

Artificial Intelligence and Inclusive Education in Tertiary Education, North-Central Nigeria

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Abstract: The study assessed the impact of artificial intelligence on Inclusive education in tertiary institutions in North Central Nigeria. The study used correlation method and correlation design. The population of this study comprises of all academic staff in all public tertiary institutions in North central Nigeria. The sample of this study consists of 367 academic staff from selected public tertiary institutions in the region. To determine the sample size, Krejcie and Morgan (1970) table of sample selection is employed by the researcher. A population of 8000 would require 367 sample. For the purpose of collecting data in this study, questionnaire was used. Respondents were asked to score themselves on a 4 – point Likert scale. To score the items, a value was assign to each items, Strongly Agree = 4, Agree = 3, Disagree = 2, strongly Disagree = 1. The data obtained from this study were subjected to statistical analysis. Frequencies and simple percentages were used to analyze the total number of respondents who completed the questionnaires. Pearson Product Moment Correlation was used to test all the two hypotheses. The 0.05 level of significance was used in rejecting or retaining the null hypotheses. The paper revealed that artificial intelligences aided the Inclusive education programme implementation in the tertiary institutions. The study also established a strong relationship between artificial intelligence and researches in Inclusive education in North-Central Nigeria. Based on the findings, the study recommends that government should invest on artificial intelligences facilities since they can influences aid teaching and learning in Inclusive education. Government should also provide adequate infrastructure facilities to support usage of AI facilities in the various institutions in the region and in Nigeria as a whole.

Keywords: Artificial intelligence, Inclusive education, Tertiary institutions.

1.0 Introduction

Tertiary education is defined as organized tertiary learning and training activities and institutions that include conventional universities such as arts, humanities, and science faculties and more specialized university institutions in agriculture, engineering, science, and technology (Alemu,

2018). The concept of higher education also includes post-secondary institutions like polytechnics, colleges of education, and “*grandes école*.” Under the umbrella of higher education come all forms of professional institutions. Even this wide spectrum does not exhaust the possibilities of forms of higher education (Assie-Lumumba, 2005). Ogunode et al., (2023a) conceptualized tertiary education as a planned and organized educational system designed for the total development of man/woman and the total transformation of the society through the utilization of teaching, research and provision of community service. Tertiary education is post-basic and secondary school education that embraces advanced teaching, research and community service. Tertiary education is an educational system that include all other aspects of education such as inclusive education.

Inclusive Education according to National Policy on Inclusive education endorses the UNESCO (2017) is ‘the process of addressing all barriers and providing access to quality education to meet the diverse needs of all learners in the same learning environment.’ According to the document, inclusive education addresses vulnerable and marginalized groups, such as learners who are excluded from or within education; living in the streets; involved in child labour; from minority cultures and/or religions, including those speaking minority languages; physically and/or psychologically abused; growing up in economic and/or cultural poverty; with health challenges, including learners affected by HIV or AIDS; or from families who are addicted to or abusing drugs; as well as those with temporary learning challenges, those who have dropped out of school, learners who learn differently – slower or faster – than the average learner, those with impairments/ disabilities, learners experiencing barriers to learning caused by factors other than impairments, and learners with social or emotional challenges, including girls who are pregnant or have given birth (Factsheet Undated; Oluremi, 2015; Osakwe, 2010).

Also, United Nations Education Scientific and Cultural Organization UNESCO, (2009) defined Inclusive education as to mean a process of transforming schools and other centers of learning to accommodate all learners including boys and girls, learners from ethnic and linguistic minorities, rural populations, those infected and affected by HIV and AIDS, those with disabilities and difficulties in learning and as well provide opportunities for all. Inclusion as the commitment to educate each child to the maximum extent appropriate; in the school and classroom he/she would otherwise attend. It involves bringing the ancillary services to the child, and requires only that the child will benefit from being in the class (rather than having to keep up with the other students (Smith 2007).

Inclusive education is all students attend and are welcome by their neighbourhood schools in the appropriate age, into regular classes and are supported to learn, to contribute and participate in all aspect of life of the school. Inclusive education is about how we develop and design our schools, classrooms, programmes and activities so that all students learn and participate together. It is about the child’s right to participate and the school’s duty to accept the child. Inclusion rejects the use of special schools or classrooms to separate students with disabilities from students without disabilities. A premium is placed upon full participation by students with disabilities and upon respect for their social, civil and educational rights. Full inclusion does not distinguish between special education and general education programmes, instead the school is restructured so that all students learn together. It is a new approach in the provision of services for learners with special needs. It is also the most effective means of combating discriminatory attitudes, of creating welcoming communities, building an inclusive society and achieving education for all as they provide an effective education for the majority of children (Allen & Schwartze 2000; Educationafri 2021; Carter, 2019).

