



TOWARDS INTEGRATION OF ARTIFICIAL INTELLIGENCE IN MANAGING PRIMARY EDUCATION IN NIGERIA

Dr. Okeke Ifediorah Nonyem

ifedinoke@yahoo.com

Department of Educational Foundations,
Chukwuemeka Odumegwu Ojukwu University, Igbariam Campus,
Anambra State, Nigeria

ABSTRACT

Primary education in Nigeria is a level of education that is required for children within the age of 6-12 years. It is the first official education level in Nigeria. Its management is a crucial task and not an easy one, since it requires the manager (head teacher) to be in charge of various administrative duties in the school, and also properly trained. These administrative duties are among supervision, curriculum evaluation, maintenance of conducive learning environment, bursary work, attendance to paper work, visitors and maintenance of good school community relationship, among others. The management of primary education in Nigeria has become a huge labour in the hands of the school managers, as a result of lack of innovation in the administrative practices. The paper examines the concepts of primary education and Artificial Intelligence, current situation in the management of primary education before the introduction of Artificial Intelligence, the integration of Artificial Intelligence in the management of primary education in Nigerian education system, challenges facing the integration of Artificial Intelligence in the management of primary education. It also provides recommendations which emphasize the roles of Nigerian government in ensuring that Artificial Intelligence, brings an enhanced and technologically advanced education that empowers both the managers and the students.

Keywords: Education, Primary School, Management & Artificial Intelligence.

Introduction

The management of primary education is not an easy task, since the Headmaster or Headmistress is in charge of various tasks and activities. These are among supervision of teachers for quality assurance, updating pupils' learning materials and schemes of work in accordance with government approved curriculum, maintaining good learning environment, and as well as bursary work. These are few among many other roles like attending to visitors, paper works and hosts of other administrative duties. There are the assistant Headmaster or Headmistress, the carter teachers and other teachers who also assist in administrative duties and other various duties in the school, such as disciplining of pupils, supervision of social activities, extra-curricular activities and hosts of others. Glossary of Education, cited in Agogbua, Amobi and Anyaeji, (2021) pointed out that there is administrative team that is saddled with the task of planning, organizing, directing and controlling. This team of administrators found in primary schools includes the head teacher as the head of school administration, followed by the assistant head teacher, as the Head of Departments, and other departmental heads. Johnson, cited in Agogbua, Amobi and Anyaeji, (2021) agreed with the Glossary of Education asserted that school administration is the school's main governing body, and it plays a major part in decision making related to students, teachers and the school's overall status. This paper explores the benefits and challenges of incorporating Artificial Intelligence (AI) in primary education management in Nigerian education system.

Concept of Primary Education

Education is a crucial aspect of everyone's life, and a good education is essential to living a successful life, (Imoh, 2023). It means that education inculcates culture, norms, values, and general knowledge of life, that will enable an individual to develop himself and as well as the society in which he lives, and these are obtained from school. Buttressing this, Dangara (2016) asserted that school is an institution designed for the attitude modification and teaching of pupils or students under the direction of teachers. Therefore, it is an



institution where the educational formation and training of young ones and adult learning is obtained. Education (school) in Nigeria is divided into three levels, namely: primary school, secondary school and tertiary levels of education, (Aduwa, 2021). Primary education refers to the first stage of formal education and it is the stage that comes up after the pre-primary. The primary school is a school where children within the ages of 6 -12 are given formal education, according to National Policy on Education, (NPE, 2014). In Nigeria, it is the school which children attend before they go to secondary school, (Babatunde, 2020).

Concept of Artificial Intelligence

Intelligence can be described as the ability to perceive or infer information, and to retain it as knowledge to be applied towards adaptive behaviours within an environment or context. In summary, intelligence can be defined as the ability to retain, recall and apply information, (Robinson, 2018). Artificial intelligence (AI) is a field of computer science that involves in the development of intelligent machines that can perform tasks that typically require human intelligence, such as visual perception, speech recognition, decision-making, and language translation, (Imoh, 2023). It refers to the creation of computer systems capable of performing tasks that historically only a human being could do, such as reasoning, making decisions, or solving problems, (Nwanguma & Onyeukwu, 2023). Also, according to Imoh, it is a thriving technology that is changing the world and is being used in almost every field. One of the places where artificial intelligence is poised to make big changes is in education. In the context of the Nigerian education system, the integration of AI in the management of primary education holds immense potential to enhance learning outcomes and streamline (modernize) administrative processes.

