

REVOLUTIONISING NIGERIAN EDUCATION: LEVERAGING ARTIFICIAL INTELLIGENCE IN LEARNING.

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Abstract

This paper focused on how the application of Artificial Intelligence in Education could revolutionise learning in Nigeria. The research used a literature review approach: collecting, analysing and synthesising information from various relevant written sources. The results show that AI is already here to stay and is being used to imitate human thought patterns to bring about a revolution in learning. In spite of its generally proven huge prospects, AI is yet to be integrated into Nigerian educational systems to a significant extent. AI has several interesting applications in the educational sector that could transform the way teaching and learning take place in Nigeria. However, present low levels of AI cognizance and integration in Nigeria are limiting the ideal extent of AI's impact on Nigerian educational systems. Its benefits include: personalised learning, heightened engagement, inclusive education; while some disadvantages are over-dependence, fabrication and loss of social interface. Despite the fact that its benefits need to be harnessed, to avoid the risk of it being abused, AI also needs to be regulated with clear guidelines in Nigerian education. AI despite its challenges is a veritable tool for transforming learning in Nigeria.

Keywords: Revolutionising, Nigerian Education, Artificial Intelligence, Learning.

Introduction

Nigeria, like several other developing nations, is lagging behind in the incorporation of technology into its educational systems; unlike most developed nations that are progressively keying into technology integration and thereby transforming their educational systems (Obidiebube et al., 2025). Artificial Intelligence (AI) has become one of the most significant technological innovations of the 21st century (Mubarik et al., 2024). According to a report by Grand View Research, the global AI in education market size was valued at USD 1.47 billion in 2020 and is expected to grow at a compound annual growth rate of 36.4% from 2021 to 2028. This indicates the increasing adoption of AI in the education sector (Grand View Research, 2021).

AI holds numerous possibilities in store for the future of education in Nigeria that could revolutionise the future of learning. According to a report from the National Science Board, the use of technology in education can increase student engagement, improve learning outcomes, and reduce the achievement gap between students (National Science Board, 2016). AI has the capacity to make education more accessible, appealing and personalised to students' needs as well as to make educational organizations more efficient and dynamic (Luna, 2024). On the other hand, AI has the potential to be misused by users, creating false content and eroding academic authenticity, if proper restrictions and guidelines are not put in place.

Nigeria's education system contends with underfunding, infrastructure challenges, and teacher shortages (UNICEF, 2020). AI in Nigeria's education system is evolving amid struggles to expand educational access, improve quality, and bridge prevalent resource gaps (Idowu & Iyabode, 2024; Wajim & Ajayi, 2024). This paper offers a focused literature review of AI's role in revolutionising education in Nigeria with

focus on learning. It draws on nascent evidence to clarify the promising benefits of AI, identify risks, and propose strategies to leverage AI to transform learning in Nigeria's education system. The paper aims to guide Nigeria's education stakeholders towards creating an enabling environment that leverages AI for more effective learning by accentuating the importance of funding, training, and strong controlling measures.

Methodology

Research Approach: This research uses a literature review approach, which is a research method that is carried out by collecting, analysing, and synthesising information from various relevant written sources (Adlini et al., 2022). The data sources used include scientific journals, books, conference proceedings, research reports, and other documents related to artificial intelligence (AI) and learning in Nigeria.

Research Steps: Included identifying the Topic and Scope; Determining the main topic, namely Revolutionising Nigerian Education: Leveraging Artificial Intelligence in Learning and limiting the scope of research to the use of AI in Nigeria, in the context of learning.

Search and Data Collection: Academic databases such as Google were used to search for relevant articles, journals, and research reports. Keywords used in the searches included: Artificial Intelligence in Education, AI in Learning Quality Improvement, Artificial Intelligence in Nigeria.

Data Analysis: This process included conducting a content analysis of the literature that had been collected. Examining the benefits of AI on learning quality and outcomes. Exploring the drawbacks of AI on learning and assessing the implementation and challenges of AI adoption in Education in Nigeria.

Synthesis of Findings: The results of analysis from various sources were integrated to provide a comprehensive picture of how Artificial Intelligence could revolutionise learning in Nigeria, pin-pointing potential benefits, limitations, challenges and proffering probable resolutions.

