INFLUENCE OF SCHOOL PLANT MANAGEMENT ON TEACHERS' EFFECTIVENESS IN PUBLIC SECONDARY SCHOOLS IN CENTRAL GEO-POLITICAL ZONE, NIGERIA

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Abstract

This study examined the influence of school plant management on teachers' effectiveness in public secondary schools in Central Geopolitical Zone, Nigeria. A descriptive survey design was adopted for the study. The population was 42,232. This is comprised of the principals and teachers from 9,068 schools. A sample of 380 respondents. This was realised from Krejcie and Morgan 1970. Data was collected through a self-structured questionnaire and analyzed using descriptive statistics (mean and standard deviation) for the research questions, and chi-square to test the two null hypotheses at a 0.05 significance level. The findings revealed that the construction and utilization of school plants play a significant and critical role in enhancing teachers' effectiveness. The study recommended that school administrators should advocate for policies that prioritize funding and strategic resource allocation for school infrastructure to ensure sustainable improvements in educational environments and outcomes.

Keywords: *School plant, School plant management, teachers' effectiveness*

Introduction

Education is universally accepted as an instrument for national transformation from the beginning of civilization to the present. Education transforms the behavior and makes man to behave rationally. Generally, education has enabled man to have a better understanding of the forces of nature, a better understanding of his fellow man and better ways of improving his environmental circumstances for a more qualitative existence.

School plant plays an important role in ensuring that the quality of teaching and learning is in line with achieving the quality of education needed by the society. Teaching and learning may not take place effectively if school plants are inadequate, deteriorating and unsafe for use. Therefore, it will be unreasonable to expect increasing student motivation and/or academic performance where the physical learning environment is structurally defective. Oyesola (2017) stated that the main objective of school plant planning is to satisfy educational goals which have been predetermined by educational planners. Oyesola (2017) explained that better school plant planned will enhance better school programmes and the community needs by providing a place for psychological and physical safety for students and teachers and enhancing good quality and quantity of instruction. Similarly, Ajayi (2007) maintained that high level of students' learning outcomes may not be guaranteed where school site planning, instructional space planning, administrative space planning, space of convenience and circulation space

planning are not properly undertaken and the plant components themselves are structurally defective, not properly ventilated and not spacious enough for use.

School facilities in most of the North Central Geo-Political Zone, Nigeria, today are apt to reinforce route teaching method and further hinder the students' capacity for independent and creative thinking. The typical secondary schools' building in Nigeria is usually a simple row of bare classroom structures – often of rectangular shaped walls in which chairs, tables, and students must fight for space. Oluchukwu (2000), asserted that school plant is an essential aspect of educational planning. Oluchukwu (2000) went further to explain that unless schools are well suited, buildings adequately constructed and equipment adequately utilized and maintained, much teaching and learning may not take place. Yusuf (2008), defined school plant as space interpretation of the school curriculum. He further said that it was impossible for the curriculum to be implemented if the school plant required for teaching and learning were not available or available but not properly planned and implemented. Absence of school plant planning principles makes teaching ineffective and desired learning will not take place. School plant planning principles and their effect become necessary to facilitate the effectiveness of school system.

Tsav (2017) explains that schools where there are deficiencies in school plant, tend to have low quality in students' participation in classroom activities. Also, where there are issues of poor condition of school plant, lack of maintenance of the school plant and scarcity of school buildings which lead to overcrowded classroom tend to have a negative effect on teachers' performance consequently decrease the academic performance of students in the class.

School plant construction" refers to the process of designing, planning, and building educational facilities such as schools, colleges, universities, and other learning institutions. This includes not only the physical structures of the buildings but also the layout of the campus, infrastructure, landscaping, and various amenities that contribute to the overall learning environment. This is often used to encompass the entire physical infrastructure and facilities that support the educational process. It includes classrooms, laboratories, libraries, administrative offices, auditoriums, sports facilities, dormitories (in the case of universities), and other structures that facilitate teaching, learning, and the overall growth and development of students. The physical infrastructure of schools, often referred to as the "school plant," plays a crucial role in shaping the overall educational experience and outcomes for students. The condition of the school plant, its facilities, and their effective management are pivotal elements that can significantly influence these outcomes. According to Smith & Johnson (2019), the design and construction of school buildings, classrooms, laboratories, libraries, sports facilities, and other amenities constitute the school plant. Proper planning during construction ensures that facilities meet educational needs, safety standards, and provide a conducive environment for teaching and learning.