Management of primary education in Nigeria before the emergence of Artificial Intelligence or current situation

However, before the integration of Artificial Intelligence (AI) in the management of primary education in Nigeria, the system relied on traditional methods and manual processes for various aspects of primary education management such as:

1. **Manual Record-Keeping:** Schools and education authorities maintained records of student enrollment, attendance, and academic performance manually, using paper-based systems.
2. **Teacher Allocation:** Teacher allocation and deployment were done based on administrative decisions and manual assessments of staffing needs.
3. **Curriculum Development:** Curriculum development was a manual process, involving committees and experts who reviewed and updated the curriculum periodically.
4. **Monitoring and Evaluation:** Monitoring and evaluation of schools and teachers were conducted through physical inspections and assessments by education officials.
5. **Resource Management:** Resource allocation and management, including funds, infrastructure, and instructional materials, were managed through traditional budgeting processes.
6. **Data Management:** Manual record-keeping led to inefficiencies, errors, and delays in accessing and analyzing education data.

These however, consist of various challenges in the Management of Primary Education before the emergence of Artificial Intelligence.

When Artificial Intelligence will be integrated in the management of primary education in Nigerian education system

In Nigeria, Artificial intelligence will bring about opportunities to contribute to areas such as Education which can be achieved through:

1. **Data Analytics:** AI algorithms are used to analyze education data, such as student performance, attendance, and teacher effectiveness, to identify trends, patterns, and areas for improvement.
2. **Personalized Learning:** AI-powered educational platforms and tools are being used to provide personalized learning experiences for students, catering to their individual needs and learning styles.
3. **Teacher Support:** AI systems are being developed to assist teachers in lesson planning, grading assignments, and providing feedback to students, thereby enhancing teaching effectiveness.
4. **Predictive Analytics:** AI is used to predict student outcomes, identify at-risk students, and recommend interventions to improve student retention and academic success.
5. **Resource Optimization:** AI algorithms help in optimizing resource allocation, such as teacher



deployment, school infrastructure planning, and budget management, to ensure efficient use of resources.

6. Virtual Assistants: AI-powered chatbots and virtual assistants are being used to provide information, answer queries, and offer support to students, teachers, and parents in real-time.
7. Personalized Learning: AI algorithms can analyze students' learning patterns and provide personalized recommendations to cater to individual needs.
8. Efficient Administrative Processes: AI-powered systems can automate administrative tasks such as student enrollment, attendance tracking, and resource allocation, leading to increased efficiency.
9. Enhanced Teacher Support: AI tools can assist teachers in lesson planning, grading, and providing feedback, allowing them to focus more on student engagement and development.
10. Data-Driven Decision Making: AI analytics can generate insights from large datasets to inform strategic decisions and improve educational policies.
11. Time Management: AI can help primary school teachers save time by automating tasks like experiment design, data gathering, and analysis. Teachers may concentrate on the intellectual parts of experiments and successfully interact with students during class time, (Kotsis, 2024).

These numerous benefits of Artificial Intelligence integration in the management of primary education in Nigeria holds great promise for transforming the education system and ensuring quality education for all students, in the country.

Challenges facing the integration of Artificial Intelligence in the management of primary education in Nigerian education system

The adoption of AI technologies in education seeks to enhance knowledge acquisition, leading to a surge in online learning. However, many developing nations like Nigeria, face challenges in fully harnessing AI benefits due to infrastructural limitations and limited access to the Internet.

1. Digital Divide: Access to AI technology may be limited in certain regions, exacerbating existing disparities in education quality.
2. Privacy Concerns: The collection and analysis of student data by AI systems raise privacy and security issues that need to be addressed through robust policies.
3. Training and Capacity Building: Teachers and administrators may require training to effectively utilize AI tools and integrate them into the curriculum.
4. Ethical Considerations: The use of AI in education must adhere to ethical standards to ensure fairness, transparency, and accountability.
5. Institutional Insecurity: According to Goldberg et al., (2023), whereas this aspect of AI is beneficial in terms of operational efficiency, it also raises additional concerns. It highlights the ease with which surveillance and monitoring can be increased in educational institutions, potentially intensifying the ethical dilemmas already associated with such practices.

