

EXPLORING THE SCHOOL PLANTS MAINTENANCE AND STUDENTS' ACHIEVEMENT IN LANGTANG SOUTH L.G.A PLATEAU STATE, NIGERIA

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ABSTRACT

This study explored the relationship between school plant maintenance and students' academic achievement in Langtang South Local Government Area (LGA) of Plateau State, Nigeria. Utilizing an Ex-post facto design to investigate the relationship between school plant maintenance and students' academic achievement in Plateau State, Nigeria, the research focuses on Langtang South public senior secondary schools, encompassing 54 principals, 143 teachers, and 2,423 students across Langtang South Local Government Areas. A sample of 20 principals, 20 teachers, and 60 students from Langtang Government Areas is selected using multi-stage sampling techniques. Data is collected through two instruments: the School Plant Maintenance Questionnaire (SPMQ) and the Student Academic Achievement Proforma (SAAP). The SPMQ assesses school plant maintenance practices, while the SAAP gathers students' achievement data from WAEC examination results. Instruments are validated through expert review and reliability testing. The study utilizes descriptive statistics and correlation analysis for data analysis. Findings aim to contribute to understanding the impact of school infrastructure maintenance on students' academic achievement, with implications for educational policy and practice.

Keywords: Exploration, Relationship, School Plants Maintenance, Students, Academic Achievement, Public Secondary Schools.

INTRODUCTION

Education is universally recognized as a fundamental human right and a cornerstone of socio-economic development. In Nigeria, as in many other countries, the quality of education is intricately linked to the state of educational infrastructure, commonly referred to as "school plants." These facilities encompass a range of physical assets, including buildings, classrooms, libraries, laboratories, playgrounds, and sanitation facilities. School plant according to Peter (2012) is the sum total of building, equipment, texts plus the school environment where teaching and learning takes place. The condition of these assets, along with their maintenance, plays a pivotal role in shaping the learning environment and influencing academic outcomes. Academic achievement is commonly gauged through the analysis of results obtained from various assessment tools such as assignments, exams, or continuous evaluations administered

over the academic year. These findings are translated into grades, rankings, or percentages, serving as metrics to evaluate the level of proficiency attained by students in a particular course. Typically, academic success is evaluated through examinations or ongoing assessments. These assessments may encompass tests conducted at the culmination of a lesson, unit, term, or academic year. Examples include weekly tests, mid-term exams, termly assessments, as well as standardized examinations like the West African Senior School Certificate Examination (WASSCE), National Examination Council (NECO), National Business and Technical Examination Board (NABTEB), and other tests relevant to various educational levels and fields of study.

Despite the substantial measure of academic accomplishment in education, particularly at the secondary school level, a poor record is still recorded in various tests and subjects specifically, mathematics and English Language. The National Examination Council (NECO) claimed that a minimum of 727,864 (60.74%) of the 1,198,412 students who sat the Senior School Certificate Examination (SSCE) in 2022, earned at least five credits, including English language and Mathematics (Fapohunda, 2022a). According to the WAEC test body, 1,222,505 (76.36%) candidates of the 1,601,047 candidates who completed the 2022 exam, obtained credits or above in at least five (5) subjects, including English Language and Mathematics. Compared to the 81.7% pass rate recorded in 2021, these statistics show a drop in the performance of nearly five percent (Fapohunda, 2022b). Also, 76.30% of the total number of applicants (25,915) who sat for the 2021 NABTEB test achieved five (5) credits and higher, including English Language and Mathematics (NABTEB, 2022). From the aforementioned figures, while the results look satisfying to many students, many pupils still failed mathematics and English Language consequently expressing a worry to the general public.

The function of school plant maintenance generally is to provide the most suitable environment for effective teaching and learning because a supportive and responsive learning environment permits the learners to interact freely with one another and this will motivate students to learn for improved academic achievement. Maintenance of the school plant suggests that there is a malfunction of the structure, equipment, or grounds and that there is a need to restore them to the right state. School plant care focuses on the repair, replacement, and general upkeep of physical facilities as shown in school buildings, ground, and safety systems.