Rodriguez & Martinez (2018) assert that regular maintenance of the school plant is crucial for preserving its functionality and quality. Proper maintenance practices ensure that facilities remain safe, efficient, and capable of supporting effective teaching and learning. Well-designed and well-maintained facilities create a positive and conducive learning environment. Comfortable classrooms, equipped laboratories, and functional libraries contribute to improved student engagement, motivation, and academic achievement. Similarly, Hamdallah, Ozovehe and Olanrewaju (2013) opined that the effective school plant t in terms of human and material

resources ensure effective delivery of school curriculum. These factors are positively related to the quality of educational product. They explain further that standard educational products can automatically boost the nation's economy and effective school plant planning principles and their effect are directly/indirectly related to rapid educational growth.

Poor quality of school plant construction tends to manifest in poor building condition, improper layout and inadequate landscaping. However, the extent to which school plant construction influences student academic performance, conduct and school community relationship has not been ascertained in most secondary schools in North Central states of Nigeria. Although improper utilization seems to be quite evident in the over congestion of classroom, laboratories, workshops, and other school buildings, yet the extent of the relationship between school plant utilization, conduct and school community relationship has also not been clearly determined in the case of North-Central States secondary schools. Overall, school plant construction is a comprehensive process that involves collaboration among architects, educators, administrators, and various stakeholders to create an environment that fosters learning, growth, and development.

The utilization of school facilities requires that facilities are put to maximum use to enable the execution of educational programmes. In most public schools, facilities are either unutilized or over utilized. School facilities ought to be used to its full capacity. Facilities are unutilized when there are no trained personnel to handle such equipment. Over-utilization also occurs when there is an increased number of users. Ebong (2006), stated that the utilization of educational resources depends on their need and number of users. Allowing access to school facility by the community also increases the rate of its usage. The optimal utilization of school facilities connotes the practice of using facilities for as much purpose as possible. If school facilities are to be adequately and appropriately utilized, flexibility in the design of facilities is needed. For instance, the provision of movable partitions on buildings makes it possible to expand and contract instructional space to meet the need of various teaching and learning situations. Moreover, alternative uses to which school facilities can be put to use should be explored.

This implies that school facilities which could be made to serve double or multiple purposes should be used for such purposes. For instance, a school hall is not just an assembly hall but can serve as a multipurpose hall which could be utilized for drama presentation, team teaching, open classroom learning or for other activities on a rainy day. In urban areas where electricity supply is available, the hall can be used for showing for watching school television programmes. It can also serve as an exhibition centre for arts and craft. Also, the dining hall could be used for cultural and recreational activities. Hallack in Nweneka (2016) emphasized that to make optimal use of facilities in school, school personnel and members of the community should ensure adequate functioning of such facilities and their alternative uses. Without such knowledge, some facilities will be under-utilized, some over-utilized or not used at all. Flexibility is necessary when designing school buildings so that the building can be utilized for different instructional purposes. Related to facilities utilization is the suitability of facilities with respect to the ages and sizes of pupils, students and teachers. It is disheartening to see students share reading and writing desk in overcrowded classrooms, invariably making the teaching process cumbersome with little result.

Teachers' effectiveness is determined by various factors, including academic achievement, student engagement, teacher satisfaction, and overall learning environment. Effective utilization of the school plant involves optimizing the use of available facilities to support educational activities. This includes scheduling classes, ensuring equitable access to resources, and maximizing the potential of various spaces for diverse learning experiences Brown, & Green (2020), The participants of the summit and spectators were highly optimistic that the gathering of Northern leadership would result in breathing new life into the poor situation of education in the region. Across the schools, there appears to be general inadequacy of school plant construction, utilization and maintenance as crucial missing gap in tracing the root of the problems of school effectiveness in secondary school in the North-Central Geo-Political Zone.

