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Artificial Intelligence and Curriculum Implementation in Public Secondary Schools of Federal Capital Territory, Abuja, Nigeria

AHMED MOHAMMED
Academic Planning Federal University Wukari Taraba state
ahmadwalama1979@gmail.com

Umar Faiza Bashir
Faculty of Education Department of Arts Education Taraba State University, Jalingo
fumarbashirgmail@gmail.com

Abubakar Abdullahi Ismail
Faculty Of Education Department of Arts Education Taraba State University, Jalingo
abubakarabdullahiismail19@gmail.com

Abstract:

The study assessed the impact of artificial intelligence on curriculum implementation in public secondary schools in Federal Capital territory, Abuja, Nigeria. The research design used for the study is descriptive survey. The population of the study comprises of the all the teachers in public secondary schools in FCT. The sample for the study is 320 respondents. The researcher formulated a questionnaire titled Artificial Intelligence on Curriculum Implementation Questionnaire (AICIQ). The instrument was subjected to face and content validation using two lecturers from Educational Management department university Abuja. Reliability of the instrument was determined using test retest method. The first and second results obtained from the instrument were correlated and it yielded a coefficient of 0.86 which is high enough for the study. Descriptive statistics was used to analyze data collected for the research questions and hypothesis formulated for the study. The findings of the study revealed that artificial intelligence aided the implementation of school curriculum in the public secondary schools in FCT. The findings also revealed that shortage of Al

facilities, poor implementation of ICT policies, high cost of Al, unstable power supply, poor internet service, high cost of maintenance and poor funding of Al programme are the problems militating against deployment of Al for effective curriculum implementation in public secondary schools in Federal Capital Territory, Abuja, Nigeria. The findings finally, established that there is positive relationship between artificial intelligences deployment and effective curriculum implementation in the secondary schools. Based on this, the study recommended that the government should increase funding of public secondary schools in FCT to enable adequate provision of Al facilities in all the public secondary schools to support effective curriculum implementation in the schools.

Keywords: artificial intelligence, curriculum implementation, secondary schools

Introduction

Curriculum implementation is important tertiary school for the graduates to be self-reliance and create jobs and be empowered without waiting for the government to provide white collar jobs upon graduation. Curriculum is means an 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. Garba, (2004) viewed curriculum implementation as putting the curriculum into work for the achievement of the goals for which the curriculum is designed. Ivowi (2004) noted that 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. Curriculum implementation also can be seen as the translation of the objectives of the curriculum from paper to practice (Okoro, 2008). Obanya, (2004) sees the implementation of curriculum as day-to-day activities that school management and classroom teachers undertake in the pursuit of the objective of any given curriculum. Okoro, (2010), averts that 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. Chikumbi & Makamure, (2000), the curriculum entails putting into practice the officially prescribed courses of study, syllabuses and subjects. From the above, curriculum implementation is the virtual and practical execution of prescribed courses of study in school, syllabuses and subjects in the classrooms within a given time. Curriculum implementation can also be viewed as the process of the planned prescribed courses of study being translated into syllabuses, schemes of work and lessons by professional teachers to be delivered to students in the classroom online or physically. Ohiare, Ogunode, and Sarafadeen (2021) curriculum implementation is critical to the realization of school objectives.

The realization of curriculum implementation goals depends on the availability of adequate human and materials resources like Information Communication Technology and artificial intelligences. Ogunode, Idoko and ThankGod (2024); Chan, and Tsi,(2023); Ogunode et al (2023); Ogunode and Olowonefa (2023) and Chen, Chen, and Lin, (2020) noted that Al deployment in the educational institutions has the capacity to transfer the sector. ….Artificial Intelligence is both a driving force of the fourth educational revolution and a major carrier of the technological progress that is changing societies and economies globally.

There are many definitions on artificial intelligences. For instance, 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, 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. trusani and Houngbonon (2019) defined AI as a combined large volume of data with computing power to simulate human intellectual abilities such as reasoning, language processing, perception, vision recognition and spatial processing Artificial Intelligence refers to the study of intelligent machines and software that can reason, learn, gather knowledge, communicate, manipulate and perceive objects (Verma, 2018**).** Artificial Intelligence is a part of computer science that deals with the design of intelligent systems; that is, systems that exhibit characteristics associated with intelligence in human behaviours (Ocana et al., 2019). Ogunode, Agbade & Bassey (2023) defined Al as programs designed with human-like intelligence and structured in forms of computer, robot, or other machines to aid in provision of any kind of service or tasks to improve social economic and political development of the society.

