The International Journal of Leadership and Innovative Management (IJLIM)
e-ISSN: xxxx-xxxx Vol.1 Issue 1|2024

Artificial Intelligence, School Supervision and School Plant Management in Public Secondary Schools in Abuja, Nigeria

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Abstract: The objectives of this study was to assess the impact of artificial intelligence on School Supervision and School plant management in public secondary schools in Federal Capital Territory, Abuja, Nigeria. The study adopted a descriptive survey design. The population of this study included all the 292 public senior secondary schools in Abuja. A sample size of 400 principals and vice principals was drawn using stratified random sampling technique. The research instrument was titled "Artificial Intelligence and School supervision and School Plant Management Questionnaire (AISSSPMQ)". Four points rating scale of (a) strongly agree (S.A) – 4, (b) Agree (A) – 3, (c) Disagree (D) – 2, and (d) Strongly Disagree (S.D) – 1 were adopted for the study. The instrument was validated by three lecturers in the Department of Educational Management, University of Abuja. The reliability of the instrument was computed using Cronbach Alpha reliability coefficient. Reliability coefficient of 0.87 was obtained. Data obtained were analyzed using Pearson Product Moment Correlation (t-test) and tested at 0.05 level of significance. The study concluded that there was significant relationship between artificial intelligence and effective school supervision and there was significant relationship between artificial intelligence and effective school plant management in public secondary school in FCT, Abuja, Nigeria.

Keywords: Artificial intelligence, School Supervision, School plant management

INTRODUCTION

Nigerian educational system comprises of the basic education which include the pre-primary, primary school and junior secondary school and the Post-Basic Education and Career Development (PBECD) and tertiary education. Post-Basic Education and Career Development (PBECD) is one of the crucial form of education because of its roles in linking the basic education to the tertiary education. Post-Basic Education and Career Development (PBECD). Post-Basic Education and Career Development (PBECD) it is the form of education that prepares an individual for a career life in the higher education. It is vital to national development. Post-Basic Education and Career Development (PBECD) in Nigeria is defined as the education children receive after a successful completion of ten 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 (Federal Republic of Nigeria, 2013).

The objectives of Post-Basic Education and Career Development (PBECD) are to: 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; offer diversified curriculum to cater for the differences in talents, disposition, opportunities and future roles; provide trained manpower in the applied sciences, technology and commerce at sub-professional grades; provide entrepreneurial, technical and vocational job-specific skills for self-reliance, and for agricultural, industrial, commercial and economic development; develop and promote Nigerian languages, art and culture in the context of world's cultural heritage; inspire students with a desire for self-improvement and achievement of excellence; foster patriotism, national unity and security education with emphasis on the common ties in spite of our diversity; and raise morally upright and well-adjusted individuals who can think independently and rationally, respect the views and feelings of others and appreciate the dignity of labour. The realization of the objectives of Post-Basic Education and Career Development (PBECD) depends on effective supervision and effective plant management.

Kamindo (2006) defined school supervision as leadership for the improvement of instruction and ultimately student learning. These definitions suggest that the role of

school supervision is to improve teaching and learning through a deliberate emphasis on ways and means of instilling excellence in the quality instruction. Supervision is a process which strives to stimulate others towards greater effectiveness or productivity. National Open University of Nigeria (NOUN, 2006) listed benefits of school supervision include; provision of opportunities for teachers to be groomed through critical study of instructional processes and classroom interactions to carry out their teaching tasks in line with professional codes of conduct. If schools are not supervised adequately, it will have inimical effects on the students' output and the educational objectives may not be achieved, consequently various instructional supervisory techniques should be employed to ensure qualitative and quantities service delivery by the teachers.

There are many factors that enhances effective school supervision and some of these factors include funding, transportation, security and school plant. Yusuf (2008) stated that school plant is the space interpretation of the school curriculum. In this perspective, the curriculum will be impossible to implement if the physical facilities required for teaching and learning are neither available nor inadequately provided and maintained. Njoku (2004) viewed school plant as educational facilities that are tangible such as buildings, land equipment, machineries, furniture, fixtures and fittings which are put into use and capable of providing excellent educational services. Walson (2015) noted that since school plant is sine qua non to the achievement of school goals; it is a primary function of government and top management staff down to non-teaching staff to ensure that school facilities are provided and effectively managed.

