

Assessment of Impact of Artificial Intelligence on Curriculum Implementation in Tertiary Education, Nigeria

Eze, Ifeoma Nonyelum

*Department of Educational Management, Faculty of Education, University of Abuja,
Nigeria*

Abstract. *This paper assessed the impact of artificial intelligence on curriculum implementation in tertiary institutions in Nigeria. The paper is a review paper. The paper used secondary data. The secondary data were collected from government documents, print resources and online publication. Inclusion and exclusion criteria were used to narrow the literature to the theme of the study. The paper concluded that artificial intelligence positively impacted curriculum implementation in tertiary institutions in Nigeria. Artificial intelligence aided effective teaching and research programme implementation in the tertiary institutions. Based on this findings, the paper recommends that government should increase funding of tertiary education in Nigeria. The budgetary allocation by the government should be increase in the tertiary institutions to enable the managers of the institutions to acquire more artificial intelligence facilities in their restive institutions.*

Keywords: *Artificial Intelligence, Curriculum, Curriculum implementation, Tertiary Institutions.*

Introduction

Tertiary education also called post-secondary education, is any level of education pursued beyond high school, including undergraduate and graduate credentials. These credentials encompass certificates, diplomas or academic degrees (Tophat,2022). Tertiary institutions encompass diverse institutions of higher learning that extend beyond universities. Tertiary institutions are a micro section of the larger society. Tertiary institutions are an organized fraction of the whole society curved out for teaching programmes, research and provision of community service. The tertiary institutions can also be seen as a subset of the general society that is made of the collection of different people, different cultures, different lifestyles and different values (Ogunode and Odo 2023).

Tertiary education, more commonly referred to as postsecondary education, refers to academic pursuit undertaken after high school. Undergraduate programs include any postsecondary education that takes up to four years to complete, including certificates, diplomas, and associate' and bachelor's degrees. Graduate programs typically require prior completion of an undergraduate degree and include diploma, certificate, masters' and doctoral degree programs. You can find tertiary education programs at vocational schools, community colleges, technical schools, professional schools, colleges and universities (Learn.org 2020). Tertiary institutions have been defined by Ogunode, Edinoh and Okolie (2023) as a planned and organized educational system designed for the total development of man/woman and the total transformation of society through the utilization of teaching, research and provision of community service. Tertiary education can also be viewed as post-basic and secondary school education that embraces advanced teaching, research and community service.

The goals of tertiary education (tertiary institutions) shall be to: contribute to national development through high-level manpower training; pro-vide accessible and affordable quality learning

opportunities in formal and informal education in response to the needs and interests of all Nigerians; provide high-quality career counselling and lifelong learning programmes that prepare students with the knowledge and skills for self-reliance and the world of work; reduce skill shortages through the production of skilled manpower relevant to the needs of the labour market; promote and encourage scholarship, entrepreneurship and community service; forge and cement national unity; and promote national and international understanding and interaction (FGN National Policy on Education 2013). The implementation and realization of tertiary education goals depends on the availability of human resources and material resources. Curriculum is one of the material resources aiding the attainment of tertiary education.

Curriculum is an organized and planned programme meant for the development of the society and to be learnt through educational institutions. Curriculum must be planned for an effective implementation (Ogunode & Ohibime 2021). Curriculum could also be defined as the document, plan or blue print for instructional guide, which is used for teaching and learning to bring about positive and desirable learner behavioural change (Offorma, 2014). Isife, & Ogakwu, (2016) viewed curriculum as means and organized, planned educational experiences administered to the learners under the guidance and supervision of the school. The actual execution and administration of these experiences to the learners can then be called curriculum implementation. Esu and Emah (2014) curriculum consists of knowledge, skills, values, activities and many more, which students learn through various school subjects. In the view of Akudolu (2011), curriculum covers educational goals, the content or fact to be learnt, the learning experiences, outcome of learning encounters and the learning environment. The objective of curriculum is to realize the goal of education and aid national development.

