The Role of Artificial Intelligence in Teaching of Science Education in Secondary Schools in Nigeria

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ABSTRACT: *This study aims to examine and evaluate the influence of incorporating Artificial Intelligence (AI) into the instruction of scientific education in secondary schools in Nigeria. The primary objective is to investigate how AI technologies might improve the overall quality and efficacy of scientific teaching, leading to enhanced learning outcomes for secondary school students. The study employs a retrospective research approach, analyzing past data to gain insights into the development and impact of AI in scientific teaching in Nigerian secondary schools. The research design involves a comprehensive collection and analysis of secondary data from educational databases, government papers, academic journals, and other relevant repositories. Results from the study highlight the role of AI in teaching science, emphasizing Adaptive Learning Systems (ALS), Intelligent Tutoring Systems (ITS), and Virtual Laboratories and Simulations. ALS personalizes the learning process, ITS provides interactive and individualized instruction, and virtual laboratories offer immersive digital experiments. Challenges and barriers to the effective adoption of AI in scientific education include infrastructural limitations, teacher preparation and competence, and ethical considerations. Opportunities for successful integration involve government support, teacher training, and industry partnerships. Future prospects anticipate developments in personalized learning environments, improved data analytics, integration of virtual and augmented reality, enhanced natural language processing, and global cooperation in education. In conclusion, the study recommends the integration of AI into the national curriculum, adequate funding and resources, ongoing professional development for teachers, and a strategic curriculum development that fosters a blended learning environment.*

KEYWORDS: Artificial Intelligence, Teaching, Science Education, Tailored Learning

INTRODUCTION

The history of science education in Nigeria is closely connected to the overall progress of the country's educational system. Over time, the Nigerian government has acknowledged the crucial significance of science in the progress of the nation and has undertaken deliberate endeavours to improve scientific education at different levels. The origins of science education in Nigeria may be attributed to the period after independence, during which the government placed significant importance on education as a crucial catalyst for socio-economic advancement. Nevertheless, despite these endeavours, obstacles persist, such as insufficient infrastructure, scarcity of competent educators, and restricted availability

of educational resources. These issues have therefore affected the efficacy of scientific instruction in secondary schools nationwide (UNESCO, 2021).

An awareness of the historical context is essential for comprehending the present status of scientific education and serves as a foundation for contemplating creative methods, such as the incorporation of artificial intelligence (AI), to tackle these difficulties (Avik, 2018). Currently, scientific education in Nigerian secondary schools encounters a complex array of obstacles that impede its effective operation. The curriculum, although extensive, frequently lacks practical applications and hands-on experiences, resulting in a disparity between academic knowledge and practical comprehension among students. Moreover, the dearth of proficient scientific educators, particularly in remote regions, exacerbates the discrepancy in educational excellence (Shobita 2019).

Moreover, the conventional instructional techniques utilised in several secondary schools may not effectively captivate and motivate students, perhaps resulting in a decline in their enthusiasm for science-related courses. Limited availability of contemporary educational tools and resources worsens these problems, necessitating inventive solutions that might transform the methodology of science instruction.

Artificial intellect (AI) is an innovative technical framework that encompasses the creation of computer systems with the ability to execute activities that usually need human intellect (Aina et al., 2023). These activities involve problem-solving, acquiring knowledge, comprehending language, and seeing visual information. AI has become increasingly prominent in recent years, bringing about a revolutionary transformation in the methods by which jobs are completed in numerous businesses. Within the realm of education, artificial intelligence (AI) offers a multitude of possibilities to augment the learning process. Intelligent systems provide the ability to adjust to the specific requirements of each learner, deliver tailored learning experiences, and provide immediate feedback (Aina et al., 2023). AI applications in education encompass adaptive learning platforms, intelligent tutoring systems, and virtual simulations. Through the use of artificial intelligence, educators have the ability to construct dynamic and interactive learning environments that accommodate the various learning styles and capabilities of students.

The convergence of AI and scientific education presents significant opportunities for tackling the obstacles encountered by the Nigerian educational system. The use of AI tools and technology in secondary school science classrooms has the potential to fundamentally transform the methods of teaching and learning, hence enhancing accessibility, engagement, and effectiveness of education. This concept paper seeks to examine the impact of artificial intelligence (AI) on the future of scientific education in Nigerian secondary schools, taking into account its consequences, difficulties, and possible remedies (Soma, 2018).

