

ARTIFICIAL INTELLIGENCE AND THE FUTURE OF HIGHER EDUCATION IN NIGERIA¹JOYCE IMEKE-JAJA & ²SUNDAY D. OSSAT¹Rivers State University, Nkpolu Oroworukwo, Rivers State.²University of Port Harcourt, Choba, Rivers State.¹joyceifeomajaja1808@gmail.com 08036727492 ²sunday.osaat@uniport.edu.ng 08036731057**Abstract**

The paper reflected on Artificial Intelligence and the future of higher education in Nigeria. The concept of artificial intelligence was elaborately discussed. Artificial intelligence is equated with machine intelligence. The paper also expounded the concept of higher education, and the objectives of higher education in Nigeria was also highlighted. The types of Artificial Intelligence were explained which includes Intelligent Tutoring System, Automated Grading and Assessing, Adaptive Learning Technologies and virtual Classrooms. AI. Prospects and challenges were treated. The paper concluded that the importance of AI enhance teaching and learning is not in doubt; however, that AI cannot be made to replace the traditional teaching method. It recommended that necessary guidelines to be put in place before effective utilization of AI in Nigerian higher education.

Keywords: Artificial Intelligence, Future and Higher Education.

Introduction

Artificial Intelligence (AI) emanated in the 1940s, it is also known as machine learning. This is because it utilizes machine in carrying out its responsibilities. Artificial Intelligence (AI) is the simulation of human intelligence process by machine especially computer system. The ability of a digital computer or computer-controlled robot to perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristics of humans such as, the ability to reasons, discover meaning, generalizes or learn from the past experiences, present and future challenges. Since the development of digital computer in 1940s, it has been demonstrated that computers can be programmed to carry out complex tasks.

Machine learning and intelligent software have a lot of use in education, especially higher education in Nigeria, from the implementation of tutoring systems that provide personalized feedback and guidance for students to AI-based virtual assistants that help lecturers in planning lectures. AI can provide educators with real-time feedback about how their students are faring in the classroom and where they might be headed, so that interventions can be staged sooner as needed.

Artificial Intelligence has a transformative impact on the educational landscape, transforming the way we learn and teach, transforming industries, and preparing the workforce for contemporary societies. UNESCO' highlights the importance of integrating AT into education to foster innovation and meet workforce demands (UNESCO, 2020). Artificial Intelligence support self-directed learning, foster collaborative learning communities, and promote creativity in understanding concepts, as evidenced by recent curricular developments in education. Nigerian universities, like the National Universities Commission (NUC), are adapting to global technological trends to prepare students for the Fourth Industrial Revolution. The integration of Artificial Intelligence into higher education in Nigeria aligns with the national agenda of fostering innovation, research, and technological advancement (NUC, 2017). Nigerian universities are aiming to position themselves as a technological hub by evolving their curricula to equip students with the necessary skills.

Concept of Artificial Intelligence

The concept of artificial intelligence as conceived by Akogun & Greenhow (2022) is about the combination of applications of machine learning, deep learning, algorithm production and natural language processing. A frequently cited definition of artificial intelligence literacy was developed by Long & Magerko (2020) who defined it as “a set of competencies that enables individuals to critically evaluate artificial intelligence technologies, communicate and collaborate effectively with artificial intelligence and use artificial intelligence as a tool online, at home and in the work place6.

According to Zhengyu, Yingjia & Jmimiig in Owuka (2024) artificial intelligence was defined as a robot with the ability to simulate learning characteristics or intelligent characteristics that can be accurately described. Artificial intelligence education is a new form of education formed on the basis of artificial intelligent technology which is integrated in concept, organisation, mode, resources and other aspects. AI is the branch of computer science that makes the computers to mimic the human behaviour, it assists humans for greater and better performance in the field of science and technology. Artificial Intelligence is sometimes called machine intelligence; this is because it is an intelligence demonstrated by machines as opposed to natural intelligence displayed by man or animals (Ziyad, 2019).

Accordingly, Ziyad (2019) asserts that AI is a branch of computer science that makes the computers to mimic human behaviour, it assists humans for greater and better performance in the field of science and technology. AI is sometimes called machine intelligence; this is because it is an intelligence demonstrated by machine as opposed to natural intelligence displayed by man

It is imperative to state that there is a difference between digital education and e-learning According to Mcilwhan (2018), the term digital education is increasingly used but often without clear understanding of what the term means. It is sometimes used interchangeably with technology enhanced learning and with e-learning or online learning, however’ arguably each of these terms reflects a different stage in the evolution of the discipline’. Allan perceives digital education as an umbrella term for any education that is conducted at least partly in. with or through digital technologies. This is a deliberately broad definition that could encompass the use of technology in traditional classrooms, blended learning (which combines online and face to face instruction) and education that takes place entirely online. While the e-learning mean the application of Information Communication Technology (ICT) to teaching and learning. It’s the use of digital technology and online process to support and enhance the facilitation processes.

