European Journal of Innovation in Nonformal Education (EJINE)
Volume 5 | Issue 12 | Dec - 2025 ISSN: 2795-8612

Implementation of Smart Curriculum in Nigerian Schools: Problems and Solutions

Ahmed Mohammed
Academic Planning Federal University Wukari, Taraba State.
ahmadwalama1979@gmail.com
Sule Mataple Abasu
Taraba State Post Primary Schools Management Board, Jalingo
abasujen@gmail.com
Umar Faiza Bashir
Faculty of Education, Department of Arts Education, Taraba State University, Jalingo
fumarbashir@gmail.com

ABSTRACT

This study explore the implementation of smart curriculum in Nigerian schools. The study employed secondary data. The secondary data were collected from online and print publications. The study revealed that poor funding, inadequate infrastructure facilities, poor internet service, poor electricity supply and shortage of curriculum ICT inclined personnel, Poor training, high cost and lack of Smart curriculum policy. Based on the findings, the study recommend that the Nigerian government, in collaboration with private sector stakeholders and development partners, should prioritize the provision of stable electricity, broadband internet, and digital devices across schools, especially in rural areas. Federal and state governments should allocate at least 15–20% of the education budget to digital learning development as recommended by UNESCO. Dedicated funding should support smart classroom development, teacher training, and maintenance of ICT facilities. Government should ensure continuous capacity building for teachers is essential. Teachers should receive regular training in digital literacy, smart pedagogy, and data-driven instruction. Partnerships with universities, teacher training institutes, and ICT organizations can facilitate the development of certified training programmes for educators. Nigeria needs a coherent national policy that clearly outlines standards, implementation guidelines, and accountability mechanisms for integrating smart curriculum. The policy should harmonize federal, state, and local efforts and prevent duplication or fragmentation of initiatives. To reduce costs and dependency on proprietary systems, the Ministry of Education should encourage the adoption and development of OER materials. These resources can be localized to reflect Nigerian cultural and linguistic contexts, ensuring inclusivity and relevance of learning content.

Hosting by Innovatus Publishing Co. All rights reserved. © 2025

ARTICLE INFO

Article history:
Received: 01 Dec 2025
Received in revised form10 Dec 2025
Accepted: 15 Dec 2025

Keywords: Curriculum, Smart Curriculum, Schools.

1. Introduction

The implementation of a smart curriculum in Nigerian schools represents a transformative step toward modernizing the nation's education system and aligning it with global standards of digital learning. A smart curriculum integrates technology, innovation, and interactive teaching methods to enhance learners' engagement, critical thinking, and problem-solving skills. It emphasizes digital literacy, flexible learning environments, and competency-based education that prepare students for the challenges of the 21st century knowledge economy. In Nigeria, the adoption of a smart curriculum has become increasingly necessary due to the rapid advancement of information and communication technology (ICT) and the growing demand for technologically skilled graduates.

However, despite the recognized importance of a smart curriculum, its implementation in Nigerian schools faces several challenges. These include inadequate ICT infrastructure, insufficient funding, lack of teacher training, poor internet connectivity, and resistance to change from traditional teaching practices. Additionally, disparities between urban and rural schools create inequalities in access to digital resources and learning opportunities. Addressing these challenges requires a multi-dimensional approach involving government commitment, institutional capacity building, stakeholder collaboration, and continuous professional development for teachers. This paper therefore examines the problems associated with the implementation of a smart curriculum in Nigerian schools and proposes practical solutions to ensure effective integration of digital learning tools, pedagogical innovation, and inclusive education practices across all levels of the educational system.

2.0 Review of Literature

2.1 Concept of Curriculum

The concept of curriculum has evolved over time, reflecting different educational philosophies, social contexts, and learning objectives. Scholars and educators have offered various definitions to explain what constitutes a curriculum, ranging from content-centered perspectives to broader views that include experiences, goals, and processes of learning. For instance, Ralph Tyler (1949) viewed curriculum as "all of the learning experiences planned and directed by the school to attain its educational goals." This definition emphasizes the deliberate and systematic planning of learning experiences to achieve specific educational objectives. Tyler's model underscores four essential questions: what educational purposes should schools seek to attain, what educational experiences can be provided, how can these experiences be organized, and how can learning outcomes be evaluated. His approach laid the foundation for modern curriculum development processes. Hilda Taba (1962) defined curriculum as "a plan for learning." She viewed curriculum as a structured and organized framework that specifies what learners should learn, how learning should take place, and how outcomes should be assessed. Taba's model is learner-centered and stresses the importance of teachers' participation in curriculum development. She proposed a grassroots approach, beginning with designing specific learning units and gradually building up to a full curriculum.

