left behind in terms of exposure to technology and digital learning tools (OECD, 2016).

3. *Teacher Training and Professional Development*

The competence of teachers in using emerging technologies is critical to the successful integration of these tools into the classroom. Unfortunately, many teachers in Nigeria are not adequately trained to use technology in their teaching. While some teacher education programmes include basic ICT training, this training is often insufficient in preparing teachers to integrate technology effectively into their lessons. According to Harris et al. (2009), many teachers lack the pedagogical knowledge to use technology meaningfully in the classroom, relying instead on traditional teaching methods that do not leverage the potential of digital tools.

Furthermore, professional development opportunities for teachers in ICT are often limited. Teachers who are trained in using technology may not receive ongoing support or opportunities to update their skills, which is essential in the rapidly changing world of digital education. Without continuous professional development, teachers may struggle to keep up with new tools, platforms, and educational technologies, thereby limiting their ability to incorporate these technologies effectively into their classrooms.

4. *Resistance to Change*

Resistance to change among teachers and educational administrators is another significant challenge to the adoption of emerging technologies in Nigerian classrooms. Many teachers, especially those who have been teaching for many years, may be hesitant to adopt new technologies, viewing them as disruptive to established teaching practices. This resistance often stems from a lack of confidence in their ability to use technology or a belief that traditional teaching methods are sufficient. According to Paniagua and Istance (2018), some teachers may also feel that the use of technology diminishes their authority in the classroom, as students may become more adept at using technology than the teachers themselves.

Moreover, administrators may be reluctant to invest in technology if they are not convinced of its effectiveness or if they face financial constraints. This resistance can result in a lack of institutional support for technology integration, making it difficult for teachers to access the tools and resources they need to effectively incorporate technology into their teaching (Yang, 2008).

5. Lack of Policy Implementation and Support

While the Nigerian government has introduced several policies aimed at promoting the integration of ICT in education, the implementation of these policies has been inconsistent and often inadequate. The National Policy on Education (2013) highlights the importance of ICT in education and calls for the inclusion of ICT training in teacher education programmes. However, there is often a gap between policy formulation and actual implementation. Many schools do not have the necessary resources to carry out these policies, and the monitoring and evaluation frameworks to ensure compliance are weak (UNESCO, 2008).

In addition, there is a lack of coordinated efforts between various stakeholders, including government agencies, educational institutions, and private sector players. While there are isolated initiatives aimed at improving ICT access in schools, these efforts are not always well-coordinated or sustained, and there is often a lack of long-term planning to ensure that technology is integrated into the curriculum in a meaningful way (Federal Republic of Nigeria, 2013).

6. Financial Constraints

The cost of acquiring, maintaining, and upgrading technology in schools is another significant barrier to the adoption of emerging technologies in Nigerian classrooms. Many schools, particularly those in the public sector, operate on limited budgets, which makes it difficult to invest in the necessary infrastructure and resources. Additionally, the cost of internet access, which is essential for using many digital learning tools, is often prohibitively high for schools in rural and underserved areas (Mormah & Bassey, 2019). Without adequate funding, schools are unable to provide teachers and students with the digital devices and connectivity they need to engage with emerging technologies effectively.

7. Cultural and Societal Factors

Cultural attitudes towards technology and education may also play a role in the slow adoption of emerging technologies in Nigerian classrooms. In some communities, there is a lack of awareness regarding the benefits of technology in education, and traditional teaching methods are still highly valued. Additionally, there may be societal resistance to change, as parents and other community members may not fully understand or appreciate the importance of technology in the education system. These cultural attitudes can create additional barriers to the successful implementation of technology in schools (Onyia & Offorma, 2011).

Strategic Approaches for Enhancing Technology Integration in Education

The integration of technology into education presents an exciting opportunity to enhance learning experiences, improve teaching practices, and foster a more dynamic, interactive classroom environment. However, the successful adoption and effective use of technology in Nigerian schools require deliberate, strategic approaches. These strategies must address various challenges

such as infrastructure limitations, inadequate teacher training, resistance to change, and socio-economic disparities. This section outlines strategic approaches that can facilitate the successful integration of technology into Nigerian classrooms, ensuring that both teachers and students benefit from the advancements in digital education.