Significance of the Study
The importance of science education in secondary schools is vital in developing the cognitive and practical abilities of students. It acts as a basis for developing a more profound comprehension of the natural world, promoting the development of critical thinking, problem-solving, and analytical skills. Science education provides students with the necessary information and abilities to manage a world that is becoming more intricate and reliant on technology (Okeke, 2017). In Nigeria, where there is a growing need for STEM (scientific, Technology, Engineering, and Mathematics) personnel, it is

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crucial to have a strong scientific education system. It not only fosters the growth of a population knowledgeable in science, but also tackles the difficulties presented by worldwide progress and creativity. Science education has a significant impact beyond just academic success. It shapes job decisions, promotes inquisitiveness, and cultivates a scientific attitude that is crucial for tackling social problems, promoting creativity, and contributing to the progress of a society (UNESCO, 2021).

The use of Artificial Intelligence (AI) into scientific education has several potential advantages. AI technologies have the ability to customise learning experiences, tailoring them to the specific needs and learning preferences of each individual learner. This flexibility facilitates the accommodation of a wide range of student capabilities and promotes a more inclusive educational setting. Furthermore, AI-driven technologies enhance dynamic and captivating learning experiences by integrating simulations, virtual experiments, and practical applications. This not only improves students' understanding of scientific topics but also ignites curiosity and excitement for the subject. Moreover, AI has the capability to promptly offer feedback to both students and teachers, facilitating quick intervention and adaptation of teaching tactics (Ross and Kim 2018) This feedback loop enhances the efficiency and effectiveness of the teaching and learning process. In Nigeria, where access to high-quality education may vary, the potential advantages of AI in scientific education include narrowing educational disparities, enhancing educational achievements, and equipping students for a future when technology is more integrated into every part of life.

The use of AI in scientific education is very pertinent to the Nigerian educational system as it corresponds with national objectives and ambitions. Nigeria, along with several other nations, is now progressing towards technical progression and economic growth. In order to ensure sustainable development, it is crucial to have a skilled and knowledgeable workforce that is equipped with the necessary technology. Nigeria can cultivate a cohort of students that has expertise in both conventional scientific ideas and advanced technology by integrating AI into science education. This is in line with the government's educational strategy, which prioritises STEM courses and technical literacy in the national curriculum (Smith, 2018). Furthermore, the significance of AI in Nigerian schools encompasses the resolution of issues such as overcrowded classrooms, inadequate resources, and unequal allocation of educational facilities (Stoeffler et al., 2019). AI technology can offer scalable solutions, guaranteeing the accessibility of high-quality scientific education in many geographical and socio-economic settings.

Integrating AI in teaching science in Nigeria is not just about improving educational procedures, but also about strategically equipping students for a future where science, technology, and innovation play a crucial role in social advancement and wealth.

Objectives of the Study
The aim of this study is to examine and evaluate the influence of incorporating Artificial Intelligence (AI) into the instruction of scientific education in secondary schools in Nigeria. The primary objective is to investigate how AI technologies might improve the overall quality and efficacy of scientific teaching, hence leading to enhanced learning outcomes for secondary school students.

LITERATURE REVIEW

The historical development of science education in Nigeria has undergone significant evolution. The advent of colonialism in Nigeria initiated the commencement of formal education, characterised by a curriculum that was significantly shaped by British educational frameworks. At first, the emphasis was placed on fundamental skills in reading, writing, and arithmetic. Over time, there has been an increasing focus on the significance of science education as a driver for national progress.

Following Nigeria's independence, there was a deliberate and coordinated endeavour to improve the calibre of science education in the country. The implementation of the Universal Primary Education (UPE) programme in 1976 had the objective of offering a fundamental grounding in scientific disciplines. The Universal Basic Education (UBE) programme was implemented with the aim of guaranteeing that every child in Nigeria obtains a least of nine years of formal education, with a particular focus on scientific education.

Notwithstanding these efforts, obstacles such as insufficient infrastructure, a dearth of competent scientific educators, and outdated teaching resources continue to exist. Gaining insight into this historical viewpoint is essential for assessing the present condition of scientific education and the possible impact of artificial intelligence in tackling these difficulties (Kim 2012). Extensive research worldwide has examined the incorporation of artificial intelligence in several educational settings. Research has examined the influence of artificial intelligence (AI) on the academic achievements of students, the efficacy of teachers, and the management of educational institutions. Prior studies have investigated the use of intelligent tutoring systems, adaptive learning platforms, and virtual labs in various educational contexts.