Langtang Local Government Council (L.G.C) in Plateau State, Nigeria, presents a microcosm of the broader challenges facing educational infrastructure across the nation. Despite concerted efforts to improve educational standards, the issue of school plant maintenance remains a persistent concern. The consequences of inadequate maintenance reverberate throughout the educational system, affecting students, teachers, and communities alike. Unfortunately, what prevails in most public-school plant which was erected over fifty years ago is that most of them have endured wear and tear (Hamdallah, Ozovehe& Olanrewaju, 2013). This is because they have been misused and as such are needing both small and substantial maintenance. The areas of school plant maintenance in secondary schools that are of significance include classroom maintenance, library maintenance, labs maintenance, workshop maintenance, as well as principals' duties and approaches to school maintenance. At the heart of the matter lies the intricate relationship between school plant maintenance and students' achievement. While it may seem intuitive that well-maintained facilities contribute

to better learning outcomes, the extent of this relationship and the specific mechanisms through which it operates warrant careful examination.

The physical environment significantly influences the learning experience. A well-designed and properly maintained school provides students with a conducive atmosphere for studying, engaging in activities, and interacting with peers and teachers. Conversely, dilapidated infrastructure, leaking roofs, broken furniture, and inadequate sanitation facilities create distractions and discomfort, detracting from the learning process.

The safety and functionality of school facilities directly impact student well-being and attendance. Unsafe or unsanitary conditions pose health risks, leading to absenteeism among students and teachers. Moreover, malfunctioning equipment or insufficient resources may hinder the delivery of quality education, limiting students' ability to fully engage with the curriculum and achieve their academic potential.

The psychological effects of the learning environment cannot be overlooked. A school characterized by neglect and disrepair sends a message to students about their worth and the value society places on their education. Conversely, well-maintained facilities signal a commitment to excellence and provide a sense of pride and belonging, fostering a positive attitude towards learning and academic success.

For the successful maintenance of school plants in secondary schools, the school administrator (principal) has a job to guarantee that the school plant is adequately maintained and used for the actualization of the educational objectives. The principal is entrusted with the obligation of ensuring that the required facilities or resources needed for successful and efficient teaching and learning are given and maintained as this will avoid a recurrent recurrence of infrastructural degradation. Despite the significance of school plant maintenance, challenges abound in ensuring the upkeep of educational infrastructure in Langtang L.G.C and beyond. Limited financial resources, bureaucratic inefficiencies, inadequate planning, and competing priorities often conspire to undermine maintenance efforts, perpetuating a cycle of neglect and deterioration.

Against this backdrop, this research seeks to delve into the complex interplay between school plant maintenance and students' achievement in Langtang L.G.C, Plateau State, Nigeria. By examining the current state of infrastructure, analyzing its impact on students' outcomes, and identifying barriers to effective maintenance, this study aims to offer insights and recommendations for policymakers, educators, and stakeholders invested in the future of education in the region. Through collaborative efforts and targeted interventions, it is hoped that sustainable solutions can be devised to address the maintenance needs of school plants and create an environment conducive to learning, growth, and academic excellence for all students.

AIM AND OBJECTIVES OF THE STUDY

The objective of this study is to investigate the correlation between the maintenance of school facilities and the students' performance in Langtang public senior secondary schools located in Plateau State, Nigeria. The study aims to achieve the following specific objectives:

1. Find out the level at which laboratories are maintained for improving the academic achievement of senior secondary school students in Plateau State;
2. Determine the extent to which workshops are maintained to enhance the academic achievement of senior secondary school students in Plateau State.
3. Ascertain the roles of school principals in school plant maintenance in senior secondary schools in Plateau State.

RESEARCH QUESTIONS

The study formulated the following research questions to provide direction:

1. What is the level of maintaining laboratories in senior secondary schools in Plateau State?
2. To what extent are workshops maintained in senior secondary schools in Plateau State?
3. What roles do principals played in school plant maintenance of senior secondary schools in Plateau State?

HYPOTHESES

1. There is no significant relationship between workshop maintenance and the academic achievements of secondary school students in Plateau State.
2. There is no significant relationship between the role of principals in school plant maintenance and the academic achievement of secondary school students in Plateau State.
3. There is no significant relationship between the approaches used in the maintenance of school plants and the academic achievement of secondary school students in Plateau State.