The United Nations Educational, Scientific and Cultural Organization (UNESCO) (2006) defines curriculum as "a description of what, why, how, and how well students should learn in a systematic and intentional manner." This definition reflects a global and inclusive perspective, focusing on both the content and the quality of learning. It emphasizes the role of curriculum in ensuring equitable and relevant education, promoting lifelong learning, and adapting to societal changes and global challenges. Curriculum is "all the learning which is planned and guided by the school, whether it is carried on in groups or individually, inside or outside the school." This definition expands the understanding of curriculum beyond classroom activities, recognizing informal and extracurricular learning experiences as vital components of education. Kerr's perspective highlights the holistic nature of education, integrating formal instruction with social, emotional, and moral development (John Kerr 1968). Lawrence Stenhouse (1975) viewed curriculum as "an attempt to communicate the essential principles and features of an educational proposal in such a form that it is open to critical scrutiny and capable of effective translation into practice." Stenhouse's definition emphasizes curriculum as a dynamic, flexible, and evolving

document that guides educational practice rather than a fixed set of contents. He stressed teacher autonomy and professional judgment in implementing and refining curricula, positioning teachers as researchers in their own classrooms.

2.2 Concept of Smart Curriculum

Smart curriculum is a teaching strategy that focuses on incorporating technology and interactive learning into the classroom. It aims to use technology as a tool to enhance the overall learning experience for students and improve their academic performance. Smart curriculum also involves creating a diverse and inclusive learning environment that caters to the needs of individual students. This approach promotes critical thinking, problem-solving, and collaborative learning, which are essential skills for academic success. Overall, smart curriculum is a modern and innovative approach to education that strives to make learning more engaging and effective for students.

Smart curriculum refers to an innovative educational approach that integrates technology and data-driven decision making to create personalized learning experiences for students. This approach uses advanced algorithms to analyze student data and adapt the curriculum to meet each student's unique needs and learning styles. By utilizing technology and data, smart curriculum helps students to reach their full potential and achieve academic success. With the ability to constantly analyze and adjust based on student progress, smart curriculum is constantly evolving and improving to provide the most effective and engaging learning experience for each individual student.

3.0 Method

The study is a position paper that depend on secondary data to support the points raised. The secondary data were collected via online and print resources. The print sources includes; Curriculum publication, journals, book chapter, documentary by professional institutions and abstract proceeding. The study employed content analysis and systematic review methods to identify and streamlined the literatures to the topic content.

4.0 Result and Discussion on Problems of Facing Implementation of Smart Curriculum in Nigerian Schools

The study revealed that poor funding, inadequate infrastructure facilities, poor internet service, poor electricity supply and shortage of curriculum ICT inclined personnel, Poor training, high cost and lack of Smart curriculum policy are the challenges facing implementation of Smart Curriculum in Nigerian Schools.

Poor funding

Inadequate funding has been identified as one of the major problems facing the implementation of smart curriculum in Nigerian schools. This lack of financial support has hindered the progress of incorporating new technological advancements into the education system. As a result, students are not able to fully benefit from the advantages of a modernized curriculum and are not adequately prepared for the demands of the 21st century. This issue must be addressed in order to ensure the successful implementation of a smart curriculum in Nigerian schools. Without proper funding, the necessary resources and tools cannot be obtained, hindering the ability for teachers to effectively teach and for students to learn. It is crucial that the government and other stakeholders prioritize funding for education in order to facilitate the implementation of a smart curriculum. By doing so, Nigerian schools can provide a high-quality education that prepares students for future success. Inadequate funding is also a major issue in the implementation of smart curriculum in Nigerian schools. Many schools, especially in rural areas, struggle to secure funding for technological equipment such as computers and tablets. This not only hinders the implementation of a smart curriculum but also creates a digital divide between schools in urban areas and those in rural areas.

Inadequate infrastructure facilities

One of the main problems facing the implementation of smart curriculum in Nigerian schools is the lack of proper infrastructure. Many schools in Nigeria still do not have access to basic amenities such as electricity and internet, which are essential for the successful implementation

of a smart curriculum. Without these resources, it becomes difficult for teachers to incorporate technology into their lessons and for students to access online learning materials. The implementation of a smart curriculum in Nigerian schools faces several challenges. One major problem is the lack of technology infrastructure in many schools, which hinders the adoption and integration of smart curriculum.