Concept of Higher Education

Higher education is otherwise referred to as tertiary education. The Federal Republic of Nigeria (2004) defines tertiary education as the education given after secondary education, in universities, colleges of education, polytechnics monotechnics, including those institutions offering correspondence courses (Iyieke- Jaja, 2020).

Okoli (2017:9) opines that the development of higher education in Nigeria started with the establishment of Yaba Higher College in 1932 as residential school with 41 students until 1934 when it was formally opened with 91 students enrolled by the governor Sir Donald Cameron. The initial courses offered at Yaba College were civil engineering, medicine, agriculture, survey and teacher training for secondary schools, later commerce forestry and veterinary science were included. The students were awarded Yaba Higher College diploma at the end of the courses. The diploma had no international recognition. Presently however, the higher education in Nigeria has been greatly enlarged.

Higher education in Nigeria is made up of a university sector and a non-university sector, and has the following characteristics:

Degree Structure

Nigeria's higher education system follows a three-tier degree structure: bachelor's, master's, and doctoral.

- **Certificate and Diploma Programmes**
Certificate and diploma programs are offered at both the undergraduate and graduate levels.
- **University Sector**
The university sector is part of Nigeria's higher education system.

Non-University Sector

The non-university sector is made up of polytechnics, monotechnics, and colleges of education.

Objectives

The objectives of higher education in Nigeria include:

- Acquiring, developing, and inculcating proper values
- Developing intellectual capacities
- Contributing to national development through training relevant manpower
- Promoting and encouraging scholarship and community services
- Promoting national and international understanding and interaction.

Types of Artificial Intelligence in Higher Education

There are various types of AI applications in higher education, each serving different purposes to enhance teaching and learning experiences

Intelligent Tutoring Systems (ITS): This Intelligent tutoring systems have been built to offer instruction and feedback personally to the pupils' interacting with them. These allow students to work at their own pace by utilizing subjects and exercises that suit the style of their learning. Such service probably cannot work as a genuine simulator of one-on-one tutoring, but at least the ITS can use algorithms that analyze how students interact with educational material and predict what teaching strategies are most likely to be effective.

Automated Grading and Assessment

The grading process can be automated by AI systems, especially for objective assessments such as multiple-choice tests⁶. Advanced AT tools can even analyze essays and written responses based on content, grammar, coherence etc. It lessens the educators' burden and allows their resources to be utilized for a student's more challenging aspects of engagement. For instance, AI-based tools are being utilized by Turning to grade essays, detecting patterns in responses and analyzing grammar and structure. This automated approach saves time and reduces waiting for feedback (Vonlehn, 2021).

Adaptive Learning Technologies: Tools like automated assessment aid in understanding assignments, provide support for students. This helps prevent heavy workloads and ensures reduced challenges, streamlining learning and prevents students from struggling. Learning is being transformed by AI - powered platforms such as Dream-Box and Knewton, which offer customized exercises based on every student's progress and learning requirements (Kulik, & Fletcher, 2016).

Virtual Classrooms and Assistants using Artificial Intelligence

Virtual classrooms powered with AI Huge Transformation in E-Learning Industry Distance Learning and Blended Learning AI can be used for classroom assignments, discussions and feedback on these platforms. AI driven virtual assistants, chat-bots answer pupil queries, help them in the learning material orientate and support teachers to undertake menial administrative tasks. AI-powered resources, such as Quizlet, lessen the effort of teachers by producing practice questions and flashcards, improving the learning experience for pupils, and improving the calibre of instructional materials. The teacher is waiting for students to ask questions, but real-time assistance is being provided through AI-based chat-bots, enhancing learning continuity without waiting for intervention.

Artificial Intelligence and Higher Education; Benefits and Prospects in Nigeria.

As stated in the opinions of international educator and lawyer, Jacob Sule who in 2024 explained how Nigeria can integrate Artificial Intelligence into the country's education sector. In his submission, Sule (2024) emphasised that: "Artificial Intelligence (AI) is revolutionizing industries worldwide and is now fully integrated into education. In Nigeria, where the education sector faces numerous challenges, such as inadequate infrastructure, lack of qualified teachers, and inconsistent access to learning resources, AI has the potential to bridge significant gaps.

