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The Effects of Maintenance on Public School Buildings in Selected Local Government Area of Delta State, Nigeria

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Abstract: **This study examines the effects of maintenance on public school buildings in Oshimili South, Warri South, and Ughelli North Local Government Areas of Delta State, Nigeria. Utilizing a survey research design, data were collected through questionnaires of 56 public school buildings, supplemented by secondary data from literature and online resources. A stratified random sampling approach ensured representation of the 348-target population, comprising SUBEB and PPEB staff and teachers. Data analysis was performed using SPSS (version 22) and MS Excel, employing descriptive statistics, Pearson correlation, and Relative Importance Index (RII). The results revealed that maintenance significantly enhances the educational environment, with "beautifying the environment," "increasing student enrollment," and "ensuring health and safety" ranked as the top effects. Correlation analysis confirmed a strong positive relationship between maintenance and teaching and learning outcomes, with a Pearson correlation coefficient of 0.968 ($p < 0.05$). This underscores the critical role of maintenance in fostering academic performance, teacher productivity, and community pride. The study recommends the development of comprehensive maintenance policies, the appointment of skilled maintenance managers, and increased stakeholder involvement to ensure sustainable management of school infrastructure. By prioritizing maintenance, public schools in Delta State can provide a conducive learning environment, improve education quality, and safeguard long-term investments in education.**

Keywords: **Maintenance, Public School Buildings, Delta State, Pupils, Students.**

I. INTRODUCTION

Schools are educational institutions established for the purpose of teaching and learning. In order to enhance teaching and learning in schools, it is the responsibility of school management to provide functional buildings to accommodate students and staff, thereby creating a conducive atmosphere for various educational activities within the school environment. In Nigeria, government or public primary and secondary schools are educational institutions owned and operated either by the Federal or State government and receives government funding. These types of schools provide education to the public at a reduced cost which is covered by government reimbursement. Public primary and secondary schools play a vital role by providing affordable education to the public hence, its buildings should be considered as assets that require regular maintenance to function effectively and efficiently at all times. Ogunoh, Mbanusi and Okoye (2018) emphasized that, the maintenance levels of these buildings are very crucial to educational effectiveness.

School buildings therefore, are structures designed, constructed and used for teaching and learning. Buildings contribute immensely to the functioning, ultimate performance and realization of the goals and objectives of education (Ogunoh, 2014). They constitute part of our most valuable assets, providing learners with shelter facility for study, work and leisure

(Akinsola and Iyagba, 2006). Consequently, if school buildings are to function as intended, they must be maintained in order to continue to accommodate the activities for which they are designed and constructed.

In Nigeria, Studies carried out on building maintenance shows that maintenance attitude remains low at individual and government level (Akingbohungbe,2002). Falemu and Adewole (2006) lamented that many publicly and privately owned buildings are in various states of disrepair, and dilapidation and consequently have become unsightly. It is not an uncommon sight in most of our public primary and secondary schools to find environmental conditions such as peeling paint, crumbling plaster, nonfunctioning toilets, poor lighting, inadequate ventilation, raising dampness in substructure, doors and window defects, foundation failure and sagging beam. Maduka, Abiodun and Ezeji (2019) in their study, titled "appraisal of building condition in public secondary school in Onitsha" found out that the condition of floors, wall finishes, doors, windows, stairs, electrical and sanitary fittings in some public schools in Onitsha were in deplorable condition requiring either minor or major repairs. The scenario above is not different from that of the study area.

II. LITERATURE REVIEW

A. Overview of public School building maintenance

The core function of schools is to provide formal education to students. It is widely accepted that education is instrumental in shaping ones personality and the way he or she deals with situations in life. The National Policy on Education (2014) states that education is an instrument for national development and social change. It further states that, education maximizes the creative potentials and skills of the individual for self-fulfillment and general development of the society. The importance of education cannot be over emphasized as the development and growth of any society is dependent on the level of education of its citizen. This perhaps explains why education is considered a necessity for human beings after food, clothes and shelter.