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) are machines programme forms with capacities and abilities to execute tasks and responsibilities that human beings are performing with the assistance of human-like intelligence (Ogunode & Ejike, (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. The deployment of artificial intelligence for implementation of school curriculum in Federal Capital Territory, Abuja seem not have drawn attention from researchers because there are many studies on curriculum and curriculum implementation in Federal Capital Territory, Abuja but not much on the impact of artificial intelligence on curriculum implementation. Based on this research gap, this study is aimed to assess the impact of artificial intelligence on curriculum implementation in public secondary schools of in Federal capital territory, Abuja, Nigeria.

Purpose of the Study

The objectives of this study is to assess the impact of artificial intelligence on curriculum implementation in public secondary schools of in Federal capital territory, Abuja, Nigeria. The sub-objective includes:

i. To ascertain the impact of artificial intelligence on curriculum implementation in public secondary schools in FCT, Nigeria.
ii. To assess the problems militating against deployment of artificial intelligence in public secondary schools in FCT, Nigeria.

Research Questions

Based on this research objectives, the researcher formulated the following research questions to address the objectives:

i. What is the impact of artificial intelligence on curriculum implementation in public secondary schools in FCT?.
ii. What are the problems militating against deployment of artificial intelligence in public secondary schools in FCT, Nigeria?.

Methods

The research design used for the study is descriptive survey. The population of the study comprises of the all the teachers in public secondary schools in FCT. The sample for the study is 320 respondents. The proportionate stratified sampling technique was applied to the population of the teachers in all the six area councils of Federal Capital Territory, Abuja. The researcher formulated a questionnaire titled Artificial Intelligence on Curriculum Implementation Questionnaire (AICIQ). The questionnaire was divided into two parts- Parts A and Part B. Part covered information about the respondents while part B contains the 20 items separated into two research questions. The instrument was subjected to face and content validation using two lecturers from Educational Management department university Abuja. Reliability of the instrument was determined using test retest method. The same questionnaire constructed for the study was administered twice after a two weeks interval to 10 public secondary schools teachers in some public secondary school in FCT which are not part of the sample of the study. The first and second results obtained from the instrument were correlated and it yielded a coefficient of 0.86 which is high enough for the study. Mean was employed to analyze the data collected from the study based on decision rule of mean scores of the data that is 2.5 as the cut off mark for accepting an item and mean scores below 2.5 is to be taken as low for disagreed and rejection. Descriptive statistics was used to analyze data collected for the research questions and hypothesis formulated for the study.

Data Analysis

Table 1: Analysis of Responses on the impact of Artificial Intelligence and curriculum implementation

N= 320

S/N		X	S.D	Decision
1.	Al support teachers in writing lesson plan for effective curriculum implementation.	3.35	0.52	Agreed
2.	Al aid presentation of lesson in classrooms for effective curriculum implementation.	2.48	0.92	Agreed
3.	Al assists teaching in marking assignments and projects for effective curriculum implementation.	3.14	0.85	Agreed
4.	Al helps teachers in note preparation and course work for effective curriculum implementation	2.60	0.92	Agreed
5.	Al aid effective preparation of students result and report for effective curriculum implementation	3.12	0.86	Agreed
6.	Al aid extra-curriculum activities for effective curriculum implementation.	3.23	0.79	Agreed
7	Al support training of teachers for effective curriculum implementation	3.30	0.92	Agreed
	Average	**3.03**	**0.88**	**Agreed**

Table 1 shows that the teachers agreed that Al is helping in school curriculum implementation in FCT, Nigeria. Specifically, Al support teachers in writing lesson plan for effective curriculum implementation (item 1, x = 3.35), Al aid presentation of lesson in classrooms for effective curriculum implementation (item 2, x = 2.48), Al assists teaching in marking assignments and projects for effective curriculum implementation (item 3, x = 3.14), Al helps teachers in note preparation and course work for effective curriculum implementation (item 4, x = 2.60), Al aid effective preparation of students result and report for effective curriculum implementation (item 5, x = 3.12), Al aid extra-curriculum activities for effective curriculum implementation (item 5, x = 3.23), and Al support training of teachers for effective curriculum implementation (item 7, x = 3.30). The average mean is greater than the cut-off point of 2.50, so is accepted that artificial intelligence is aiding implementation of curriculum in public secondary schools in FCT, Nigeria.