School plant according to Amanchukwuand Nwachukwu (2015) is school site, all the essential structures-permanent and semi-permanent such as machines and laboratory equipment and chalkboard needed for effective teaching and learning, other scholars have defined school plant in different perspectives. Olagboye (1998) maintained that school plant consist of the basic system and structures which a viable school or institutions need in order to function effectively and to fulfill the purpose for which it was established. He further says that school plants include the following: Building: classroom blocks, libraries, laboratories, workshops, hostels, staff quarters, assembly halls, administrative /office blocks ,equipment: laboratory/workshop equipment, sporting kits. Teaching aids, machinery: workshop machines/tools, secretarial machine e.g. computer, vehicles, furniture: classrooms/ offices, hostels/staff furniture, text books, stationary/library, electrical infrastructure: electrical fittings, fans, AC, overhead electrical conductor lines, generator, Water supply infrastructure: pipe born water, borehole, deep well water; tanks, etc. School plant objectives is realized by effective school plant management.

School plant management is defined by Adelabu (2012) as the process of planning, organizing, coordinating and budgeting for the building of school plant to ensure that service delivery is facilitated and supported in the provision of education by a school. Articulating these views, school plant management in this context is the application of management functions of planning, organizing, coordinating and controlling the physical environment of learning for the actualization of educational goals in secondary schools. Olga (2011) described school plant management as a series of decisions by individuals and groups in the school system in building school plant according to need, operating and using it effectively and efficiently to ensure that they are functional for use in course of implementing school programmes.

Hinum (1999) noted that school plant management involves planning and keeping records of school facilities, supervising and evaluating their availability as well as encouraging teachers and students to participate in maintenance of school plant. School plant management involves a number of on-going and related activities – determining the need for school plants, educational programme planning, school facility or building design, building construction, furnishing and equipping the school, school plant operation, utilisation and maintenance and school plant modernisation or renovation, as the need arises (National Open University Nigeria. (2012). Fenker (2004) states that facilities management is a process that ensures that buildings and other technical systems support the provisions of an organisation. School plant management ensures that school buildings and grounds, equipment, materials, technical and other service systems, facilitate and support the provision of education by a school.

There are many technological resources available for management of educational resources such as school plant. These information technology resources aids effective management of school resources such as school plant. Artificial intelligence have been identified by Ogunode, & Gregory (2023) as resources that school manager and administrators can deploy for implementation of teaching and learning programme and for management of other educational resources. Artificial intelligence according to Ogunode & Ukozor (2023) is the ability of a machine to carry out tasks usually carry out by human intelligent. Artificial intelligence is a branch of science that deals of programming machines with a simulation of human intelligence to performance similar tasks normally carry out by human beings. 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, 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. American technology giant International Business Machines Corporation defined AI as referring to any human-like intelligence exhibited by a computer, robot, or other machines. 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. It is import to examine the impact of artificial intelligence on school supervision and school plant management in public secondary schools in Federal Capital Territory, Abuja, Nigeria.

Purpose of the Study

The objectives of this study is to assess the impact of artificial intelligence on School Supervision and School Plant Management in public secondary schools in Federal Capital Territory, Abuja, Nigeria. The sub-objectives includes:

i. To find out the impact of artificial intelligence on school supervision in public secondary schools in FCT, Nigeria; and
ii. To assess the impact of artificial intelligence on school plant management in FCT, Nigeria.

Research Hypotheses

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

H_{o1}: There is no significant relationship between artificial intelligence and school supervision in public secondary schools in FCT, Abuja, Nigeria

H_{o2}: There is no significant relationship between artificial intelligence and school plant management in public senior secondary schools in FCT, Nigeria.