The realization of the objectives of curriculum depends on the effectiveness of curriculum implementation. Curriculum implementation is the act of executing the planned curriculum in the school to modify behavior of the learners (Akin-Ibidiran, Ogunode & Ibidiran 2022). Curriculum implementation involves a number of activities culminating in translating curriculum documents into classroom practice. It involves translation of theory into practice or proposal into action. This is achieved when the teacher is handed the curriculum and ends when the learners have been exposed to the learning experiences prescribed in the document. There are intermediate steps which includes verbal and non-verbal exposition, practical work in the laboratories, interactions, workshops, field work, teacher – student interactions, student-materials interactions and the evaluation and feedback (Ivowi 2004). Curriculum implementation makes teachers to prepare lesson notes, use reinforcement and motivational strategies, classroom control and creation of friendly relationship, application of theories and principles of learning, effective use of evaluation techniques and adequate consideration of learner's cognitive styles. This facilitates resolution of instructional challenges as well as achievement of overall goals of education, which is the vision of the 21st century (Okoro, 2010). Curriculum implementation as putting into practice the officially prescribed courses of study, syllabuses and subjects (Chikumbi & Makamure, 2000). Curriculum implementation as the transition of the objectives of the curriculum from paper to practice. That is, only effective curriculum implementation ensures the achievement of the objectives for which the curriculum was designed to attain ((Okebukola, 2004).

There are many factors that aids curriculum implementation in tertiary institutions. Artificial intelligence is one of the technological resources available for curriculum implementation in the tertiary institutions. AI as the ability of a computer or machine to mimic the capabilities of the human mind – learning from examples and experience, recognising objects, understanding and responding to language, making decisions, solving problems – and combining these and other capabilities to perform functions a human might perform, such as greeting a hotel guest or driving a car (Alagbe 2023). Ogunode & Ukozor (2023) defined AI as programs designed with human-like intelligence and structured in the forms of computers, robots, or other machines to aid in the provision of any kind of service or tasks to improve the social economic and political development of the society. Artificial Intelligence is an application or program constructed to carry out tasks with human-like intelligence. Artificial intelligence (AI), is 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 characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from past experience. Artificial intelligence (AI) as simulation of human intelligence by software-coded heuristics Copeland 2023). Artificial Intelligence is a branch of science producing and studying the machines aimed at the stimulation of human intelligence processes (Frankenfield 2023).

Method

The paper is a review paper. The paper used secondary data. The secondary data were collected from government documents, print resources and online publication. Inclusion and exclusion criteria were used to narrow the literature to the theme of the study.

Impact of Artificial Intelligence and Curriculum Implementation in Tertiary Education

What is the impact of artificial intelligence on curriculum implementation in Tertiary institutions?

Table 1: Data Analysis

S/N	Names	Findings
1	Ogunode, Abdullahi & Sani, (2024).	The study revealed that AI as an infrastructure has a critical role to play in the implementation of the CCMAS in Nigerian universities. Artificial Intelligence being an infrastructure can aid effective teaching and implementation of CCMAS, research in CCMAS, support effective provision of community service to the host communities and support blended learning implementation. There is an agreement among scholars of development studies that AI is an infrastructure. The findings of this study therefore.
2	Oluyemisi, (2023).	The study reveals that AI technologies, including machine learning and natural language processing, play a pivotal role in enhancing educational practices. Notably, AI facilitates personalized learning experiences, automates assessments, and optimizes curriculum design by analyzing extensive datasets on student performance. The findings underscore the potential of AI to address scalability issues in education, offering a dynamic approach to curriculum development that considers individual learner needs and ensures the delivery of high-quality educational content.
3		Concluded that AI can aid effective tertiary institution administration, effective implementation of teaching programmes, enhance effective student learning in tertiary institutions, aid effective conduct of examination in tertiary institutions, support virtual learning in tertiary institutions, improve research programme development, improve the provision of community service programme, aid effective data management, improve security in tertiary institutions and can improve the attendance of staff in tertiary institutions.
4	Thomas, Gambari, Sobowale, & Shehu,.(n.d)	Findings of the study revealed that lecturers rarely used AI with a grand mean of 1.85. Independent samples t-test analysis showed that $t = 1.730$, $p > 0.085$ indicating no significant difference in the mean response of male and female lecturers' level of utilisation of AI.
5	Smith (2021 & 2022)	The applications for Artificial Intelligence (AI) in educational management. These applications include personalized learning, where AI tailors learning paths to individual students based on their unique attributes; intelligent tutoring systems providing real-time feedback and individualized learning experiences; student performance prediction utilizing AI algorithms to analyze various data factors and intervene proactively; automated grading for multiple-choice and short-answer questions, freeing up teacher time; learning analytics aiding educators in analyzing student data for trends and patterns; AI-powered chatbots and virtual assistants offering instant answers