Table 2: Analysis of Responses on the problems militating against deployment of Artificial Intelligence for curriculum implementation

N= 320

S/N		X	S.D	Decision
8.	Shortage of Al facilities.	3.15	0.52	Agreed
9.	Poor implementation of ICT policies.	2.58	0.92	Agreed
10.	High cost of Al.	3.24	0.85	Agreed
11.	Unstable power supply	2.70	0.92	Agreed
12.	Poor internet services	3.10	0.86	Agreed
13.	High cost of maintenance	3.25	0.79	Agreed
14	Poor funding of Al programme	3.17	0.92	Agreed
	Average	**3.19**	**0.88**	**Agreed**

Table 2 indicates that the teachers agreed that Al is facing deployment challenges in schools curriculum implementation in public secondary schools in Federal capital territory, Abuja state Nigeria. Specifically, some of the deployment challenges facing Al include; shortage of Al facilities (item 8, x = 3.15), poor implementation of ICT policies (item 9, x = 2.58), high cost of (item 10, x = 3.24), unstable power supply (item 11, x = 2.70), poor internet service (item 12, x = 3.10), high cost of maintenance (item 13, x = 3.25), and poor funding of Al programme (item 14, x = 3.17) and a total average mean of 3.19 which is above the cut-off point of 2.5 implying agreement that shortage of Al facilities, poor implementation of ICT policies, high cost of Al, unstable power supply, poor internet service, high cost of maintenance and poor funding of Al programme are the problems militating against deployment of Al for effective curriculum implementation in public secondary schools in Federal Capital Territory, Abuja, Nigeria.

H_{o1}: There is no significant relationship between artificial intelligence and curriculum implementation in public senior secondary schools in FCT.

Table 3: Test of Relationship between Artificial intelligence and curriculum implementation in FCT, Nigeria.

Variables	N	Mean	SD	R	r^2	Sig@0.05	Decision
Al	320	2.92	0.89	0.880	0.792	0.000	Significant
Curriculum Implementation	108	3.12	0.78				

Result on Table 3 showed that there was a significant relationship between artificial intelligence and curriculum implementation (p=0.000, which is less than 0.05 level of significance). As a result, the hypothesis was rejected. In other words, there was a very strong positive correlation (0.880) between Artificial intelligence and curriculum implementation in public senior secondary schools in Federal Capital Territory, Abuja, Nigeria.

Discussion of Findings

The result obtained in table indicated that that artificial intelligence aided the implementation of school curriculum in the public secondary schools in FCT. This result collaborates with the discovery of Bojorquez, and Vega,(2023); Ogunode, Gregory (2023c); Ogunode Okolie, and Chinedu (2023); Ogunode and Ukozor (2023); and Bordia (2023) that found out that artificial intelligence assisted teachers in school curriculum implementation.

The information collected in table two revealed that shortage of Al facilities, poor implementation of ICT policies, high cost of Al, unstable power supply, poor internet service, high cost of maintenance and poor funding of Al programme are the problems militating against deployment of Al for effective curriculum implementation in public secondary schools in Federal Capital Territory, Abuja, Nigeria. This result is in line with Ogunode, Agbade, and Bassey (2023) findings that listed poor funding, shortage of expertise, high cost and poor internet service as barriers to usage of artificial intelligence in educational institutions in Nigeria.

The hypothesis test result established that there is positive relationship between artificial intelligences deployment and effective curriculum implementation in the secondary schools.

Conclusion and Recommendations

The study was designed to assess the impact of artificial intelligence on curriculum implementation in public secondary schools in Federal Capital territory, Abuja, Nigeria, find out the problems militating against deployment of artificial intelligence in public secondary schools in FCT, Nigeria and to establish if Al can influence effective curriculum implementation in public secondary schools in FCT, Abuja, Nigeria.

Based on the result collected after analysis, the study concluded that artificial intelligence aided the implementation of school curriculum in the public secondary schools in FCT. Shortage of Al facilities, poor implementation of ICT policies, high cost of Al, unstable power supply, poor internet service, high cost of maintenance and poor funding of Al programme were the problems militating against deployment of Al for effective curriculum implementation in public secondary schools in Federal Capital Territory, Abuja, Nigeria. There was a positive relationship between

artificial intelligences deployment and effective curriculum implementation in the secondary schools.

Based on this, the study recommended that the government should increase funding of public secondary schools in FCT to enable adequate provision of Al facilities in all the public secondary schools to support effective curriculum implementation in the schools.

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