Statement of the Problem

The level of inadequate utilization and maintenance school plant facilities in North Central Geopolitical Zone, Nigeria, has raised concerns about its potential impact on the overall effectiveness of secondary schools in the study area. Despite the conducive physical environment in fostering effective teaching and learning, there is a dearth of comprehensive research that investigates the specific relationship between school plant factors and school effectiveness, many secondary schools in North Central Geo-political Zone, Nigeria, still suffer from inadequate infrastructure, including classrooms, laboratories, libraries, and sports facilities. This deficiency can limit students' access to quality education and impact their overall learning experience. Also, there has been disparities in the allocation of resources and infrastructure among schools. Some schools may have better facilities and resources, while others struggle with inadequate infrastructure. Another observed challenge is the limited financial resources allocated to education can hamper the construction, maintenance, and renovation of school facilities. This has results in deteriorating infrastructure and an inability to create an optimal learning environment. Poor maintenance of existing school infrastructure has leads to rapid deterioration, making it challenging to provide a safe and conducive learning environment for students and teachers.

As a result of the above problem, this study examined the influence of school plant management on teachers' effectiveness in public secondary schools in North Central Geo-Political Zone, Nigeria to fill the literary gap.

Objectives of the Study

The main objective of this study was to investigate the influence of school plant management on teachers' effectiveness in public secondary schools in North Central States Geo-Political Zone, Nigeria. Specifically, the study sought to:

1. investigate the influence of school plant management construction on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria
2. examine the influence of school plant management utilization on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria

Research Questions

The following research questions were formulated to guide the study. These included:

1. What is the influence of school plant management construction on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria?
2. What is the influence of school plant management utilization on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria?

Hypotheses

The following Hypotheses are formulated for the purpose of this study. These are:

Ho_1: There is no Significant Influence of School Plant Management Construction on Teachers' Effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria

Ho_2: There is no Significant Influence of School Plant Management Utilization on Teachers' Effectiveness in Public Secondary Schools in North Central Geopolitical Zone, Nigeria

Methodology

The study adopted descriptive survey research design. Survey research design is a data collection technique in which information is gathered from respondents. Specifically, it requires that data are collected at a particular time, from a large population for the purpose of describing a represented by the sample at that particular time. Anikweze (2013) looked at descriptive design which involves the collection of data within a short span of time from a random sample of the targeted population. This design was considered suitable because it assisted in collecting data to examine the influence of school plant management on teachers' effectiveness in public secondary schools in North Central Geo-Political Zone, Nigeria.

The population of the study comprises 4,223 (9,068 principals 33,164 teachers) of 9,068 public secondary schools in the North Central states (Benue, Nasarawa, Niger, Kogi, Kwara and Plateau) of Nigeria. The characteristic of principals and teachers used for this study was based on their qualification and experience. The sample of the study consisted of 360 schools, principals and teachers in public secondary school in North Central States, Nigeria representing 3.97% of the population of 42,232. A sample of 10% was considered adequate by Emaikwu (2012) who reports that where the population is as high as 42,232, 3.97% is considered suitable as sample for a study. A proportionate stratified random sampling technique was used for the study. A structured questionnaire was used. The questionnaire titled "Influence of School Plant Management on Teachers' Effectiveness in Public Secondary Schools in North Central Geo-Political Zone, Nigeria questionnaire (ISPMTEPSSQ). The questionnaire wsa developed by the researcher based on objective of the study.

The questionnaire consisted of 10 items which seek information on the variables of school plant construction and utilization. It consisted of two clusters. Cluster (i) has items ranging from 1 to 5 which are on school plant construction. Cluster (ii) consists of items from number 6 to 10 on school plant utilization. The instrument was structured on a 4-point rating scale with a response mode of Strongly Agree (SA)-4, Agree (A)-3, Disagree (D)-2, and Strongly Disagree (SD)-1. The rationale for choosing this scale was because it provides different levels for

respondents to express their opinions. The flexibility of the scale has rendered it appropriate for measuring the statements relating to the variables of the study. The cut off value for responses considered to be significant at 2.50. Any response above 2.50 is positive and acceptable while any response below 2.50 was not acceptable.

Results

Research Question 1: What is the influence of school plant management construction on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria?

