

Artificial Intelligence and Teacher' Job Performance in Public Post-Basic Education and Career Development (Pbecd) in Fct, Nigeria

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Annotation

The study assessed the impact of artificial intelligence on teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria. The research adopted a descriptive survey design for this study. The Sample for this study comprises three hundred and twenty (320) teachers who were randomly selected in six areas councils in FCT. The sampling techniques that were used for this study are simple random sampling techniques. A well-structured questionnaire was used to obtain information from the students. The questionnaire were structured on a four-point type likert modified scale: Strongly Agreed, Agreed, Disagreed, strongly Disagreed (SA, A, D, SD). The face validity of the questionnaire was examined through experts' judgment while factor analysis was used to estimate its content and construct validity. The percentage analysis was used to indicate the percentage scores of all the respondents. Mean and standard deviation were used to analyse research questions while hypothesis was tested using Pearson r, t-test of correlational analysis and simple regression analysis. The study concluded that there is a very strong positive correlation between AI and teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in F.C.T, Nigeria. Implying that AI supported effective implementation of teaching and learning in schools. The study also disclosed that high cost of purchasing AI facilities, high cost of maintaining AI facilities, AI literate level of teachers, limited AI facilities, unstable electricity, inadequate AI infrastructure facilities and students AI literacy level are the challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT. Based on this the paper hereby recommends that government through FCT secondary school education board should provide adequate AI facilities to all the Post-Basic Education and Career Development (PBECD) in F.C.T. The governments and private institutions should support the Post-Basic Education and Career Development (PBECD) in F.C.T with AI facilities for both teachers and students and government should ensure supply of constant electricity and internet services.

Keywords: Artificial intelligence, Teachers' job performance, Post-Basic Education and Career Development (PBECD).



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1.0 Introduction

The Post-Basic Education and Career Development (PBECD) is the education children receive after a successful completion of nine years of Basic Education and passing the Basic Education Certificate Examination (BECE) and Junior Arabic and Islamic Studies Certificate Examination (JAISCE). It includes: (i) senior secondary education, (ii) higher school; and (iii) continuing education given in Vocational Enterprise Institutions (VEIs) to either Basic Education graduates who are not proceeding to Senior Secondary Schools, or Senior Secondary graduates that are not proceeding to the tertiary level, as a means of preparing them for the world of work, wealth creation and entrepreneurship (National policy on education 2014; Mohammed, Ogunode, & Yahaya 2021).

The objectives of Post-Basic Education and Career Development (PBECD) according to (National policy on education 2014) are to: a. provide holders of the Basic Education Certificate and Junior Arabic and Islamic Studies Certificate with opportunity for education of a higher level, irrespective of gender, social status, religious or ethnic background; b. offer diversified curriculum to cater for the differences in talents, disposition, opportunities and future roles; c. provide trained manpower in the applied sciences, technology and commerce at sub-professional grades; d. provide entrepreneurial, technical and vocational job-specific skills for self-reliance, and for agricultural, industrial, commercial and economic development; e. develop and promote Nigerian languages, art and culture in the context of world's cultural heritage; f. inspire students with a desire for self-improvement and achievement of excellence; g. foster patriotism, national unity and security education with emphasis on the common ties in spite of our diversity; and h. raise morally upright and well-adjusted individuals who can think in dependently and rationally, respect the views and feelings of others and appreciate the dignity of labour. (National policy on education 2014). The realization of the objectives of Post-Basic Education and Career Development (PBECD) depend on the availability of many factors such as artificial intelligence.

Artificial intelligence has 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 (Ogunode & Ukozor 2023). Artificial intelligence is a specific branch of computer science. Through research and development, it can simulate, extend, and expand the theory, method, technology, and application system of human intelligence. The research scope of this field is wide, including language processing, language image recognition, and intelligent robot. Since the advent of artificial intelligence technology, it has been deeply studied by scholars all over the world. The theory and technology research are becoming more and more mature, and the application field is also expanding. In the future, the scientific and technological products brought by artificial intelligence will be the aggregation of human intelligence. To some extent, artificial intelligence can carry out digital simulation of the information process of human consciousness and thinking and even surpass human in thinking ability class. At the same time, artificial intelligence is a science with great development potential (Xia, & Li, 2022; Bordia, (2023); Singh, & Jain, 2022).