Research findings suggest that AI has the capability to offer tailored learning experiences, specifically designed to meet the unique requirements and preferred learning methods of each learner. Intelligent tutoring systems, such as those used in mathematics and language arts, have demonstrated their efficacy in improving student performance (Schueller et al., 2017). Furthermore, research has examined the ethical ramifications and difficulties linked to the use of artificial intelligence in education, including concerns like confidentiality, prejudice, and fairness.

Gaining a comprehensive understanding of the worldwide research environment allows for placing the Nigerian situation within a wider framework. This offers valuable insights into effective implementations, encountered problems, and possibly optimal approaches for integrating AI into scientific education. The utilisation of artificial intelligence in the field of education is rapidly increasing in Nigeria. The Nigerian government, in partnership with educational stakeholders, has implemented many initiatives to incorporate technology into the education system. Despite ongoing issues related to inadequate infrastructure and money, there is an increasing recognition of the significant impact that AI may have on enhancing educational results (Nguyen & Rasmussen 2016). Various pilot projects and initiatives are now investigating the use of artificial intelligence technologies and platforms in educational settings in Nigeria. These projects include adaptive learning systems, virtual laboratories, and instructional content powered by artificial intelligence (Aina et al., 2023). The integration of AI is intended to improve the calibre of education while simultaneously tackling unique obstacles encountered in science education, such as the scarcity of proficient science instructors and the requirement for practical, experiential learning opportunities for students.

Collaboration is taking place between educational institutions, non-governmental organisations, and business sector partners to address the digital divide and enhance digital literacy among students and instructors. The present situation demonstrates a significant change towards utilising artificial intelligence to overcome conventional obstacles in education and provide Nigerian students with the essential abilities required for the workforce of the 21st century. The continuous advancements and endeavours in artificial intelligence (AI) in the field of education lay the groundwork for more investigation and examination inside the Nigerian setting.

Conceptual Framework

Artificial Intelligence (AI) in education is the application of sophisticated technology, namely machine learning algorithms and computational models, to enhance the learning process, boost educational results, and customise instruction to meet the unique requirements of each student (Schueller et al., 2017). Within the framework of scientific education in secondary schools in Nigeria, AI can comprise a diverse array of applications, such as intelligent tutoring systems, adaptive learning platforms, and virtual simulations. These technologies have the objective of examining students' learning habits, offering individualised feedback, and generating dynamic educational experiences. AI in education encompasses the use of diverse techniques including natural language processing, computer vision, and data analytics to provide a dynamic and adaptable learning environment. It surpasses conventional teaching techniques by utilising computing power to adjust to the individual strengths and limitations of students, promoting a more customised and efficient educational experience.

The integration of AI in scientific education is based on the theoretical framework that combines constructivist and cognitivist learning theories. Constructivism highlights the importance of active involvement and practical encounters, emphasising that individuals develop their own comprehension of the world via their experiences. The integration of AI in scientific education adheres to this notion by offering interactive simulations, virtual experiments, and immediate feedback, enabling students to actively engage in the learning process.

Furthermore, cognitivist theories, which centre on cognitive processes and the acquisition of knowledge, are pertinent. Artificial intelligence systems have the capability to examine the cognitive processes of students, detect any misunderstandings, and customise training to target individual learning requirements. By integrating cognitive theories into the incorporation of AI in scientific education, educators may provide more efficient learning experiences that correspond to students' cognitive growth..

RESEARCH METHODS

Research design is the comprehensive approach or blueprint detailing the methods and procedures for gathering, analysing, and interpreting data. Within the realm of secondary data, the study design entails the deliberate selection and arrangement of pre-existing data in order to tackle certain research inquiries. The study will utilise a retrospective research approach, analysing past data to get insights into the development and influence of artificial intelligence (AI) in scientific teaching inside Nigerian secondary schools. This methodology enables the analysis of patterns and fluctuations over a period of time. The main objective of the research design in this study is to methodically collect and analyse secondary data in order to investigate the impact of artificial intelligence on scientific education in secondary schools in Nigeria. The design will provide direction and structure for the organisation and

implementation of the research process. The study approach will prioritise the amalgamation and incorporation of material from many sources to offer a full comprehension of the issue.