Literature Review

The Benefits of Artificial Intelligence on Learning Quality and Outcomes

Education is being transformed by AI. It has powerful capacities to revolutionise how we teach and learn. Educational institutions across the world are beginning to harness the potential of AI to evolve and move education beyond the walls of traditional classrooms. Its possibilities are being tested in all kinds of educational scenarios (Luna, 2024; Copeland, 2024; Porter, 2024). The integration of AI into the education sector is declared to be of huge benefit. The affirmation is given by Nwode et al. (2024), Nwosu et al. (2024), Okpeseyi et al. (2024), Oyeyemi et al. (2024), Bellei (2019), DigiTechie, 2024; WEF, 2024; Puntillo, 2024 and many others. These benefits include:

Enhanced Learning Tools: AI-powered platforms like chatbots and virtual assistants provide students with instant access to information and support. These tools can answer questions, provide resources, and tutor students in various subjects. A study on AI chatbots highlights their role in improving student engagement and learning outcomes (Luna, 2024; Copeland, 2024; WEF, 2024).

Personalised Learning: Improving student's motivation and academic performance often involves adopting methods tailored to each student's interests and needs. Large classes, however, make this very difficult to achieve even in advanced countries. Educational materials are usually generalised and often fail to engage some of the students. AI is a key technology that enables personalised learning. It can analyse vast amounts of student data, identify individual student's strengths and weaknesses to create customised content and assignments to meet their individual needs. Educators are thus identifying students' areas of weakness and tailoring their lessons accordingly. Assignments are being individualised and quizzes customised (WEF, 2024; DigiTechie; 2024, Luna,2024).

Heightened Engagement: With AI, students get specifically what they require to have a delightful day in the classroom and increase their engagement – interactive videos, learning through games, and images instead of text, practice instead of theory, as well as quizzes and adaptive assessments instead of long assignments (Luna, 2024; Puntillo, 2024; Oyeyemi et al. (2024).

Inclusive Education: AI makes learning opportunities available to students who otherwise would have been hindered by obstacles. In classrooms with students from different backgrounds, languages and economic status, AI is highly effective at providing adaptive, individualised learning experiences for all students. Multilingual support and accessibility tools for students with disabilities assist educators foster an inclusive and accessible learning environment (WEF, 2024; Luna.2024).

Organisational effectiveness: Many of the time-consuming tasks like marking assignments, tests and exams, preparing lesson plans, lesson notes and instructional materials, compiling results and filling forms, are being streamlined and made faster by AI, which provides automated grading, lesson planning and report generation. This frees teachers to give more time and attention to the students and cut down on stress (Luna, 2024; Bellei, 2019; Nwosu, 2019).

Supporting Critical and Creative Thinking: AI challenges students' existing viewpoints, stimulating them to think critically to solve problems, overcome blocks and explore new ideas. It creates complex, unconventional scenarios in all kinds of disciplines – from math and history to arts and music. AI creatively works as effective assistants in music, image and video generation as well as story drafting. AI-driven story generation, art creation and music composition is boosting academic creativity; helping students overcome obstacles during intellectual processes (Luna, 2024; Nwode et al. (2024).

Drawbacks of Artificial Intelligence in Learning.

In spite of being a very beneficial technology to enhance learning, AI also has its challenges, limitations and probabilities for abuse (Luna, 2024). These include:

Over-dependence: It goes without saying that one of the obvious challenges of AI is the tendency to become over-reliant on this technology. AI has an unlimited number of uses. It can perform in seconds what could take lengthy and tasking days to do. From writing degree thesis's and composing essays, to summarising passages and completing difficult homework. Just as calculators, computers and smartphones have made our lives easier, there is the attendant risk of lack of critical thinking, laziness and losing the effort, diligence and determination required to succeed academically (Mohammed & Shehu, 2023; Luna 2024).

Fabrication and Bias: Since AI simply depends on the data it has been programmed with to make complex calculations to create accurate content, they are prone to

producing responses that are factually inappropriate, absurd and even harmful. This could trigger misinformation and wrong beliefs in the classroom. A typical scenario of garbage in, garbage out. Teachers therefore need to be able to identify erroneous content (Luna, 2024).

Loss of Social Interface: Education, especially in early childhood, is meant to be a collective process of acquiring new skills and knowledge. The classroom is the preferred environment for this because of the interaction it promotes among the learners. However, AI is an effective but more solitary, individualised education isolating students as they interact with a virtual assistant instead of with their classmates and teachers. This could hamper their social skills (Luna, 2024).

Academic Authenticity: The rise AI has made ensuring academic genuineness very challenging. Since this new technology is not regulated and there are no clear guidelines on the limitations for its use, including in education, students may abuse its use to submit work that is AI generated as their own. AI generated content is not yet sufficiently detected accurately and reliably by current technologies compounding the problem of plagiarism and lack of academic integrity (Luna, 2024).