1. *Strengthening Infrastructure and Access to Technology*

A key prerequisite for effective technology integration is the availability of the necessary infrastructure. Without reliable access to digital tools and the internet, even the best-designed educational programmes and policies will struggle to succeed. To enhance technology integration in Nigerian schools, a robust infrastructure development plan must be implemented.

a. Provision of Digital Devices and Internet Connectivity:

One of the first steps in improving technology integration is ensuring that schools, particularly those in rural and underserved areas, have access to digital devices such as computers, tablets, interactive whiteboards, and projectors and international organizations, should prioritize the provision of these resources, especially to schools in rural areas where access to technology is limited. Subsidies or grants from both public and private sectors can be used to alleviate the cost of acquiring and maintaining these digital devices and internet services.

b. Infrastructure Maintenance and Upgrades:

It is not enough to merely provide digital devices; ensuring that these technologies are well-maintained and regularly updated is crucial. Schools should be provided with technical support and training to maintain their ICT infrastructure. Additionally, there should be a long-term investment strategy for upgrading outdated technology and expanding internet bandwidth to keep pace with the growing demand for digital learning tools.

2. Comprehensive Teacher Training and Professional Development

Teachers are the cornerstone of technology integration in the classroom. Therefore, a comprehensive teacher training and professional development program is essential to ensure that educators are equipped with the knowledge and skills needed to integrate technology into their teaching.

a. Pre-service and In-service Training Programmes:

Teacher education programmes must include extensive ICT training that goes beyond basic computer literacy. These programmes should teach teachers how to integrate technology into their curriculum, use digital tools to enhance lesson delivery, and employ educational technologies to support personalized learning. In-service training programmes should be developed to provide continuous professional development for teachers, keeping them updated on new technologies, best practices, and innovative teaching methods.

b. Pedagogical Integration of Technology:

It is not enough for teachers to be familiar with the tools; they must also understand how to use technology in a pedagogically sound manner. Training programmes should emphasize the integration of technology with teaching methodologies to ensure that digital tools are used to enhance learning outcomes. Teachers should learn how to design and deliver interactive lessons, utilize online resources, and assess students through digital platforms.

c. Ongoing Support and Mentorship:

In addition to initial training, ongoing support through mentorship, peer collaboration, and access to resources such as lesson plans and instructional videos will help teachers continue to improve their use of technology. Educational leaders should encourage a culture of collaboration where teachers can share ideas, strategies, and resources, further enhancing their ICT competency.

3. Developing and Implementing Clear Policies and Guidelines

A well-structured policy framework is vital for the sustainable integration of technology in education. Clear policies and guidelines ensure that technology use aligns with the educational goals of the country and that resources are distributed effectively.

a. National Technology Integration Policy:

A comprehensive national policy on technology integration in education should be developed and implemented, focusing on equipping schools with the necessary infrastructure, promoting ICT literacy among teachers and students, and providing incentives for schools to innovate. This policy should also set out specific objectives, timelines, and responsible agencies for implementation, monitoring, and evaluation.

b. Standardized Guidelines for Technology Use:

Clear guidelines for the use of technology in classrooms should be established to ensure that educational technologies are being used effectively and appropriately. These guidelines should address issues such as acceptable use policies, data privacy, and ethical considerations in digital

learning. Ensuring that these policies are enforced and monitored will help maintain accountability and foster trust in technology adoption among stakeholders.

Suggestions

1. The Nigerian government should prioritize the allocation of adequate funds for the development and maintenance of educational infrastructure, particularly in rural and underserved areas. This includes providing schools with essential digital tools such as computers, tablets, projectors, and interactive whiteboards, as well as improving internet connectivity across the country.
2. A clear, coherent national policy for the integration of technology in education should be developed and enforced. This policy should outline specific goals, guidelines, and timelines for technology adoption in schools, as well as the roles and responsibilities of stakeholders at all levels of the education system.
3. The government should actively foster partnerships with private sector companies, especially technology firms, to provide affordable digital tools and platforms for schools.
4. Educational institutions should foster a collaborative environment where teachers can share ideas, strategies, and resources for integrating technology into their classrooms. Peer mentoring programmes and professional learning communities should be encouraged, as they allow teachers to support one another and learn from each other's experiences.

Conclusions

The effective management of education in Nigeria necessitates a strategic approach to integrating emerging technologies into classrooms to meet 21st-century learning demands. While these technologies offer transformative potential for enhancing engagement, collaboration, and access to educational resources, systemic barriers such as inadequate infrastructure, insufficient teacher training, and policy gaps hinder progress. Bridging these gaps requires coordinated efforts among government agencies, private sector stakeholders, and educational institutions. Investing in infrastructure, fostering a culture of innovation, and providing continuous professional development for educators are critical steps. By addressing these challenges, Nigeria can unlock the potential of emerging technologies, ensuring equitable and quality education for all learners, and positioning its education system to contribute meaningfully to national and global development goals.

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