AI deployment could enhance the teachers' job performance. On the other hands, Ogunode (2023) conceptualized teacher job performance as the implementation of teacher's assigned responsibilities in the school. Teacher job performance is the extent to which the teachers are carrying out their official responsibilities in the schools (Ogunode, Olowonefa, & Ayoko 2023). Teacher job performance refer to the execution of instructor's responsibilities and tasks in the educational institutions (Josiah, Audu and Ogunode, 2023).. Teacher job performance is the level by which the teachers accomplished their given functions and assignment in the schools

(Onafowope, Oweikpodor & Dafiaghor, 2025). Teachers' job performance is the extent they are committed to effective pedagogical delivery and exhibit uprightness and academic excellence in conducting academic activities (Uko *et al.*, 2015). Teachers' job performance is the ability of teachers to display the right attitude to work by being committed and dedicated to the teaching job and making frantic efforts towards the accomplishment of school goals and objectives (Akporehe, *et al.*, 2023). Also, Bassey, Agbade & Ogunode (2023) and Ogunode and Josiah (2023) defined teacher job performance as the extent to which the teachers have attained the objectives of teaching in the schools. Teachers' job performance is the level at which the instructor has been able to execute the assigned functions in the school environment. The job performance of teachers is very important to the school because the success or failure of the teachers affects the school system.

1.1 Purpose of the study

The purpose of this study is to assess the impact of artificial Intelligence on teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria. The specific objectives includes;

1. To find out the impact of artificial Intelligence on teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria;
2. To find out the various challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria.

1.2 Research Questions

Based on the purpose of the study, the following research questions were generated for the study:

1. What is impact of artificial Intelligence on teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria?;
2. What is various challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria?.

Hypothesis

Based on the research questions of the study, the following research hypothesis was generated for the study:

H₀₁: There is no significant relationship between artificial Intelligence and teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in FCT.

3.0 Method

The research adopted a descriptive survey design for this study. The Sample for this study comprises three hundred and twenty (320) teachers who were randomly selected in six areas councils in FCT. The sampling techniques that were used for this study are simple random sampling techniques. A well-structured questionnaire was used to obtain information from the students. The Questionnaire used for the study had two sections. Section (A) collected information on bio-data while Section (B) collected information on the subject matter. The questionnaire were structured on a four-point type likert modified scale: Strongly Agreed, Agreed, Disagreed, Strongly Disagreed (SA, A, D, SD). The face validity of the questionnaire was examined through experts' judgment while factor analysis was used to estimate its content and construct validity. The reliability was tested by using Cronbach alpha for estimating the internal consistency of the instrument. The percentage analysis was used to indicate the percentage scores of all the respondents. Mean and standard deviation were used to analyse research questions while hypotheses were tested using Pearson r, t-test of correlational analysis and simple regression analysis.

4.0 Result and Discussion

Table 1: Test of Relationship between Artificial Intelligence and Teachers' Job Performance in Post-Basic Education and Career Development (PBECD) in FCT.

Variables	N	Mean	SD	R	r ²	Sig@0.05	Decision
AI							
	212	3.03	0.88	0.962	0.877	0.000	Significant
Teachers' Job Performance	108	3.12	0.78				

Result on Table 1 showed that there was a significant relationship between AI and teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria ($p=0.000$, which is less than 0.05 level of significance). As a result, the second hypothesis was rejected. In other words, there was a very strong positive correlation (0.962) between AI and teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in F.C.T, Nigeria. The r^2 value of 0.877 shows that only 88% of the variance in teachers' job performance in public senior secondary schools in North Central, Nigeria can be explained on the basis of application of various AI tools for the implementation of teaching and learning.