The integration of AI into curriculum development in Inclusive Education emerges as a vital imperative. AI, characterized by machine learning algorithms, neural networks, and natural language processing, represents an advanced technological paradigm that simulates human intelligence processes. In the context of education, AI holds the promise of revolutionizing learning experiences (Oluyemisi, 2023). Frankenfield (2023) defined Artificial intelligence (AI) as simulation of human intelligence by software-coded heuristics. Artificial Intelligence is a



branch of science producing and studying the machines aimed at the stimulation of human intelligence processes. Alagbe (2023) viewed AI as the ability of a computer or machine to mimic the capabilities of the human mind – learning from examples and experience, recognizing 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.

Ogunode and 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), according to Copeland (2023) 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) according to (Oluyemisi, 2023) stands as an advanced technological frontier, simulating human intelligence through machine learning algorithms, neural networks, and natural language processing (NLP). Its transformative impact extends across diverse industries, encompassing healthcare, finance, and manufacturing. In recent years, AI has emerged as a potent force in educational management, revolutionizing the learning landscape. It contributes to enhancing the learning process, elevating student outcomes, and streamlining administrative tasks. Positioned at the forefront of the fourth educational revolution, AI represents a key driver of technological progress, reshaping societies and economies globally (Oluremi 2015).

Studies showed that AI have proven to be effective in the implementation of teaching and learning in Basic education where AI has assisted in helping both students and teachers to carry out academic work (Igbokwe, 2023). In the Basic education, also, AI has supported school administration, supervision, instructional implementation and data management. At the senior secondary schools, AI have supported implementation of curriculum, data management and improve students' academic performance (Ogunode & Olowonefa (2023); Ogunode & Gregory, 2023). At the tertiary institutions, 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 (Ogunode, Edinoh & Chinedu, 2023; Borbajo, Malbas, & Dacanay, 2023; Bordia, 2023).

It is important to fully integrate AI into the implementation of Inclusive education in the tertiary institutions since Inclusive education covers both ability and disability students. The integration of AI may assist to support smooth implementation of teaching and learning in the Inclusive education. AI may provide opportunities for people with disability to learn and achieve more in their educational pursuit. It is in line with this that is very important to assess the impact AI in the implementation of Inclusive education in Nigeria. In this study, we assess the impact of artificial intelligence on Inclusive education in tertiary institutions in North Central Nigeria.

1.2 Purpose of the Study

The purpose of the study is to assess the impact of artificial intelligence on Inclusive education in tertiary institutions in North Central Nigeria. The specific objectives include;

- 1 To find out the extent to which artificial intelligence are deploy to support teaching in Inclusive programme in tertiary institutions in North-Central, Nigeria
- 2 To find out the extent to which artificial intelligence are deploy for researches in Inclusive education in tertiary institutions in North-Central, Nigeria



1.3. Research Questions

This research question was raised to guide the study.

1 To what extent are artificial intelligence deploy to support teaching in Inclusive programme in tertiary institutions in North-Central, Nigeria?

2 To what extent are artificial intelligence deploy to aid researches in Inclusive education in tertiary institutions in North-Central, Nigeria?

1.4 Research Hypothesis

The following were formulated to guide the study:

H₁: There is no significant relationship between artificial intelligence and supporting teaching of Inclusive education in tertiary institutions in North central, Nigeria.

H₂: There is no significant relationship between artificial intelligence and researches in Inclusive education in tertiary institutions in North central, Nigeria.

3.0 Method

The research design used in this study was correlation method and correlation design. The population of this study comprises of all academic staff in all public tertiary institutions in North central Nigeria. The sample of this study consists of 367 academic staff from eight (8) public tertiary institutions in the region. To determine the sample size, Krejcie and Morgan (1970) table of sample selection is employed by the researcher. A population of 8000 would require 367 sample. The sample size for each participant's institution is selected randomly but proportionately for fair representation. For the purpose of collecting data in this study, two Instruments were adopted, and each had measured one of the variables on focused. They include, Artificial intelligence and Inclusive education and Artificial intelligence and Researches in Inclusive education questionnaire. The scale was originally developed for academic staff. Participants were asked to score themselves on a 4 – point Likert scale. To score the items, a value was assign to each items, Strongly Agree = 4, Agree = 3, Disagree = 2, Strongly Disagree = 1. For the purpose of this study pilot study was carried out to ascertain the reliability of the questionnaires of the two variables. The test was done by administering the questionnaire to fifty academic staff that were not part of the sampled institutions. However, the questionnaires turns out to be reliable with Cronbach's Alpha of 0.729 for AI and Inclusive education and AI and researches in Inclusive education Cronbach's Alpha of 0.932 and combined reliability of 0.876. the questionnaire were validated through face validation method, by distributing among experts in department of educational management to assess its ability to measured Artificial intelligence and Inclusive education and Artificial intelligence and Researches in Inclusive education questionnaire and were found valid. Questionnaire were distributed to sampled tertiary institutions through research assistance. The data obtained from this study were subjected to statistical analysis. Frequencies and simple percentages were used to analyze the total number of respondents who completed the questionnaires. Pearson Product Moment Correlation was used to test all the two hypotheses. The 0.05 level of significance was used in rejecting or retaining the null hypotheses.