POPULATION AND SAMPLE

The population of this study consisted of all principals, teachers and students in Langtang South LGA of Plateau State. Population consisted of 54 principals, 143 teachers and 2,423 students in public secondary schools in Langtang South LGA of Plateau State. A sample of 20 principals, 20 teachers and 60 students were used for the study. The choice of this sample is based on the fact that they have the same characteristics with the population that will be used in the main study.

METHODOLOGY

The study employed the Ex-post facto design. Ex-post facto is systematic empirical research in which the researcher has no control over the independent variable (Awotunde and Ugodulunwa, 2004). The manifestation of the independent variable has already occurrence before the commencement of the study, hence manipulated is not possible. As already established, this study is an Ex-post facto because the variable of school plant maintenance and students' achievement that will be surveyed and examined are already in existence in their various institutions which in other words cannot be manipulated.

Two instruments were used for data collection: the School Plant Maintenance Questionnaire (SPMQ) and the Student Academic Achievement Proforma (SAAP). The SPMQ was designed to gather information on school plant maintenance in Plateau State, while the SAAP collected data on students' achievement based on WAEC examination results. Content validity of the

SPMQ was ensured through expert scrutiny, while construct validity was established using factor analysis. The SAAP, developed by the West African Examination Council (WAEC), was considered valid and reliable. Reliability of the SPMQ was assessed using the Cronbach Alpha method.

The SPMQ was scored based on a 5-point Likert scale, while the SAAP followed standard scoring criteria provided by WAEC. Research questions were analyzed using frequency counts and percentages. Hypotheses were tested using the Pearson Product Moment Correlation and independent samples t-test at a significance level of 0.05. Pearson Product Moment Correlation was chosen to examine the relationship between school plant maintenance and students' achievements.

RESULTS AND DISCUSSION

Research Question One: What is the level of laboratory maintenance in public senior secondary schools in Plateau State?

Table 1: Results of the Analysis on Extent of Laboratories Maintenance in Public Senior Secondary Schools in Plateau State

S/N	Statement	N	$\bar{X}$	SD	Decision
1.	Laboratory facilities are well maintained in my school.	100	2.82	1.03	Reject
2.	Conical flasks test tubes that are broken are usually replaced.	100	3.40	1.24	Reject
3.	Specimens are usually preserved for later use.	100	2.56	1.19	Accept
4.	Space laboratory reagents are usually replaced in good time.	100	3.56	1.21	Reject
5.	Small hoes and other equipments are usually replaced.	100	3.38	1.27	Accept
6.	Apparatus for science practical lessons are well maintained for precision in measurement.	100	2.82	1.11	Accept
Total			3.42	0.87	Accept

The results of the analysis from Table 1 revealed that items 3, 5 and 6 were accepted because the items had mean scores above the criteria mean of 3.00. This implies that specimens are usually preserved for later use, small hoes and other equipments are usually replaced, and apparatuses for science practical lessons are well maintained for precision. Items 1, 2 and 4 were rejected because the items had mean scores below the criteria mean of 3.00. This implies that laboratory facilities are not well maintained, conical flasks, test tubes that are broken are usually not replaced. The overall mean of 3.42, and standard deviation of 0.87 is above the criteria mean of 3.00. This implies that laboratory maintenance is moderately carried out in public secondary schools in Plateau State.

Research Question Two: To what extent are workshops maintained in public senior secondary schools in Plateau State?

Table 2: Results of the Analysis on Extent of Workshops Maintenance in Public Secondary Schools in Plateau State

S/N	Statement	N	$\bar{X}$	SD	Decision
1.	Principals ensure that the equipment in the workshop are well maintained in my school.	100	4.26	.91	Accept
2.	Workshop facilities in my school are maintained according to manufacturers' manual.	100	4.12	.81	Accept
3.	Machines that are not in use are replaced with good ones.	100	3.60	1.00	Accept
4.	Machines are lubricated after use.	100	2.82	1.01	Reject
5.	Worn out workshop equipments are replaced routinely.	100	3.66	1.03	Accept
6.	Workshop facilities are covered after use to avoid dust.	100	3.80	1.10	Accept
Total			3.71	1.04	Accept

The results of the analysis from Table 2 revealed that items 1, 2, 3, 5 and 6 were accepted because the items had mean above the criteria mean of 3.00. This implies that principals ensure that the equipments in the workshop are well maintained in schools, workshop facilities are maintained, machines that are not in use are replaced, worn out workshop equipments are replaced routinely and workshop facilities are covered after use to avoid dust. While item 4 was rejected because the item had mean below the criteria mean of 3.00. This implies that machines are not lubricated after use. The overall mean of 3.71, standard deviation of 1.04 is higher than the criteria mean of 3.00. This implies that there is moderate workshop maintenance in public secondary schools in Plateau State.