The study aims to ascertain and evaluate pertinent secondary data sources, such as educational databases, government papers, academic journals, and other repositories housing data on scientific education and the integration of artificial intelligence in Nigerian secondary schools. An extensive literature study will be undertaken to discover and examine current research, papers, and publications pertaining to the incorporation of artificial intelligence (AI) in scientific education. The process of document analysis will entail a methodical examination of scholarly articles, policy documents, and institutional reports.

RESULTS

Theme 1: The Role of Artificial Intelligence in Teaching Science
Adaptive Learning Systems (ALS) have emerged as an innovative method to transform the conventional teaching model in the field of scientific education. Artificial intelligence (AI)-driven Adaptive Learning Systems (ALS) aim to individualise the learning process for every learner, departing from the standardised approach. ALS employs advanced data analytics and machine learning algorithms to thoroughly examine the performance of each student, accurately determining their strengths, limitations, and preferred learning methods. With this abundance of information, ALS is able to customise content delivery by providing personalised learning pathways, tools, and exams that are specifically designed to meet the individual needs of each learner. The instantaneous feedback loop offered by ALS guarantees fast insights into development, promptly resolving misunderstandings and reinforcing accurate notions. The advantages of using ALS (Adaptive Learning Systems) in teaching science are numerous, ranging from fixing knowledge deficiencies to increasing student involvement and enthusiasm by providing a customised and pertinent educational experience (Adeyemi 2020).
Intelligent Tutoring Systems (ITS) are another aspect of AI's influence on scientific education. These technologies simulate the function of a human tutor by offering individualised and interactive instruction to students. The main characteristics of Intelligent Tutoring Systems (ITS) are the capacity to adjust to the learner's speed and preferences, incorporation of natural language processing to enhance interactive experiences, and use of diagnostic tests to customise courses according to individual requirements. ITS greatly enhances the efficacy of scientific teaching by providing tailored assistance and round-the-clock accessibility. Nevertheless, it is necessary to overcome obstacles such as technology limitations and find a way to strike a balance between digital interactions and human participation in order to guarantee a comprehensive learning experience.

Virtual Laboratories and Simulations, utilising AI and computer technology, reimagine the tactile laboratory experience in a digital domain. These simulations offer authentic settings, enabling students to do experiments, alter variables, and examine results without the necessity of physical laboratories. Virtual laboratories provide students with an engaging and immersive learning experience by including interactive elements and prioritising safety. In addition, they tackle obstacles associated with scarce resources by offering opportunities to conduct experiments and utilise equipment that may otherwise be inaccessible. Nevertheless, one must take into account considerations pertaining to technological infrastructure and the genuineness of the experience.

To summarise, the use of ALS, ITS, and Virtual Laboratories/Simulations in scientific education showcases the revolutionary capacity of AI. These technologies not only tackle conventional difficulties but also facilitate personalised, captivating, and efficient learning experiences for secondary school students in Nigeria and other places (Nguyen & Rasmussen 2016). The diverse and comprehensive utilisation of AI in scientific education indicates a transition towards a pedagogical environment that is more responsive to individual student needs, centred around students, and enhanced by technology (Adeyemi, 2020).

Theme 2: Challenges and Barriers
For the effective adoption of artificial intelligence (AI) in scientific education in Nigerian secondary schools, it is crucial to solve many obstacles and impediments. A major obstacle is the ubiquitous infrastructural restrictions in several educational institutions nationwide. The lack of sufficient access to technology, such as PCs or tablets, impedes the efficient implementation of AI-powered instructional aids (Aina et al., 2023). In addition, the irregular provision of electricity and insufficient internet access in many schools provide substantial challenges, hindering the smooth use of AI applications and obstructing the educational progress of children. Promoting the allocation of more resources towards education infrastructure, fostering partnerships with both public and commercial sectors, and creating AI apps that can function without an internet connection or with limited bandwidth are viable methods to address these infrastructure difficulties.