4.0 Data Analysis

Hypothesis one: There is no significant relationship between artificial intelligence and teaching of inclusive education in tertiary institutions in North central, Nigeria.

In order to test this hypothesis Pearson Product Moment Correlation was employed in the table below



Table 2.1 Pearson Product Moment Correlation statistics showing relationship between artificial intelligence and teaching of inclusive education in tertiary institutions.

Variables	M	SD	r	df	p
Artificial intelligence	31.7372	4.87919	0.880	329	0.001
Teaching of inclusive Education	3.6360	.55564			

Correlation is significant at the 0.05 level (2-tailed) $r=0.880$ $p=0.001$

Table 2.1 shows the Pearson product moment correlations which revealed that significant relationship exist between artificial intelligence and teaching of inclusion of education in tertiary institutions in North central, Nigeria. This is because the calculated p value of 0.001 was found to be lower than the 0.05 alpha level of significance at a correlation index value of 0.880. This implies that the higher the artificial intelligence deployed, the more effective is the implementation of the curriculum of inclusive education. Therefore, the null hypothesis which stated that, there is no significant relationship between artificial intelligence and teaching of inclusive education in the tertiary institutions in North-central Nigeria.

Hypothesis Two: There is no significant relationship between artificial intelligence and research in inclusive education in tertiary institutions in North central, Nigeria.

To test the relationship between artificial intelligence and research in inclusive in tertiary institutions in North central, Nigeria correlation was employed in the table below.

Table 2.2 Pearson Product Moment Correlation statistics on relationship between artificial intelligence and research in inclusive in tertiary institutions in North central, Nigeria.

Variables	M	SD	r	df	p
Artificial intelligence	70.8066	12.90262	0.773	329	0.003
Researches in Inclusive Education	31.7372	4.87919			

Correlation is significant at the 0.05 level (2-tailed) $r=0.880$ $p=0.001$

Table 2.2 is a Pearson product moment correlations analysis aimed at finding relationship between artificial intelligence and research in inclusion in tertiary institutions. The Results revealed that significant relationship exist between artificial intelligence and research in inclusive in tertiary institutions in North central. This is because the calculated p value of 0.003 was found to be lower than the 0.05 alpha level of significance at a correlation index value of 0.773. This implies that the Artificial intelligences supported researches in inclusive education in tertiary institutions in North-central Nigeria, the higher the availability of AI facilities to both academics staff and students, the more quality of research output they achieved in the various institutions. Therefore, the null hypothesis which stated that, there is no significant relationship between artificial intelligence and research in inclusive in tertiary institutions in North central, is hereby rejected.

Discussion of Findings

The result revealed that artificial intelligence aided teaching and learning in Inclusive education in the tertiary institutions in North Central Nigeria. This result is in line with Chan, and Tsi (2023); Ogunode, Agbade, and Bassey, (2023) that concluded that AI supported implementation of education programme.

The study also showed that AI supported researches in Inclusive education in the various tertiary institutions in North-central Nigeria. This result also collaborates with the finding of Khedkar, S. (2023); Oztok, & Zingaro, (2019); Singh, & Singh, (2021) and Laskowski, & Tucci, (2023) they discovered that AI aided research programme implementation in tertiary institutions. AI supported both academic staff and students to carry out their academic functions.

Conclusion and Recommendations

The study examined the impact of artificial intelligence on Inclusive education in tertiary institutions in North Central Nigeria. The paper disclosed that artificial intelligences aided the Inclusive education programme implementation in the tertiary institutions. The study also established a strong relationship between artificial intelligence and researches in Inclusive education in North-Central Nigeria.

Based on the findings, the study recommends that government should invest on artificial intelligences facilities since they can influences aid teaching and learning in Inclusive education. Government should also provide adequate infrastructure facilities to support usage of AI facilities in the various institutions in the region and in Nigeria as a whole.

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