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Review Article

Role of Artificial Intelligence in Education Planning and Administration: Implication for Higher Education in Nigeria

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Abstract

The application of emerging technologies such as artificial intelligence in education planning is timely as it offers new and interactive ways of teaching and learning. In this paper, the role of artificial intelligence in education planning and administration: implication for higher education in Nigeria was assessed. Findings reveal that the application of artificial intelligence in education planning and administration in Nigeria boost assimilation rate in student thereby developing their domains of learning and increasing effectiveness. Results further show that in the use of artificial intelligence in education planning and administration, improved efficiency and reduced administrative burden, data-driven decision-making leading to better policies, enhanced learning experiences and student outcomes, equitable access to educational resources and improved teacher support and professional development were enhanced. Based on these findings, it was recommended among others that investment in ICT infrastructure in schools and training educators and administrators on AI technologies should form Government policies and partnerships with tech companies in development of localized AI solutions tailored to Nigeria's context should be prioritized.

Keywords: *Artificial intelligence, Education, Planning, Administration.*

Introduction

As education continuous to champion national development, new technologies such as artificial intelligence (AI) has taken a centre stage in driving this transformation. In Nigeria, the aim of education is development and to attain this aim, new technologies such as AI remains a key tool (Ogunode, Okolie, and Chinedu, 2023). AI is a branch of computer science with systems that use hardware, algorithms, and data to create 'intelligence' to do things like make decisions, discover patterns, and perform some sort of action (Alagbe, 2023; Copeland, 2023; Ogunode and Ukozor, 2023; Ruiz and Fusco, 2023). According to Laskowski & Tucci (2023), AI is characterized by cognitive skills such as learning, reasoning, self-correction, and

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creativity. While learning entails acquiring data and creating algorithms for actionable information, reasoning involves choosing the right algorithm for desired outcomes. On the other hand, self-correction ensures continual refinement of algorithms for optimal accuracy, and creativity employs various AI techniques to generate novel outputs like images, text, music, and ideas (Ogunode, Idoko and ThankGod, 2023). Evidently, cognitive skills depict the dynamic and evolving nature of the contribution of AI to different applications, while constantly refining algorithms to meet the demands of an ever-changing landscape at the same time.

Education planning and administration programmes connote a structured educational initiative designed for tertiary institutions. They are aimed at cultivating efficient professional in education planning and administration. Ogunode et al. (2023) observed that education planning and administration programmes are at the intersection of education and management sciences, and are instrumental in shaping the educational landscape within the majority of Nigerian higher institutions. The attainment of the aim of education planning and administration programmes across higher institutions in Nigeria depends on the availability of relevant human and material resources. Russell and Norvig (2021) opined that AI is oriented to comprehend, model, and replicate human intelligence and cognitive processes into artificial systems. This cognitive ability of AI makes it a major material resource for the implementation of education planning and administration in Nigeria. To this end, the present paper assesses the role of artificial intelligence in education planning and administration: implication for higher education in Nigeria.

Challenges to Education Planning and Administration in Nigeria

A number of challenges exist that have impeded the effective implementation of AI in education planning and administration in Nigeria. These include inadequate data for decision-making and policy formulation, inefficient administrative processes, resource allocation and management issues, emerging technologies challenges, teacher recruitment, training, and management.

- **Inadequate data for decision-making and policy formulation:** This is a major setback to the application of AI in education planning and administration in Nigeria. According to Ololube (2013), inaccurate statistical data is one of the most difficult challenges that educational planners face. It follows that the quality of planning and administration is often marred by inaccurate data and statistical. Obviously, the education system in Nigeria has not been able to effectively plan due to lack of accurate data, and this stems largely from the use of outdated data management tool in the planning and forecasting processes.
- **Inefficient administrative processes:** This is largely due to inadequate education planning in Nigeria. The lack of effective planning poses a significant obstacle to administration and advancement of education across the country (Nwankwo, 1982). Proper planning is pertinent to

the success of any educational system. This includes the planning of human and material resources needed to guide the allocation and usability of educational resources in the school systems (Ololube, 2013b). Planning in this way can help channel resources adequately and at the same time avert wastages. Thus, ineffective administrative processes can be addressed through effective planning for any educational system to effectively develop.

