



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

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### ABSTRACT

The aim of this research was to evaluate how artificial intelligence affects the supervision of schools and the management of school facilities in public secondary schools within the Federal Capital Territory, Abuja, Nigeria. The study utilized a descriptive survey approach, targeting all 292 public senior secondary schools in Abuja. A sample of 400 principals and vice principals was selected using a stratified random sampling method. The research utilized a questionnaire titled "Artificial Intelligence and School Supervision and School Plant Management Questionnaire (AISSSPMQ)" employing a four-point rating scale: (a) strongly agree (S.A) - 4, (b) agree (A) - 3, (c) disagree (D) - 2, and (d) strongly disagree (S.D) - 1. The questionnaire's validity was confirmed by three lecturers from the Department of Educational Management, University of Abuja, and its reliability was assessed using Cronbach Alpha reliability coefficient, yielding a coefficient of 0.87. Data analysis employed Pearson Product Moment Correlation (t-test) at a significance level of 0.05. The study concluded that there exists a significant correlation between artificial intelligence and effective school supervision, as well as between artificial intelligence and effective school plant management in public secondary schools in the FCT, Abuja, Nigeria.

## **INTRODUCTION**

The Nigerian educational system encompasses various levels, including basic education, which comprises pre-primary, primary, and junior secondary schools, as well as Post-Basic Education and Career Development (PBECD) and tertiary education. PBECD plays a crucial role in bridging the gap between basic and tertiary education, preparing individuals for higher education and career paths. It is pivotal to national development and is defined as the education received after successfully completing ten years of basic education and passing relevant examinations. This includes senior secondary education, higher school, and continuing education provided in Vocational Enterprise Institutions (VEIs). The objectives of PBECD include offering opportunities for higher education irrespective of background, providing diversified curriculum, training manpower in various fields, imparting entrepreneurial and vocational skills, promoting Nigerian languages and culture, fostering patriotism, and nurturing morally upright individuals capable of independent thinking and respect for others.

Effective supervision and management of school facilities are crucial for realizing the objectives of PBECD. School supervision, defined as leadership aimed at improving instruction and student learning, plays a vital role in enhancing teaching quality. Inadequate supervision can hinder student outcomes and impede educational objectives. Factors such as funding, transportation, security, and school infrastructure contribute to effective supervision. School plant, encompassing tangible educational facilities like buildings, equipment, and infrastructure, is essential for implementing the curriculum. Effective school plant management involves planning, organizing, coordinating, and controlling physical learning environments to support educational goals.

Technological resources, including artificial intelligence (AI), play a significant role in managing educational resources such as school plant. AI, the ability of machines to perform tasks typically requiring human intelligence, offers opportunities for improving teaching and learning processes, as well as resource management. AI can simulate human intelligence processes, learn from examples, recognize objects, understand language, make decisions, and solve problems. Its impact on school supervision and plant management in public secondary schools in Abuja, Nigeria, warrants examination.

## **METHODOLOGY**

The research employed a descriptive survey design, encompassing all 292 public senior secondary schools in Abuja. A sample of 400 principals and vice principals was selected using a stratified random sampling method. The research tool utilized was the "Artificial Intelligence and School Supervision and School Plant Management Questionnaire (AISSSPMQ)," comprising three sections: A, B, and C. Section A solicited demographic information from respondents, including school name, position, cadre, class taught, age, and gender. Section B contained 12 items related to school supervision, while Section C comprised 9 items concerning school plant management. A four-point rating scale ranging from strongly agree (S.A) - 4, agree (A) - 3, disagree (D) -

2, to strongly disagree (S.D) - 1 was employed. The questionnaire's validity was confirmed by three lecturers from the Department of Educational Management, University of Abuja, and its reliability was assessed using Cronbach Alpha reliability coefficient, yielding a coefficient of 0.87. Data analysis involved Pearson Product Moment Correlation (t-test) and was tested at a significance level of 0.05.

## RESEARCH ESULTS AND DISCUSSIONS

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 <sup>2</sup> | 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 |       |                |          |             |

The findings presented in Table one indicate a notable correlation between artificial intelligence and school supervision within public senior secondary schools in the FCT, Nigeria ( $p=0.000$ , which is below the significance level of 0.05). Consequently, the initial hypothesis was refuted. Specifically, a highly positive correlation (0.851) was observed between artificial intelligence and school supervision in public senior secondary schools in the FCT, Nigeria. The  $r^2$  value of 0.720 suggests that approximately 86.0% of the variability in artificial intelligence contributing to effective school supervision in public senior secondary schools in the FCT, Nigeria was accounted for.

**H<sub>02</sub>:** 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 <sup>2</sup> | <u>Sig@0.05</u> | Decision    |
|-------------------------|-----|------|------|-------|----------------|-----------------|-------------|
| Artificial Intelligence | 264 | 3.03 | 0.88 | 0.941 | 0.885          | 0.000           | Significant |
| School plant Management | 136 | 3.12 | 0.78 |       |                |                 |             |

The findings presented in Table two indicate a significant association between artificial intelligence and school plant management within public senior secondary schools in the FCT, Nigeria ( $p=0.000$ , which is below the significance threshold of 0.05). Consequently, the second hypothesis was nullified. Specifically, there exists a highly positive correlation (0.941) between artificial intelligence and school plant management in public senior secondary schools in the north-central region of Nigeria. The  $r^2$  value of 0.885 suggests that approximately 86.8% of the variability in artificial intelligence and school plant management in public senior secondary schools in the North FCT, Nigeria can be accounted for based on the support of artificial intelligence in facilitating effective school plant management.

Furthermore, the collected results revealed a noteworthy relationship between artificial intelligence and school supervision in public senior secondary schools in the FCT, Nigeria. This finding aligns with the conclusions drawn by Pocket (2022), Singh, & Jain (2022), and Ogunode, Idoko, & ThankGod (2024), who emphasized that AI aids in various aspects of school management, lesson delivery, learning engagement, examination conduct, online teaching and learning, classroom management, and result processing, as well as enhancing school security.

Additionally, the findings also unveiled a significant correlation between artificial intelligence and effective school plant management in public senior secondary schools in the FCT, Nigeria. This result corroborates the insights provided by Igbokwe (2023), Ogunode, & Gregory (2023), and Ogunode, Edinoh, & Chinedu (2023), who emphasized the impactful role of artificial intelligence in educational management, assisting in school administration, teacher performance, and school plant management.

## **CONCLUSION AND RECOMMENDATIONS**

The primary aim of this study was to evaluate how artificial intelligence influences school supervision and school plant management in public secondary schools located in the Federal Capital Territory, Abuja, Nigeria. The sub-objectives were to examine the effects of artificial intelligence on school supervision and school plant management within public secondary schools in the FCT, Nigeria.

The study's findings indicated a significant correlation between artificial intelligence and successful school supervision in public senior secondary schools in the FCT, Nigeria. Additionally, it was established that there exists a noteworthy relationship between artificial intelligence and effective school plant management in public senior secondary schools in the FCT, Nigeria.

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