Poor internet service

Reliable and high-speed internet connectivity is fundamental to the effective implementation of a smart curriculum, which relies heavily on online learning platforms, virtual classrooms, and digital content delivery. In Nigeria, however, poor internet service remains a major obstacle, especially in rural and underserved areas. Many schools experience inconsistent or extremely slow connectivity, making it difficult for students and teachers to access digital resources, participate in online assessments, or engage in interactive learning sessions. According to Afolabi and Adesina (2021), the lack of stable internet connectivity in most public schools severely limits the effectiveness of e-learning and digital pedagogy. The authors note that without adequate broadband infrastructure, the vision of digitalized education remains unattainable. Similarly, the Nigerian Communications Commission (NCC, 2022) reported that while internet penetration has improved in urban areas, many educational institutions in rural regions remain disconnected or dependent on expensive, low-bandwidth mobile data.

Poor electricity supply

According to research, inadequate electricity supply has been identified as one of the major problems facing the implementation of smart curriculum in Nigerian schools. This shortage of electricity has hindered the use of technology and other smart tools in the education system, leading to a less effective learning experience for students. The lack of reliable electricity also directly affects the availability of digital resources and access to the internet, making it difficult for students to engage in online learning and access educational materials. This not only impacts the quality of education but also widens the educational gap between rural and urban areas, where access to electricity is significantly different. The shortage of electricity has also limited the use of smart devices and tools in classrooms, hindering the modernization of the educational system in Nigerian schools. This not only affects the learning experience but also makes it challenging for teachers to implement the smart curriculum effectively. The shortage of poor electricity supply remains a significant problem facing the implementation of smart curriculum in Nigerian schools, hindering the modernization and improvement of the education system. Solving this issue is crucial for the advancement and success of the smart curriculum, leading to a better learning experience for students and a more effective educational system in Nigeria.

Shortage of curriculum ICT inclined personnel

The shortage of ICT experts has led to a lack of proper training and support for teachers. Without skilled professionals to guide and train teachers on how to effectively utilize technology in the classroom, the potential of smart curriculum remains largely untapped. As a result, teachers may struggle to effectively incorporate technology into their lessons, hindering the overall success of the smart curriculum. The shortage of ICT experts also poses a challenge for the maintenance and upkeep of the necessary technological infrastructure. With a lack of trained professionals, issues and glitches may not be addressed promptly, leading to disruptions in the learning process. This can also result in additional expenses for repairs and maintenance, further burdening already struggling education budgets. The shortage of ICT experts also limits the scope and potential of the smart curriculum. With a limited pool of skilled professionals, schools may not be able to fully implement all aspects of the smart curriculum, thus limiting the benefits that technology can bring to the education system. This not only impacts the quality of education, but also hinders the overall progress and innovation of the education sector. The shortage of ICT experts continues to be a major obstacle in the successful implementation of smart curriculum in Nigerian schools. It not only affects the teachers and students directly, but also has broader implications for the education system as a whole. Addressing this issue and investing in the development of ICT expertise is crucial for the effective integration of technology in education and the overall advancement of the education sector in Nigeria.

Poor Training

There is a lack of training and support for teachers on how to effectively use technology in the classroom. This can lead to a resistance towards new teaching methods and hinder the successful implementation of a smart curriculum. The lack of proper training for teachers is another challenge in implementing a smart curriculum in Nigerian schools. Many teachers have not received proper training on how to effectively use technology in their lessons. This results in a lack of confidence and competence in incorporating technology into their teaching, which ultimately hinders the successful implementation of a smart curriculum. The successful implementation of a smart curriculum depends largely on the competence of teachers and administrators in using digital tools and innovative teaching methods. Unfortunately, many educators in Nigeria lack the necessary training and skills to integrate technology effectively into classroom instruction. Poor digital literacy among teachers leads to resistance to change and limited use of available smart technologies. Okebukola (2020) argues that the low level of teacher preparedness is one of the main barriers to implementing smart education initiatives in Nigeria. Many teachers are still accustomed to traditional chalk-and-talk methods and find it difficult to adapt to digital instructional approaches. The absence of continuous professional development programs further worsens the situation, as teachers are not exposed to emerging technologies such as virtual learning environments, artificial intelligence in education, or interactive learning applications. In a related study, Adeyemi and Ojo (2021) found that even when schools are provided with digital facilities, the lack of trained personnel often leads to underutilization or misuse of the resources. Thus, capacity building through regular ICT workshops and digital literacy programs is crucial for the successful execution of smart curricula.