- **Resource allocation and management issues**: Generally, resources determine quality and this holds true in education planning and administration. The availability of resources for any educational programme would determine the capacity of school systems to implement that type of educational programme (Chukwbikem, 2013). The dearth of resources across public schools has impeded on the successful implementation of most of the educational programmes suitable for education planning and administration in Nigeria.
- **Emerging Technologies Challenges:** Lack of knowledge of emerging technologies poses a serious challenge in the planning of education in Nigeria. The ability of education planners and administrators to identify and respond to new technologies in other to elevate their planning objectives is a major success determining factor. Recently, new technologies such as AI and machine learning among others have emerged. These have ushered in modern advancements into the planning process and approaches, while understanding emerging issues related to educational planning and development (Rampton, 2023).
- **Teacher recruitment, training, and management**: In Nigeria, competent education planners and administrators are not readily available. Teacher recruitment, training and management is aimed at nurturing efficient planners that will effectively administrate in the education system for optimal outcome. Ololube (2013) asserted that the most significant single resource that can lead to greater and efficient planning productivity and performance is the quality of planners. This is because effective utilisation of available resources through connection of knowledge, skills and talents are pertinent in planning. In this regard, world best practice must be the guiding standard in the recruitment, training and management of planners and administrators.

Benefits of AI in Education Planning and Administration

The benefits of AI applications in education planning and administration are many as it aids effective teaching and learning. This stems from the fact that AI applications in education planning and administration creates an environment that influences the way teachers teach and how students learn. Included herein are some of the benefits of AI applications in education planning and administrations:

- **Improved efficiency and reduced administrative burden:** Generative AI applications such chatbots, automated grading systems, virtual teaching and research assistants provide vital benefits that effectively streamline the tasks of education planners and administrators (Maddux et

al., 2001; Ufomba et al., 2024). These applications also offer personalized experience for the learners and at the same time minimize the admin load of teachers by more than an hour in a given week (Government News Team, 2024). As observed by Rampton (2023), teachers can deploy AI to administrate in tasks such as creating emails, memos, and proposals; time management and smart scheduling; and setting and tracking goals.

- **Data-driven decision-making leading to better policies:** The assistance AI provides could form the basis of policies of stakeholders in education planning and administration. This is because AI application enhances data-driven decision making via its different assistance tools. Chen et al. (2023) opined that the capabilities, educational outcomes, and retention rates of students can be improved through the use through of AI's data analysis. This is because AI algorithms can provide early intervention techniques, predictive analytic and the identification of learners at at-risk (Chen et al.,2023).
- **Enhanced learning experiences and student outcomes:** AI enhances learning experiences and performance of students through personalized learning and instruction. According to Meehir (2023), a major advantage of AI in education is its ability to tailor learning experiences to individual student's needs because it can predict how people will learn. This is necessary due to the diverse needs, abilities and interests of individual students. AI offers adaptive learning platforms that assess the strengths, weaknesses, and learning preferences of students thereby allowing them to progress through study content at their individual pace (Frontier, 2023). Generative AI applications also provide personalized learning materials such as worksheets, reading lists, and interactive exercises that align with learning preferences of each student. They can assist a teacher for example, in explaining a complex concept by breaking down the concept, altering the Lexile level of text, and suggesting different methods (Caukina et al., 2023).
- **Equitable access to educational resources:** AI applications create a learning interface that can be deployed both at school and home. This equitable access to educational resources keeps the students in touch with the same learning experience both at school and home.
- **Improved teacher support and professional development:** The application of AI in education planning and administration provide teacher support and professional development. Chen (2023) observed that teachers can employ AI for effective planning, execution, and evaluation of their teaching methods. This in turn, enhances the identification of needs of learners thereby allowing tailored learning content and activities. These needs help guide teachers in areas of further development to improve on their skills in the use of AI applications (Chen et al., 2023b; Ogunode et al., 2023).