Table 1: Mean and Standard Deviation scores on the influence of School Plant Management Construction on Teachers' Effectiveness (N = 380)

S/N	Item	SA	A	D	SD	Mean	SD	Decision
1	The quality of school construction significantly impacts the overall learning environment.	214	153	10	3	3.50	0.70	Agree
2	Modern and well-equipped school facilities positively contribute to students' educational outcomes.	274	71	19	16	3.70	0.60	Agree
3	Adequate classroom spaces influence students' engagement in their studies.	90	264	4	2	3.23	0.48	Agree
4	A suitable school construction layout enhances students' learning experiences.	171	186	2	1	3.46	0.53	Agree
5	The availability of specialized rooms (e.g., laboratories, libraries) plays a significant role in enhancing the learning process.	186	173	0	1	3.51	0.52	Agree
	Cluster Mean					**3.48**	**0.59**	**Agree**

Table 1 shows that the mean scores for items 1–5 are **3.50, 3.70, 3.23, 3.46, and 3.51**, with standard deviations of **0.70, 0.60, 0.48, 0.53, and 0.52**, respectively. All mean scores are above the cut-off point of **2.50**. The cluster mean of **3.48** is also above **2.50**. This indicates that there is a significant influence of school plant management construction on teachers' effectiveness in public secondary schools in the North Central Geopolitical Zone, Nigeria.

Research Question 2: What is the influence of school plant management utilization on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria?

Table 2: Mean Ratings and Standard Deviations on the influence of School Plant Management Utilization on Teachers' Effectiveness (N = 360)

S/N	Item Description	SA	A	D	SD	Mean	SD	Decision
6	The proper utilization of classrooms enhances teaching and learning, enabling students to access facilities and resources in secondary schools.	121	214	13	12	3.23	0.67	Agree
7	The effective utilization of school spaces reduces overcrowding and improves student comfort.	273	72	6	9	3.69	0.63	Agree
8	The flexible utilization of facilities for various activities enhances the overall school experience.	89	264	4	3	3.22	0.49	Agree
9	Equitable distribution of facility utilization among different grade levels fosters students' sense of belonging and engagement.	184	171	3	2	3.49	0.55	Agree
10	Optimized utilization of school facilities promotes more effective collaboration between students and teachers.	173	185	1	1	3.47	0.52	Agree
	Cluster Mean and Standard Deviation					**3.42**	**0.60**	**Agree**

Table 2 shows that items 6–10 had mean scores of **3.23, 3.69, 3.22, 3.49, and 3.47**, with corresponding standard deviations of **0.67, 0.63, 0.49, 0.55, and 0.52**, respectively. All mean scores are above the cut-off point of **2.50**. The cluster mean of **3.42** is also above **2.50**. This implies that there is an influence of school plant management utilization on teachers' effectiveness in public secondary schools in the North Central Geopolitical Zone, Nigeria.

Hypotheses Testing

The two null hypotheses were tested using Chi-square (x^2)at a **0.05 level of significance**. As in the original chapter, the representative items for construction and utilization were used, scaled to **N = 360**.

Ho$_1$: There is no significant influence of school plant management construction on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria.

Table 3: Chi-square Test of the Significant Influence of School Plant Management Construction on Teachers' Effectiveness (N = 360)

Opinions	Observed N	Expected N	Residual	df	x^2-cal	p-value	Decision
SD	6	90	-84	3	531.49	0.001	Sig.
D	9	90	-81				
A	71	90	-19				
SA	274	90	184				
Total	**360**						

Table 3 reveals that x^2-cal = **531.49**, df = **3**, and p = **0.001**. Since the p-value is less than the set alpha value of **0.05** ($p < 0.05$), the null hypothesis is rejected. This implies that there is a significant influence of school plant management construction on teachers' effectiveness in public secondary schools in the North Central Geopolitical Zone, Nigeria.

Hypothesis 2:

Ho$_2$: There is no significant influence of school plant management utilization on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria.

Table 4: Chi-square Test on the Significant Influence of School Plant Management Utilization on Teachers' Effectiveness (N = 360)

Opinions	Observed N	Expected N	Residual	df	x^2-cal	p-value	Decision
SD	3	90	-87	3	502.69	0.001	Sig.
D	4	90	-86				
A	264	90	174				
SA	89	90	-1				
Total	**360**						

Table 4 reveals that x^2-cal = **502.69**, df = **3**, and p = **0.001**. Since the p-value is less than the set alpha value of **0.05**($p < 0.05$), the null hypothesis is rejected. This means that there is a significant influence of school plant management utilization on teachers' effectiveness in public secondary schools in the North Central Geopolitical Zone, Nigeria.