High cost

Moreover, the high cost of implementing and maintaining technology in schools can be a barrier, especially for underprivileged schools. Another issue is the availability of reliable and high-speed internet connection, which is essential for using technology in the classroom. This is a common problem in many parts of Nigeria and can hinder the proper functioning of a smart curriculum. The financial implications of implementing a smart curriculum are considerable. The high cost of procuring digital devices such as tablets, computers, smart boards, projectors, and reliable power supply systems poses a serious challenge to schools, particularly in low-income and public sectors. In addition, the cost of maintaining these technologies, subscribing to online learning platforms, and ensuring consistent internet access further burdens educational institutions already struggling with limited budgets. According to Olatunji and Yusuf (2022), many schools in Nigeria cannot afford the necessary infrastructure for digital learning due to inadequate government funding and economic constraints. The researchers highlight that the majority of public schools operate on outdated facilities and lack access to modern technological tools. Furthermore, the high cost of imported educational technologies and fluctuating exchange rates make smart curriculum implementation financially unsustainable for many institutions. The National Bureau of Statistics (NBS, 2023) also reported that education expenditure in Nigeria remains below the UNESCO-recommended benchmark of 15–20% of the national budget, limiting investments in ICT-driven education reforms. As a result, smart curriculum initiatives often fail to progress beyond pilot stages.

Lack of Smart Curriculum policy

Lack of ICT policy on curriculum has been identified as a major challenge in the implementation of smart curriculum in Nigerian schools. The absence of a well-defined policy framework for integrating ICT in the curriculum has hindered the successful adoption of smart curriculum in the education system. This has resulted in a lack of standardized approach and guidelines for incorporating ICT in teaching and learning processes, leading to inconsistency and inefficiency in the implementation of smart curriculum. The lack of a clear ICT policy on curriculum also poses a challenge in terms of training and capacity building for teachers. With no specific guidelines on how ICT should be integrated into the curriculum, teachers often struggle to effectively use technology in their teaching methods. This not only affects the quality of education but also hinders the full potential of smart curriculum to enhance student learning and engagement. The absence of ICT policy on curriculum has also resulted in a lack of infrastructure

and resources in schools. As the use of technology becomes increasingly important in education, the lack of a defined policy has made it difficult for schools to allocate resources and invest in necessary infrastructure for implementing smart curriculum. This, in turn, creates a digital divide between schools with access to ICT resources and those without, leading to an uneven distribution of learning opportunities for students. The lack of an ICT policy on curriculum is a significant challenge facing the implementation of smart curriculum in Nigerian schools. Without a clear policy framework in place, the successful integration of technology in education will continue to face obstacles, hindering the overall development of the education system. It is crucial for the government and education authorities to address this issue and work towards developing a comprehensive ICT policy on curriculum that can effectively support the implementation of smart curriculum and ensure equitable access to quality education for all students.

4.1 Findings

Poor funding, inadequate infrastructure facilities, poor internet service, poor electricity supply and shortage of curriculum ICT inclined personnel, Poor training, high cost and lack of Smart curriculum policy

4.2 Conclusion and Recommendations

This study discussed the implementation of smart curriculum in Nigerian schools. The study revealed that poor funding, inadequate infrastructure facilities, poor internet service, poor electricity supply and shortage of curriculum ICT inclined personnel, Poor training, high cost and lack of Smart curriculum policy.

Based on the findings, the study recommends the following:

1. The Nigerian government, in collaboration with private sector stakeholders and development partners, should prioritize the provision of stable electricity, broadband internet, and digital devices across schools, especially in rural areas. Establishing community ICT hubs and deploying solar-powered energy systems can ensure continuous access to digital learning environments.

2. Adequate and sustained funding is critical to successful implementation. Federal and state governments should allocate at least 15–20% of the education budget to digital learning development as recommended by UNESCO. Dedicated funding should support smart classroom development, teacher training, and maintenance of ICT facilities.

3. Continuous capacity building for teachers is essential. Teachers should receive regular training in digital literacy, smart pedagogy, and data-driven instruction. Partnerships with universities, teacher training institutes, and ICT organizations can facilitate the development of certified training programmes for educators.