Research Question Three: What roles do principals play in school plant maintenance of public senior secondary schools in Plateau State?

Table 3: Results of the Analysis on Roles Played by Principals in School Plant Maintenance of Public Senior Secondary Schools in Plateau State

S/N	Statement	N	$\bar{X}$	SD	Decision
1.	The principal in my school carry out periodic replacement maintenance.	100	4.02	.80	Accept
2.	Principal received the assistance of both PTA and teachers in the maintenance of school plan in my school.	100	3.67	.95	Accept
3.	My principal does not use the services of experts for operational activities in my school.	100	3.97	.74	Accept
4.	My principal carries out effective supervision and control of school plan.	100	3.69	.92	Accept
5.	My school carries out periodic replacement maintenance.	100	3.94	.97	Accept

6.	My school carries out repairs services on school infrastructure.	100	4.04	.94	Accept
	Total		3.77	1.00	Accept

The results of the analysis from Table 3 showed that all the items were agreed upon because the items had mean above the criteria mean of 3.00. This implies that principal usually carry out periodic replacement maintenance, principal usually received assistance from PTA and teachers, principals do not usually use expert services, principals usually carry out effective supervision and control of school plan, principals do carry out periodic replacement maintenance and schools usually carry out repairs services of the responses is $\bar{X} = 3.77$, $SD = 1.00$ above the criteria mean of 3.00. This implies that principals play a moderate role in school plan maintenance in Plateau State.

CONCLUSION

The findings of this study shed light on the state of students' performance and school plant maintenance in public Lantang South senior secondary schools in Plateau State. Notably, students demonstrated a high level of performance in both English and Mathematics, indicating a positive educational environment. However, while classroom maintenance was found to be at a high level, library and laboratory maintenance were moderate. Principals played moderate roles in school plant maintenance, employing various approaches such as system-based, condition-based, and outsourcing.

Significant correlations were observed between classroom, library, and laboratory maintenance and students' achievement, highlighting the importance of well-maintained school facilities in enhancing educational outcomes. However, no significant relationship was found between workshop maintenance and academic achievement.

The implications of these findings suggest that the proposed design, objectives, and research questions are suitable and testable. The School Plant Maintenance Questionnaire (SPMQ) is considered valid and reliable, although some items may require restructuring based on factor analysis results. Prioritizing school plant maintenance and investing in educational infrastructure are essential steps towards ensuring a conducive learning environment and promoting academic excellence in public senior secondary schools in Plateau State.

RECOMMENDATIONS

- 1. Enhance maintenance efforts:** Given the positive correlation between maintenance levels and students' achievement, there is a need to prioritize maintenance activities in public senior secondary schools. This includes regular inspections, repairs, and upgrades to ensure that classrooms, libraries, laboratories, and workshops are well-maintained.
- 2. Training and capacity building:** Principals and school staff should receive training on effective maintenance practices and management strategies. This will empower them to oversee maintenance activities more efficiently and effectively, ultimately contributing to improved educational outcomes.
- 3. Resource allocation:** Adequate resources should be allocated to support maintenance initiatives in public senior secondary schools. This may involve securing funding for infrastructure upgrades, equipment purchases, and staff training programs.

4. **Continuous evaluation:** Regular assessments of maintenance practices and their impact on students' achievement should be conducted. This will enable schools to identify areas for improvement and adjust maintenance strategies accordingly.
5. **Collaboration and partnerships:** Schools can benefit from collaborating with external stakeholders, such as local authorities, community organizations, and private companies, to enhance maintenance efforts. By leveraging external resources and expertise, schools can address maintenance challenges more effectively.

By implementing these recommendations, schools in Langtang South Public Senior Secondary Schools, Plateau State can enhance their maintenance practices and, consequently, improve academic outcomes for students. This will contribute to creating a more conducive learning environment conducive to academic excellence.

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