Challenges of Implementing AI in Nigerian Education

Although AI applications offer a number of benefits and opportunities for education planners and administrators alike, there are challenges of implementing AI in Nigerian higher education. Some common challenges associated with AI applications across higher institutions in Nigeria include:

- **Infrastructure and Technological Limitations:** Institutions across Nigeria are ill-equipped and lack modern technologies that can be effectively deployed for AI applications. Ufomba et al. (2024) assert that AI holds great potential to transform education, but careful implementation and monitoring are essential to ensure its effectiveness and ethical use. This implementation demands adequate provision of infrastructural and technological facilities such as internet access and electricity supply.
- **Data Privacy and Security Concerns:** This is a major concern among education planners and administrators. Safeguarding student and teacher information is vital and remains a factor that many consider in the implementation of new technologies like AI in higher education in Nigeria, that has suffered from cybercrimes in recent times.
- **Resistance to Change:** In Nigeria, education planners and administrators are resistant

  to change. For instance, academics in Nigerian institutions lack the relevant know-how to the use of basic gadgets like computers, smart phones and smart classroom etc. Institutions on the other hand still prefer to use print materials where electronic formats like in the admission and recruitment processes. These and many more are common ways educators and administrators in Nigerian institutions show resistance to new technologies including AI.
- **High Costs of AI Systems:** The high cost of AI systems in a country like Nigeria that depends on input is another challenge to the implementation of AI applications in the nation's higher education sector. Financial barriers to acquiring and maintaining AI technology is a major setback that education planners and administrator encounter in their quest for deploying AI applications in Nigerian higher institutions.
- **Need for Skilled Personnel:** Lack of expertise in AI and technology management is common among educators and administrators of higher education in Nigeria. This poses as an impediment to the implementation of A1 application in the education sector of the economy.

Conclusion

AI applications holds promise if adequately implemented in education planning and administration in Nigeria. Quality education is evident by adequate knowledge base and human resource that ensure well trained graduates with skills for self-reliance and national development. Results of the present study reveal that the application of new technologies like AI in education planning and administration is far behind what is obtainable in other countries. This lag is largely attributed to lack of basic infrastructure and technology for the deployment of AI applications in Nigeria. Furthermore, findings also reveal that stakeholders provide the enabling environment for the implementation of AI applications across higher education institutions in Nigeria to equip students with relevant skills for today high tech – driven world. Based on these results, it was therefore recommended among others that the Government and other stakeholders invest in ICT infrastructure in schools and training educators and administrators on AI technologies to boost localized AI solutions tailored to Nigeria's context.

References

Alagbe, J., Awodele, O., & Ayorinde, I. (2021). Is Nigeria ready for Artificial Intelligence in schools? https://punchng.com/is-nigeria-ready-for-artificial-intelligence-in-schools/

Caukina,N., Vinsonb, L., Trailc, L., and Wright, C.(2023). Entering a New Frontier: AI in Education. *International Journal of the Whole Child*. VOL. 8, NO. 2

Chen, C. (2023). AI will transform teaching and learning. Let's get it right. Stanford HAI. https://hai.stanford.edu/news/ai-will-transform-teaching-and-learning-lets-get-it-right Coley,

Chen, L., Wang, X., & Zhang, Y. (2023). Predictive analytics in education: AI's role in identifying at-risk students. International Journal of Learning Analytics, 12(2), 98-115.

Chukwbikem, P. E. I (2013). Resources for early childhood education. Mediterranean Journal of SocialSciences, 4 (8), 161-172. doi:10.5901/mjss.20.

Copeland, B. J. (2022). Artificial Intelligence. https://www.britannica.com/technology/artificial- intelligence

Government News Team (2024). AI reducing teachers' admin burden. https://www.governmentnews.com.au/ai-reducing-teachers-admin-burden/

Maddux C, Johnson D, Willis J (2001). Educational Computing, Learning with Tomorrow's Technologies. Boston: Allyn and Bacon.