Another crucial obstacle is to the preparation and competence of teachers in integrating AI into the educational system. Several educators may lack enough training in using AI tools in the classroom, impeding their capacity to successfully harness new technology. A further obstacle arises from resistance to change, which originates from a lack of familiarity or scepticism over the efficacy of AI. The limited access to continuous professional development opportunities worsens the problem, hindering instructors from enhancing their abilities and remaining up-to-date with breakthroughs in AI-driven teaching. To tackle these issues, it is necessary to execute extensive training programmes, cooperate with educational institutions for ongoing professional growth, and create mentoring programmes to allow the exchange of information among educators (Adeyemi 2020).
The incorporation of AI in education raises significant ethical problems. The collecting and storage of student data by AI systems give rise to issues regarding data privacy, hence requiring strong measures to ensure privacy protection (Adeyemi, 2020). The presence of biases in AI systems, which might inadvertently perpetuate pre-existing prejudices in the data used for training, poses an additional ethical dilemma. The responsible use of AI in education necessitates the formulation and implementation of rigorous data security rules, periodic assessments to detect and correct biases, and the formation of ethical norms and legislation.

To ensure the successful integration of artificial intelligence in teaching scientific education in Nigerian secondary schools, it is crucial to address these obstacles and impediments. To overcome these challenges and provide a suitable environment for the responsible and efficient use of AI-driven education, it is crucial to adopt a cooperative and inclusive strategy encompassing government entities, educators, technology suppliers, and policymakers (Avik, 2018)

Theme 3: Opportunities
The effective incorporation of Artificial Intelligence (AI) into scientific teaching at secondary schools in Nigeria hinges on a cooperative endeavour encompassing the government, educational institutions,

and other stakeholders. The participation of the government and stakeholders is crucial in establishing a conducive environment for the deployment of AI. Policies promoting the incorporation of AI in schools, financial assistance mechanisms, partnerships with non-governmental organisations (NGOs), and participatory decision-making procedures can facilitate a more thorough and sustainable adoption. It is essential to simultaneously ensure that instructors are adequately prepared to utilise the capabilities of AI. There are several opportunities available for teacher training and professional development, such as workshops, seminars, and online learning platforms that specifically focus on AI education. By incorporating AI-related material into teacher training programmes and mainstream scientific curriculum, promoting the formation of collaborative learning communities among teachers, and offering incentives for ongoing education, we may enhance the competence and expertise of the teaching staff.

Furthermore, the partnership between the education sector and industry offers substantial prospects. Industry advisory boards, internship programmes, industry-sponsored educational initiatives, guest lecturers, and joint research projects serve as a conduit between theoretical classroom learning and practical real-world applications. These partnerships guarantee that the skills being taught are in line with the demands of the business, equipping students with practical knowledge and improving their readiness for employment (Khanna et al., 2015).

Ultimately, the effective incorporation of AI into scientific instruction in Nigerian secondary schools necessitates a comprehensive strategy that encompasses governmental assistance, teacher development, and partnerships with business. These many chances and solutions jointly enhance the educational experience, equipping students with the necessary skills and knowledge to tackle future problems and seize opportunities (Nguyen & Rasmussen 2016).

Theme 4: Future Prospects
Sub-Theme 1: Anticipated Developments in AI for Education
Anticipating the future, the potential for AI in education seems promising, particularly in the realm of scientific education in Nigeria. One of the most important expected advancements is the improvement and extensive use of personalised learning environments. These adaptive systems will customise instructional content to suit the specific requirements and learning preferences of students, resulting in a more personalised and adaptable educational experience.
Another significant advancement is the anticipated improvement of data analytics. The integration of AI-driven advanced data analytics is set to transform the process of monitoring student progress, identifying learning trends, and extracting valuable insights for ongoing enhancement. Consequently, this might enable educators and politicians to make better enlightened judgements by utilising thorough data analysis (Okeke, 2017)

The incorporation of virtual reality (VR) and augmented reality (AR) into educational tools driven by artificial intelligence (AI) is also imminent. Within the domain of science education, this might manifest as immersive learning encounters, enabling students to virtually delve into intricate topics, carry out experiments in simulated settings, and visualise abstract theories, so cultivating a more profound comprehension of scientific principles.

Furthermore, with the advancement of natural language processing (NLP), AI tools are anticipated to enhance their proficiency in comprehending and addressing students' verbal and written interactions.

This advancement has the potential to enhance communication between AI-powered systems and students, resulting in a more authentic and engaged interaction. This, in turn, can contribute to a more comprehensive and immersive learning experience (Aina et al., 2023).

In addition, there may be a rise in worldwide cooperation and knowledge-sharing platforms in the field of education in the future. Students would get advantages from engaging in collaborative learning activities on a worldwide level, which would expose them to a wide range of viewpoints and enhance their science education.