Widening Educational Disparities: Due to the high cost making AI technology and tools available to the vast majority of teachers and students, particularly in developing country like Nigeria, there are bound to be disparities between those of disadvantaged socioeconomic backgrounds and those that have access to AI. As the application of AI in the educational sector advances and evolves, students and teachers utilising it shall be far ahead of the others thus widening educational inequalities (Luna,2024; Adeniyi, 2024; Okusi, 2023)

Challenges of Implementing AI in Nigerian Learning.

Leveraging AI to revolutionise learning in Nigeria is laudable, however its implementation faces several challenges. These include lack of skilled teachers, privacy concerns, lack of data and technology (Mohammed & Shehu, 2023). The absence or non-provision of standards for regulating AI is considered one serious challenge to AI adoption and use (Adeniyi & Okusi, 2024; Mohammed & Shehu, 2023). The low levels of awareness and the cost of AI technology have also been identified to be challenges to AI implementation in Nigeria and beyond (Sinha & Dhanalakshmi, 2022). Security breaches are some other challenges (Haseeb et al., 2020; Fickling, 2019). Breaches include data theft and cyberattacks (Okusi, 2023). Data insecurity and insufficient information are some other challenges (Zhao et al., 2019).

Lack of technical-know-how slows down the adoption of AI, because personnel lack the expertise for efficient utilization and usage of AI, leading to difficulties in AI-driven operations (Ahmad et al., 2021). The reliance on obsolete infrastructure poses integration challenges too (Ahmad et al., 2021). The challenge of ignorance among teachers, (Ahmad et al., 2021), leading to their misunderstanding of or inability to use AI also hinders the adoption of AI in Nigeria. Teachers are largely ignorant of AI essentials and usage in Nigeria and most other developing nations (Okpeseyi et al., 2024). The complexities of AI pose a serious challenge the education sector as in others (Tang et al., 2018).

Addressing the challenges would allow for significant incorporation of AI into Nigerian educational systems. While the bulk of the work lies on the government, other stakeholders also have crucial roles to play in ensuring significant AI integration into the educational systems of Nigeria. Interdisciplinary partnerships and creative

approaches to proffering resolutions to the identified problems, among others, are the solutions. AI integration into the educational systems of Nigeria, to revolutionise learning depends on the willingness to resolve these challenges.

Discussion

Artificial Intelligence (AI) is increasingly being used to simplify life, due to its ability to perform complex intellectual and repetitive processes. AI systems identify their environment, deal with what they identify, solve problems and act to help make our daily lives easier. (Sachdeva, 2024). Artificial Intelligence (AI) has evolved into a disruptive force across multiple sectors, including healthcare, finance, and transportation. Its proliferation within education promises a paradigm shift in teaching methodologies, learning experiences, and administrative operations (Marengo et al., 2024; Marques-Cobeta, 2024). Across the globe, educators and policymakers grapple with how best to harness AI's capabilities - particularly in terms of personalised learning - while mitigating risks linked to data privacy, algorithmic bias, and inequitable access (Williamson & Eynon, 2020).

AI is beginning to make waves in Nigerian schools, offering transformative possibilities despite infrastructural and funding challenges. Advocates argue that AI, through intelligent tutoring systems and adaptive learning platforms, can reduce teachers' burdens and improve student outcomes (Hakimi & Fazil, 2024). Yet, sceptics caution that without robust infrastructural investment, policy guidelines, and ethical frameworks, AI may exacerbate existing inequalities (Tang & Su 2024).

To utilise AI effectively in revolutionising learning, there is the need to first ascertain that the technology aligns with the core values and mission of the educational institutions intending to use it. Clear policies and guidelines must be put in place stipulating where the use of AI is not allowed. To avoid plagiarism, rules for attribution and documentation must spelt out. In addition, content that students have access to must be monitored effectively. Risks of having personal data, privacy and security breached must be guarded against. Educational Institutions and Governments should be entrusted with providing equal access to AI technology to the privileged and less privileged.

Conclusion

One of the most rapidly growing technologies revolutionising learning across the globe is Artificial Intelligence. AI has cutting edge technology that will positively affect educators, students and the broader educational environment. However, its benefits come with prospective challenges and risks which need to be limited by proper guidelines and regulations. In Nigeria, for AI to be fully leveraged, and its potential fully harnessed, to revolutionise learning, the Government and stakeholders need to invest in the technology, training and awareness required to make it work.

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