Discussion of Findings

The following findings were organized and discussed here for ease of understanding.

The first finding revealed a significant influence of school plant management construction on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria. The finding is in line with (Jeffery & Lackney, 2006), who stated that school plant construction, which is supposed to be the first step towards providing a conducive learning environment, seems to be poorly executed. As a result, many secondary school plants in Nigeria do not have adequate provision for proper ventilation, lighting, colour acoustics, layout and

landscaping. However, according to (Ayoku, 2005), poor construction generates a lot of discomforts, which makes it very difficult for students to learn with minimum stress. School plant utilization though equally crucial for the attaint of school outcomes seem to be poorly managed due to misuse of school equipment.

The second finding of the study revealed a significant influence of school plant management utilization on teachers' effectiveness in public secondary schools in North Central Geopolitical Zone, Nigeria. The finding is agreement with Ibitoye (2003), school buildings must be planned to accommodate such factors as the aims and objectives of the educational system, the grade level to be accommodated, the expected enrolment capacity and the school population growth. School site refers to the geographical location on which the school is planted. It includes the lawns, school paths, football field, lawn-tennis court, flower beds, palm and citrus plots and school garden, school farm and trees. School site must enable optimum utilization of the resources for educational activities. According to Castadi (2006), in selecting a school site, the soil must be considered in terms of structural stability and adequate bearing capacity in relation to the building foundation design. He further asserted that the school building and the site upon which it is located should provide an environment that is conducive to effective learning and free from health hazards. The importance of school plant utilization therefore cannot be easily dismissed with a wave of the hand. Realistically, no good teaching and learning can take place in the absence of good buildings which provide shelter for students and staff.

School plant utilization implies putting into proper use, available school plant to achieve educational goals, as well as, avoiding wastage. Every facility within the school has its specific usage. The utilization of school facility for purposes other than that which it was meant for results in wastage and misuse. School plant can either be maximally used, under-utilized or over-utilized. Okenwa (2014) noted that a facility can be maximally used when they are effectively utilized to achieve the stated educational goals. On the other hand, under-utilization occurs when a facility could not be used due to lack of knowledge, unavailability or lack of skills by the personnel in-charge, while over-utilization occurs when there is much pressure on the faculty due to high population of the learners, over-loading of

Conclusion

This study's findings emphasized on the essential role that school plant construction and utilization play in enhancing teachers' effectiveness of public secondary schools in North Central States of Nigeria. The findings revealed a significant influence of each of these measurements on overall school performance, indicating that they are not merely ancillary components but essential pillars of a thriving educational environment.

Firstly, effective school plant construction has been foundational; it ensures that facilities are not only adequate in size but also designed to meet the diverse needs of students and educators. Quality infrastructure such as classrooms, laboratories, and recreational areas directly impacts the learning experience, providing a safe and stimulating environment conducive to academic achievement. Secondly, the utilization of school plants is crucial. It involves the effective deployment of existing facilities to maximize their potential. When schools employ innovative strategies to use their resources such as scheduling, maintenance of technology, and community

engagement they create a more dynamic learning atmosphere. Effective utilization fosters collaboration, encourages active participation among students, and enhances overall engagement with the curriculum. Collectively, these elements contribute to what can be termed 'school plant effectiveness. Overall, schools that invest in the above key findings of study are not only to improve their physical school environments but also to enhance good educational outcomes development.

Recommendations

In order to guide future work, policy or practice based on the findings of this study; the following recommendations were made.

1. Government/school managers in North Central States, Nigeria should engage educational planners, architects, and stakeholders to design schools that will meet current and future educational needs. Facilities should be adaptable to various teaching methods and technologies.
2. Implement flexible timetables that will allow for optimal use of classrooms, laboratories, and recreational facilities in ensuring that all students have access to resources. Also, they should create programs that will allow community members to use school facilities after hours, fostering a sense of ownership and enhancing resource utilization.

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