Table 2: Challenges of Deploying Artificial Intelligence for Teaching and Learning in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria

s/n	The following are the various challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria	X	S.D	Decision
1	High cost of purchasing AI facilities	3.11	0.54	Agree
2	High cost of maintaining AI facilities	3.26	0.28	Agree
3	AI literate level	3.18	0.50	Agree
4	Limited AI facilities	3.12	0.52	Agree
5	Unstable power	2.78	0.101	Agree
6	Inadequate AI infrastructure facilities	2.99	0.98	Agree
7	Students AI literacy level	3.05	0.64	Agree

Table 2 indicated that the teachers agreed that there are challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT, Nigeria. The item collected reads as follows: high cost of purchasing AI facilities (item 1, $x = 3.11$), high cost of maintaining AI facilities (item 2, $x = 3.26$), AI literate level of teachers (item 3, $x = 3.18$), limited AI facilities (item 4, $x = 3.12$) unstable electricity (item 5, $x = 2.78$), inadequate AI infrastructure facilities (item 6, $x = 2.99$), and students AI literacy level (item 7, $x = 3.05$). The total mean scores revealed the average mean of 3.18 which is greater than the cut-off point of 2.5, this means that the respondents agreed that high cost of purchasing AI facilities, high cost of maintaining AI facilities, AI literate level of teachers, limited AI facilities, unstable electricity, inadequate AI infrastructure facilities and students AI literacy level are the challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT.

3.1 Findings

The result collected in table one showed that a very strong positive correlation (0.932) between AI and teachers' job performance in public in Post-Basic Education and Career Development

(PBECD) in F.C.T, Nigeria. Implying that AI supported effective implementation of teaching and learning in schools.

The result also revealed that high cost of purchasing AI facilities, high cost of maintaining AI facilities, AI literate level of teachers, limited AI facilities, unstable electricity, inadequate AI infrastructure facilities and students AI literacy level are the challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT.

3.2 Discussion of Findings

The result obtained disclosed that a very strong positive correlation between AI and teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in F.C.T, Nigeria. Implying that AI supported effective implementation of teaching and learning in schools. This finding is in agreement with the result of Borbajo, Malbas, and Dacanay, (2023) that indicated that AI deployment in schools aids implementation of teaching and learning. The result also confirmed Ogunode and Ukozor (2023); Ogunode, and Gregory, (2023); Alagbe, Awodele, and Ayorinde (2021) submission that AI facilities support teaching to assess students, present lesson, prepare lesson materials and support effective students recording safety in schools. AI also aid the learning process of students in the schools.

The result showed that high cost of purchasing AI facilities, high cost of maintaining AI facilities, AI literate level of teachers, limited AI facilities, unstable electricity, inadequate AI infrastructure facilities and students AI literacy level are the challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT. This result collaborates the finding of Ogunode, Agbade and Bassey, (2023) that listed unstable power, poor digital literacy, poor implementation of digital policies, shortage of AI facilities and unstable internet connectivity as problem militating against effective usage of AI facilities in schools.

3.3 Conclusion and Recommendations

The study concluded that there is a very strong positive correlation between AI and teachers' job performance in public in Post-Basic Education and Career Development (PBECD) in F.C.T, Nigeria. Implying that AI supported effective implementation of teaching and learning in schools. The study also disclosed that high cost of purchasing AI facilities, high cost of maintaining AI facilities, AI literate level of teachers, limited AI facilities, unstable electricity, inadequate AI infrastructure facilities and students AI literacy level are the challenges of deploying artificial intelligence for teaching and learning in Post-Basic Education and Career Development (PBECD) in FCT.

Based on this the paper hereby recommends that government through FCT secondary school education board should provide adequate AI facilities to all the Post-Basic Education and Career Development (PBECD) in F.C.T. The governments and private institutions should support the Post-Basic Education and Career Development (PBECD) in F.C.T with AI facilities for both teachers and students and government should ensure supply of constant electricity and internet services.

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