However, Artificial intelligence is still faced with social, ethical, legal, and technological challenges, (Mohammed, 2023). Against this backdrop, the role of AI in education becomes a double-edged sword, offering advances in efficiency and effectiveness on the one hand, but also posing important challenges to privacy and ethical standards in education on the other hand.

6. Cost and sustainability: Must be considered is continuous costs associated with software upgrades, technical support, and maintenance when calculating the expenditures of integrating AI technologies in the classroom, (Kotsis, 2024).

Suggestions

The suggestions given below show the role of government and the head teachers of Nigeria in integration and promotion of Artificial Intelligence, in Nigerian education System.

The Nigerian government should:

1. Build and equip primary education with laboratories especially that of information communication technology (ICT) to enable the primary school pupils have a sense of computer operation and its application.
2. Train head teachers and teachers, on computer operation, in order to use it in both the management of primary schools and as well as teaching the pupils. This will improve learning especially in drawing the attention of the pupils and in retention of what they have learnt.



3. Provide security measures in primary schools when the ICT materials are provided to ensure sustainability.
4. Pay more attention to the training of ICT personnel in Nigeria, to ensure their availability in schools.
5. Ensure that head teachers properly keep and maintenance of ICT materials and equipment in their schools.

Conclusion

The integration of Artificial Intelligence in the management of primary education in the Nigerian education system presents a promising opportunity to enhance learning experiences, improve administrative efficiency, and drive innovation. However, it is essential to address the challenges associated with AI integration through strategic planning, investment in infrastructure, and continuous professional development. By leveraging the potential of AI responsibly, Nigeria can pave the way for a more inclusive and technologically advanced education system that empowers students and educators alike.

References

- Aduwa, J. (2021). *Primary education in Nigeria: The journey so far*. *International Journal of Advanced Academic Research*, 7(10). DOI: 10.46654.
- Agogbua, V. U; Amobi, B. A. & Anyaeji A. V. (2021). *Primary education administration in Nigeria: challenges and strategies for improvement*. *International Journal of Research and Scientific Innovation (IJRSI)*, 8(7) 101-105.
- Babatunde, A. A. (2020). *The state of primary education in Nigeria: A critical review*, 2(3)
- Bulus, B. (2021). *Analysis of emerging trends in artificial intelligence in education in Nigeria*. DOI: <https://doi.org/10.21203/rs.3.rs-3819828/v1>. 1-21
- Dangara, U. Y. (2016). *Educational resources: An integral component for effective school administration in Nigeria*. *Research on Humanities and Social Sciences*, 6(13) 27- 37.
- Federal Republic of Nigeria (2014). *National Policy on Education*, Lagos: NERDC press
- Goldberg, P., Bühler, B., Sikimić, V., Trautwein, U., Gerjets, P., Stürmer, K., & Kasneci, E. (2023). *Artificial intelligence in classroom management: a systematic review on ducational purposes, technical implementations, and ethical considerations*. <https://orcid.org/0000-0001-5399-9557>
- Imoh, S. I. (2023). *Artificial intelligence in education: history, roles, benefits, challenges of implementing, examples, and it futureimplications*, 1-11
- Kotsis, K. T. (2024). *Artificial intelligence helps primary school teachers to plan and execute physics classroom experiments*. *Journal of Effective Teaching Methods*. DOI: 10.59652/jetm.v2i2.158., 2(2) 1-10.
- Mohammed, K. & Shehu, A. (2023). *A review of artificial intelligence (ai) challenges and future prospects of explainable ai in major fields: A case study of Nigeria*. *Open Journal of Physical Science (OJPS)*, 4(1) 01- 18.
- Nwanguma, T. K. & Onyeukwu, H. C. (2023). *Integrating Artificial Intelligent in Nigeria education: A panacea to educational assessment development in Nigeria*. *African Journal of Information, Economics and Management Research (AJIEMR)*, 1(2), 100-106.
- Robinson, R. N. (2018). *Artificial Intelligence: Its importance, challenges and applications in Nigeria*. *Direct Research Journal of Engineering and Information Technology*, 5(5), 36- 41. DOI: <https://doi.org/10.26765/DRJEIT.2018.4780>.