- i. By integrating AI into education, Nigeria can enhance teaching, improve learning outcomes, and provide students with personalized educational experiences. However, successful integration requires careful planning, infrastructure investment, and policy support.
- ii. AI comes with numerous opportunities for the educational system in Nigeria. It could help students create personalized learning outcomes. The Integration of AI can provide students with individualized learning paths based on their abilities, learning styles, and progress.
- iii. AI can enable the creation of advanced e-learning platforms that simulate classroom experiences. For students in remote or underserved areas, this can provide access to quality education even with few qualified teachers. AI can facilitate virtual classrooms, interactive discussions, and automated assessments, allowing students to learn from anywhere.
- iv. AI can streamline administrative processes such as grading, attendance tracking, and scheduling. This can free up teachers' time, allowing them to focus more on actual teaching. For example, AI systems can quickly assess student assignments, detect patterns in student performance, and generate reports that can help teachers identify areas where students may need additional support.
- v. The emergence of artificial intelligence has reduced a lot of tedious and repetitive administrative work for teachers and for students. It promotes their independent learning abilities, thinking abilities and expands their horizon and thinking mode. There are other benefits attributed to artificial intelligence such as making the traditional classroom more comprehensive education scene will no longer be limited to the classroom, improving the quality of teaching.
- vi. Again, the artificial intelligence system can provide each learner with personalised learning style, so that each student can learn in the most suitable way, accurately record the learning status of each student, assist teachers to achieve hierarchical teaching, precise teaching, and effectively solve the core problems of teaching and learning.
- vii. The question then is: how does artificial intelligence improve students' learning enthusiasm? Many students cannot clearly understand their own learning status, which leads to more confusion when making learning plans. 'To solve this problem, artificial intelligence helps students to summarize test sites and make learning plans, so that students can have their own learning and review plans,

which not only saves time and brings convenience to students, but also improves students' enthusiasm for independent learning.

- viii. Earlier, it took ages for a teacher to assess and grade papers and check for plagiarism. Today, with artificial intelligence, checking for academic integrity, plagiarism and language issues take minutes or less. For Yousif (2011), artificial intelligence offers various learners links about the topics required by the subject matter, eases and inspires both learner and tutor by addressing different learning styles such as autonomous learning, visual learning, e-learning, audio-visual learning and deep learning.
- ix. Equally, artificial intelligence enables the teacher to select and apply the learning method taxonomy that the learner needs and highlights the areas of improvements to be focused on. With these benefits and prospects of artificial intelligence, there is need to look at its challenges to higher education in Nigeria.

Challenges of AI in Education in Nigeria

AI lacks the consciousness and subjective experience that define human thought, though artificial intelligence can be used in grading and assessing the learner and facilitating the role of the instructor, it does not guarantee fairness and objectivity, neither does it consider the psychology of learners grading or the student.

Nigerian schools face challenges in integrating AT into education due to infrastructure, technology access, and trained teachers, as well as cultural resistance. AI is revolutionizing Nigeria's education system by enhancing academic concepts and providing personalized learning experiences.

Another point is inadequate preparedness of teachers and educational institutes in general. Implementing artificial intelligence requires training a large number of teachers and educational managers to use the system which may not be an easy task. The educational system in Nigeria is not up to date to accommodate such change and thus it remains a challenge.

The next thing is the inability of students to explore their full potentials. This is because students who depend too much on artificial intelligence-based education, will limit their critical ability including thinking, and effective utilization of their memory.

Conclusion

Artificial intelligence is a welcome development in higher educations in Nigeria, it has enhanced teaching and learning by personalising learning, though it raises some concerns which implies that AI should complement the traditional teaching method and not replace them. In order to achieve this there is a need for careful planning, ethical safeguards, and a commitment to maintaining the human centred nature of education. AI integration in learning requires strategic allocation of resources, including training initiatives, to foster active participation in the learning process.

It is important to assert that though AI enhances digital literacy AI equally poses the risk of over indulgence and can lead to misinformation, since AI is the creation of man, it is what is imputed into the system that is also retrieved.

Recommendations

- i. There is need to balance AI integration with ethical standards to accomplish educational goals.
- ii. Policymakers and educators should collaborate on guidelines, provide continuous training, and promote creativity, and problem-solving skills to fully utilize AI in education.

- iii. In using AI for teaching in higher institutions, government must put up a guideline and necessary mechanisms for its utilization.

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