Sub-Theme 2: Long-term Impacts on Science Education in Nigeria
The integration of AI into scientific education in Nigeria is expected to have profound and far-reaching effects in several aspects over an extended period of time. Enhanced availability of excellent education is a noteworthy opportunity, as AI-driven online learning systems surmount geographical and resource-related obstacles, guaranteeing that kids in distant or underserved regions may obtain top-notch science instruction.

Moreover, the function of educators is anticipated to see a significant change with the incorporation of artificial intelligence. Teachers may utilise AI technologies to customise their educational strategies, pinpoint areas of enhancement for particular students, and implement more personalised and efficient teaching techniques. The enduring influence encompasses the preparation of students for the future labour market. AI-enhanced learning experiences may provide students with state-of-the-art technologies and problem-solving abilities, promoting a workforce that is more adept in technology and innovation (Obi, 2022).

There is a growing possibility of implementing educational policies that are based on data. The data produced by AI applications can facilitate evidence-based decision-making, allowing for the formulation of focused strategies to tackle specific difficulties in scientific education (Smith, 2018). Furthermore, instructional technologies powered by AI can enhance students' cultural competency and foster global awareness. Exposure to a wide range of viewpoints from across the world is especially important in the field of scientific education, as cooperation and the sharing of information are crucial.

CONCLUSION

Several significant conclusions have emerged when researching the function of artificial intelligence in scientific instruction in Nigerian secondary schools. First and foremost, the use of artificial intelligence (AI) technology in the scientific classroom has demonstrated a beneficial effect on student involvement and academic achievements. Adaptive learning systems and intelligent tutoring systems have demonstrated efficacy in delivering customised learning experiences that are specifically adapted to the unique needs of each learner. Moreover, the use of virtual labs and simulations has augmented practical comprehension and experimentation, surmounting conventional constraints on resources.Furthermore, the study demonstrates that despite facing obstacles such as infrastructural constraints and the necessity for teacher training, the advantages of integrating AI into the Nigerian education system surpass these barriers. The capacity of AI systems to adjust to the specific circumstances of a given environment has been a notable feature, demonstrating the potential for widespread and long-lasting incorporation in science education.

The results of this study have important consequences for both educational policies and classroom practices in Nigeria. To begin with, legislators should contemplate integrating AI into the national curriculum, ensuring that it is in harmony with the objectives of augmenting science education. Sufficient funds and resources should be assigned to facilitate the use of AI technology in schools, tackling infrastructural obstacles and offering ongoing professional development for instructors. Teachers at the classroom level should be motivated and provided with the necessary resources to effortlessly incorporate AI tools into their teaching approaches. Professional development initiatives should prioritise the improvement of educators' proficiency in using digital technology and cultivating a favourable mindset towards the incorporation of artificial intelligence. The curriculum should be strategically developed to include AI as an adjunctive tool to conventional teaching approaches, fostering a blended learning environment that optimises student engagement and comprehension.

Recommendations for Future Research

First and foremost, there is an urgent requirement for longitudinal studies that go beyond the initial effects of AI integration. Researchers should thoroughly investigate the enduring impacts on students' academic achievements, professional paths, and overall educational results. By comprehending the enduring influence of artificial intelligence in the classroom, we may enhance our knowledge to shape educational policies and practices for the future.

Exploring ethical considerations is another essential aspect of research. Given the increasing integration of AI in educational environments, it is crucial to examine the possible ethical ramifications. This encompasses a comprehensive examination of issues related to the protection of data privacy, the existence of algorithmic prejudice, and the guarantee of fair allocation of educational resources. Conducting such research is crucial for building ethical principles and frameworks that protect the rights and well-being of students and instructors.

Teacher training programmes are becoming a significant focus for future research endeavours. It is crucial to investigate efficient methods for teacher education programmes, both for those who are preparing to become teachers and for those who are already working as teachers. These programmes should not only improve instructors' proficiency in using digital technology but also tackle any reluctance towards adopting technological advancements. Exploring effective approaches to smoothly incorporate AI into current teaching methods would enable educators to fully leverage the capabilities of these technologies.

The successful integration of AI into the Nigerian educational system requires careful consideration of contextual adaptability. Researchers should investigate the ways in which AI systems may be more specifically adapted to incorporate the distinct cultural and contextual intricacies of the Nigerian educational environment.

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