4. Nigeria needs a coherent national policy that clearly outlines standards, implementation guidelines, and accountability mechanisms for integrating smart curriculum. The policy should harmonize federal, state, and local efforts and prevent duplication or fragmentation of initiatives.

5. To reduce costs and dependency on proprietary systems, the Ministry of Education should encourage the adoption and development of OER materials. These resources can be localized to reflect Nigerian cultural and linguistic contexts, ensuring inclusivity and relevance of learning content.

6. Special attention must be given to marginalized groups—including students in rural areas, girls, and learners with disabilities. The government and non-governmental organizations should provide subsidized devices, data support, and inclusive digital content to close equity gaps in access to smart learning.

7. Smart curricula rely heavily on digital data. There is a need to develop and enforce data protection and cybersecurity regulations for educational institutions. Teachers and administrators should be trained on safe data handling and ethical use of technology to protect learners' privacy.

8. Private technology firms, telecommunication companies, and donor agencies should be involved in developing infrastructure, digital resources, and technical support systems. PPPs can provide innovation, investment, and expertise to supplement government efforts in scaling smart curriculum projects.

9. A robust monitoring and evaluation (M&E) framework should be created to track implementation progress, assess learning outcomes, and ensure accountability. Regular assessment will enable policymakers to identify challenges early and adjust strategies accordingly.

10. School leaders and policymakers must promote a culture of innovation that encourages experimentation, collaboration, and continuous improvement. Change management strategies should address teachers' resistance by involving them in planning, decision-making, and evaluation processes.

REFERENCES

1. Adebayo, F. A. (2023). *Data Privacy and Digital Transformation in Nigeria's Education Sector: Emerging Risks and Regulatory Challenges.* African Journal of Information Systems, 15(2), 112–124.
2. Adeyemi, S., & Ojo, J. (2021). *Teachers' Competence in Digital Pedagogy and the Challenges of Smart Curriculum Implementation in Nigeria.* African Journal of Educational Research, 10(1), 89–104.
3. Afolabi, F., & Adesina, O. (2021). *Challenges of E-Learning Implementation in Nigerian Secondary Schools.* Journal of Educational Technology, 15(2), 45–57.
4. Akinola, J. O. (2022). *ICT Infrastructure Deficit and Smart Education Implementation in Nigerian Secondary Schools.* Journal of Educational Technology and Curriculum Studies, 9(1), 45–58.
5. Demir, K. A., Karadeniz, Ş., & Geden, Ö. (2021). *Smart Education Framework.* Smart Learning Environments, 8(1), Article 29. https://doi.org/10.1186/s40561-021-00170-x
6. Kerr, J. F. (1968). Changing the Curriculum. University of London Press.
7. Nigerian Communications Commission (NCC). (2022). Internet Penetration and Broadband Access Report. Abuja: NCC Publications.
8. National Bureau of Statistics (NBS). (2023). Nigeria Education Sector Expenditure Report 2023. Abuja: NBS Publications.
9. Okebukola, P. A. (2021). *Teacher Preparedness for Digital Education in Nigeria: A Situational Analysis.* West African Journal of Educational Research, 24(1), 1–15.
10. Okebukola, P. (2020). *Reinventing Education in Africa through Technology Integration.* Lagos: Stirling-Horden Publishers.
11. Ogunleye, T. A., & Adepoju, O. (2023). *Financing ICT Integration for Secondary Education in Nigeria: Issues and Prospects.* Nigerian Journal of Economics and Education, 12(2), 98–113.
12. Olatunji, T., & Yusuf, A. (2022). Financial Challenges of ICT Integration in Nigerian Schools.* International Journal of Education and Development, 8(3), 67–82.
13. Stenhouse, L. (1975). An Introduction to Curriculum Research and Development. Heinemann.
14. Taba, H. (1962). Curriculum Development: Theory and Practice. Harcourt, Brace & World.
15. Tyler, R. W. (1949). Basic Principles of Curriculum and Instruction. University of Chicago Press.
16. Udo, E. A., & Nwachukwu, C. O. (2020). *Teacher Attitude and Resistance to Educational Innovation in Nigerian Schools.* International Journal of Innovative Education Research, 8(4), 56–67.
17. UNESCO. (2021). *Education and Digital Transformation in Sub-Saharan Africa: Nigeria Country Report.* Paris: UNESCO Publishing.
18. UNESCO. (2006). Guidelines for Curriculum Development and Implementation. Paris: UNESCO.