		to common queries; campus safety through AI-powered surveillance systems; recruitment and admissions with AI analyzing applicant data; financial aid and student services automation; and AI's role in informing curriculum development by analyzing job market trends and identifying future skill needs.
6	Bordia (2023)	Concluded that educational institutions can use AI-powered chatbots to provide uninterrupted learning to students. As chatbots are available, students can use them to resolve doubts in real time. Moreover, chatbots can also be used by school authorities to provide information to parents and students. For example, details on fees, new admissions, classes etc. can be passed on to parents and students through AI- powered chatbots.
7	Borbajo, Malbas & Dacanay, (2023)	Discovered that AI technologies facilitate collaborative learning experiences among students. Virtual collaborative platforms, intelligent chatbots, and AI-based discussion forums enable students to engage in collaborative problem-solving, peer feedback, and knowledge sharing. AI tools can also assist in the formation of student groups based on complementary skills or learning needs. This integration of AI promotes collaboration, communication, and critical thinking skills, enhancing the overall learning experience. The integration of AI technologies in education facilitates personalized instruction and differentiated learning. AI-powered adaptive learning platforms and intelligent tutoring systems analyze student data and provide tailored learning experiences. These technologies adapt instructional content, pacing, and feedback based on individual student needs and learning styles. As a result, teachers can better address the diverse needs of their students, offering customized instruction and support.
8	Ogunode, Edinoh, & Chinedu, (2023)	Concluded that AI can aid effective tertiary institution administration, effective implementation of teaching programmes, enhance effective student learning in tertiary institutions, aid effective conduct of examination in tertiary institutions, support virtual learning in tertiary institutions, improve research programme development, improve the provision of community service programme, aid effective data management, improve security in tertiary institutions and can improve the attendance of staff in tertiary institutions.
9	Westagilelabs (2022)	Find out that tutoring programs or intelligent tutoring systems (ITS) based on artificial intelligence are equipped to handle personalized feedback and instructions for one-on-one teaching. However, they cannot replace teachers since they are not advanced enough to teach how a human can. They can help in scenarios where human tutors are not available for small lessons that can be taught and evaluated online. It can be an effective tool in e-learning platforms to teach languages, geography, circuits, medical diagnosis, computer programming, mathematics, physics, genetics, chemistry, etc. They are designed to factor in engagement, metrics for grading and comprehension.
10	Ogunode & Olowonefa (2023)	Artificial intelligence (AI) can be applied in preparation of students result report, school administration, aid effective learning, effective teaching implementation (intelligent tutoring), virtual learning environment and effective data management and aided curriculum implementation.

From the table, data analyzed revealed that artificial intelligence has aided implementation of curriculum in educational institutions especially in the tertiary institutions. Artificial intelligence supported implementation of teaching, learning and research in tertiary institutions.

Finding

The paper revealed that artificial intelligence positively impacted curriculum implementation in tertiary institutions in Nigeria. The paper also showed that Artificial intelligence aided effective

teaching and research programme implementation in the tertiary institutions.

Conclusion and Recommendations

This paper assessed the impact of artificial intelligence on curriculum implementation in tertiary institutions in Nigeria. The paper established that artificial intelligence positively impacted curriculum implementation in tertiary institutions in Nigeria. Artificial intelligence aided effective teaching and research programme implementation in the tertiary institutions.

Based on this findings, the paper recommends that government should increase funding of tertiary education in Nigeria. The budgetary allocation by the government should be increase in the tertiary institutions to enable the managers of the institutions to acquire more artificial intelligence facilities in their restive institutions.

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