Methods

The study adopted a descriptive survey design. The population of this study included all the 292 public senior secondary schools in Abuja. A sample size of 400 principals and vice principals was drawn using stratified random sampling technique. The research instrument was titled "Artificial Intelligence and School supervision and School Plant

Management Questionnaire (AISSSPMQ)". The instrument consist of three sections: A, B and C. section A was designed to request for demographic data from the respondents, these are name of school, position in school, cadre, class taught, age and sex. The Section B consists of 12 items generated for School supervision and section C consist 9 items on school plant management. Four points rating scale of (a) strongly agree (S.A) – 4, (b) Agree (A) – 3, (c) Disagree (D) – 2, and (d) Strongly Disagree (S.D) – 1. The instrument was validated by three lecturers in the Department of Educational Management, University of Abuja. The reliability of the instrument was computed using Cronbach Alpha reliability coefficient. Reliability coefficient of 0.87 was obtained. Data obtained were analyzed using Pearson Product Moment Correlation (t-test) and tested at 0.05 level of significance.

Data Analysis

Table 1: Test of Relationship between artificial intelligence and school supervision in Public Senior Secondary Schools in FCT, Nigeria.

Variables	N	Mean	SD	R	r^2	Sig@0.05	Decision
Artificial Intelligence	261	2.62	1.18	0.851	0.720	0.000	Significant
School Supervision	139	3.41	0.86				

Result on Table one showed that there was a significant relationship between artificial intelligence and school supervision in public senior secondary schools in FCT, Nigeria (p=0.000, which is less than 0.05 level of significance). As a result, the first hypothesis was rejected. In other words, there was a very strong positive correlation (0.851) between artificial intelligence and school supervision in public senior secondary schools in FCT, Nigeria. The r^2 value of 0.720 shows that only 86.0% of the variance in artificial intelligence aiding effective school supervision in public senior secondary schools in FCT, Nigeria.

H_{o2}: There is no significant relationship between artificial intelligence and school plant management in public senior secondary schools in FCT, Nigeria.

Table 2: Test of Relationship between artificial intelligence and school plant management **in Public Senior Secondary Schools in FCT, Nigeria**

Variables	N	Mean	SD	R	r^2	Sig@0.05	Decision
Artificial Intelligence	264	3.03	0.88	0.941	0.885	0.000	Significant
School plant Management	136	3.12	0.78				

Result on Table two showed that there was a significant relationship between artificial intelligence and school plant management in public senior secondary schools 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 (0.941) between artificial intelligence and school plant management in public senior secondary schools in north central, Nigeria. The r^2 value of 0.885 shows that only 86.8% of the variance in artificial intelligence and school plant management in public senior secondary schools in North FCT, Nigeria can be explained on the basis of artificial intelligence supporting effective school plant management in public secondary schools.

Discussion of Findings

The result collected revealed that there was a significant relationship between artificial intelligence and school supervision in public senior secondary schools in FCT, Nigeria. This result is in line with the findings of Pocket (2022); Singh, & Jain, (2022) and Ogunode, Idoko, & ThankGod (2024) concluded that AI Aid effective school management, lesson presentation, improve learning engagement, assist in conduct of examination, aid online teaching and learning, aid effective classroom management, aid fast marking and result preparation and aid school security.

The result also disclosed that there was a significant relationship between artificial intelligence and effective school plant management in public senior secondary schools in FCT, Nigeria. This result support the findings of Igbokwe, (2023); Ogunode, & Gregory, (2023); Ogunode, Edinoh, & Chinedu, (2023) that concluded that artificial intelligence is an impactful resources in the educational management assisting in school administration, teachers job performance and school plant management.

Conclusion and Recommendations

The objectives of this study was to assess the impact of artificial intelligence on school supervision and school plant management in public secondary schools in Federal Capital Territory, Abuja, Nigeria. The sub-objectives includes: to find out the impact of artificial intelligence on school supervision in public secondary schools in FCT, Nigeria;

and to assess the impact of artificial intelligence on school plant management in FCT, Nigeria.

The study concluded that there was significant relationship between artificial intelligence and effective school supervision in public senior secondary schools in FCT, Nigeria and it also established that there was a significant relationship between artificial intelligence and effective school plant management in public senior secondary schools in FCT, Nigeria.

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