Meehir, K. (2023). How AI is personalizing education for every student. Elearning Industry. https://elearningindustry.com/how-ai-is-personalizing-education-for-every-student

Mohammed, A., & Al-Ani, M. (2021). Multimedia in Education. *University of Human Development, Iraq*.

Mollick, E., Mollick, L. (2023). Let ChatGPT be your teaching assistant: Strategies for thoughtfully using AI to lighten your workload. Harvard Business Publishing Education. https://hbsp.harvard.edu/inspiring-

minds/let-chatgpt-be-your-teaching-assistant

Nieves, K. (2023). 5 ways to use AI to meet students' needs. Edutopia. https://www.edutopia.org/article/using-ai-tools-differentiated-instruction/

Nwankwo, J. I. (1982). Educational administration: Theory and Practice. New Delhi, India: Viklas.

Nwaubani O. O (2004), "Effective Teaching Methods for Pre- Primary school pupils in the Arts and Related Subjects", Journal of Primary Education Studies, Vol 1 No 1; ISSN: 0189-4617 A. A Akinrotimi and P. K. Olowe (2016)," Challenges in Implementation of Early Childhood Education in Nigeria: The Way Forward" Journal of Education and Practice ISSN 2222-1735 (Paper) ISSN 2222-288 X (Online) Vol.7, No.7, 2016, www.iiste.org.

Obiweluozor, N. (2015), "Early Childhood Education in Nigeria, Policy Implementation: Critique and a Way Forward", African Journal of Teacher Education, Vol 4, No 1 (2015), University of Benin, Nigeria.

Oghenekohwo, J. E., & Frank-Oputu, E. A. (2017). Literacy education and sustainable development in developing societies. International Journal of Education and Literacy Studies, 5(2), 126-131.

Ogunode, N.J., Idoko, G. ThankGod, P.(2024). Artificial Intelligence and Implementation of Educational Administration and Planning Programme in Nigerian Tertiary Institutions. *International Journal of Academic Integrity and Curriculum Developmen*t. Vol: 1, No 1, 2024, Page: 41-47.

Ogunode, N. J., Okolie, K. E., & Chinedu, R. (2023). Artificial intelligence and tertiary education management. Electronic Research Journal of Social Sciences and Humanities, 5(4), 18-31.

Ogunode, N. J., & Ukozor, C. U. (2023). Curriculum revolution in higher education: the mighty role of Artificial Intelligence. International Journal on Orange Technologies, 5(10), 7-16. https://ijins.umsida.ac.id/index.php/ijins/article/view/971/1183

Ololube, N.P. (2013). The Problems and Approaches to Educational Planning in Nigeria: A Theoretical Observation. *Mediterranean Journal of Social Sciences.* Vol 4 No 12, 37-48.

Ololube, N. P. (2013b). Educational management, Planning and Supervision: Models for Effective Implementation. Owerri, Nigeria: SpringField Publishers.

Rampton, J. (2023). The future of AI in time management. Calendar. https://www.calendar.com/blog/the-future-of-ai-in-time-management/

Ruiz, P. & Fusco, J. (2023) Glossary of Artificial Intelligence terms for educators. Center for Integrative Research in Computing and Learning Sciences. https://circls.org/educatorcircls/ai-glossary

Russell, S., & Norvig, P. (2021). Artificial Intelligence, global edition a modern approach. Pearson Deutschland.

Ufomba, E. R., Ezichi-Obasi, J. and Obasi, C. D. (2024). The Role of Artificial Intelligence in Enhancing Administrative and Learning Efficiency in Higher Education: Insights from Abia State University, Uturu. *International Academy Journal of Administration, Education and Society,* Volume 6, Issue 3, PP 189-202.

Ulyawati, U., & Hotimah, H. (2023). *Multimedia In Creating Smart Clasroom Elementary School On Multimedia In Creating Smart Clasroom Elementary School On Natural Science Learning In*. *January 2022*.