In Nigeria, formal education system has been structured into different levels which consist of primary, secondary and tertiary education. This study focuses on primary and secondary education. Primary education is the education given to children aged 6 – 12 years. It is the initial education given to children at early stages of their life hence it forms the foundation and bedrock for which other levels of education is built upon. The goal of primary education is to inculcate rightful social, moral norms and sound values into the child (The National Policy on Education2014). Secondary education is the education children receive after primary education and before the tertiary stage. It is a six year programme comprising of three years for junior secondary and three years for senior secondary school. Each level is of three years duration. The goal of secondary education is to prepare the individual for useful living within the society, and higher education (The National Policy on Education 2013). Given the benefits of primary and secondary education, it is important that schools, which is the institution for educating children, is provided with well-developed and adequate functional buildings to accommodate the teaching and learning process.

Buildings provide the needed identity, purposefulness, comfort and services required for the development and enhancement of education (Okanume, 2005; Ogunoh, 2014). This implies that the goals and objectives of education cannot be satisfactorily achieved without buildings. A building acts as an envelope which buffers external environments to create an internal condition which supports internal needs (Watt, 2007). Building provides safety, protects human inhabitants, animals, materials and equipment from effects of weather, and gives internal comfort (Ogunoh, 2008). From the foregoing, it is clear that the main purpose why man design and construct buildings is to provide people with an environment conducive and safe for various human activities. School buildings accommodate the educational process thereby, facilitating the teaching and learning process of acquiring knowledge, skills, values, beliefs and habits that will draw out the hidden potentials and develop the individual in the proper way.

B. Maintenance Measures for Public School Building

As components of a building begins to deteriorate, it becomes necessary to take some measures to ensure that the desired characteristics of the facility which provide safety and convince are retained through adequate maintenance. For effective maintenance of school facilities, Manga, Aliyu and Garba (2013) opinioned that the school head needs to enforce the following school maintenance activities:

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1. School grounds and the entire school environment should be swept clean from wastes generated by animals, plants and human beings on daily bases. Pot-holes should be filled up and injurious objects removed in playgrounds and other parts of the school environment. Unwanted graces and shrubs should be cut or weeded.

2. School buildings should be swept, floors and furniture scrubbed of dust on daily basis. The walls should be periodically repainted to give them a fresh new look. Leaking roofs and collapsed ceiling boards should be repaired. Cracked walls and broken floors need to be re- plastered. Broken doors and windows should be re-fixed.

3. Electrical bulbs and fluorescent tubes should be replaced when they expire. Also electrical sockets and lamp holders as well as the wiring should be kept in good condition. Electrical generators need to be regularly serviced to keep them functional. Power lines and transformers in the school should be properly maintained. Fans and air conditioners should be repaired when faults develop as to avoid electrical fires. In addition, electrical devices such as photocopiers, refrigerators, computers, televisions, video machines among others, should be kept in good condition,

4. School landscaping need to be maintained regularly. Trees, flowers and grasses that need watering should be watered and trimmed, unwanted grasses need to be weeded or cut down for beautification and safety from snakes and mosquito prevention.

5. Refuse and sewage should be regularly disposed in order to maintain a healthy and clean school environment. Blockages in gutters should be regularly cleared. Pit latrines, toilets floors, toilet seats and wash hand basins as well as urinary should be regularly washed, flushed and treated with germicides. Soak ways and plumbing works should be kept in good condition to ensure that the water cistern toilets flush correctly and efficiently.

6. School security should be maintained at all time. The fence should be regularly checked to detect and seal illegal outlets. The school gate should be regularly manned, check movement of persons and vehicle especially those of visitors. All school buildings should have burglary proofs on windows and doors. There should also be strong locks at the doors and keys kept at a secured place when buildings are locked. Security lights should also be placed at strategic points in the school and at side of school buildings.

7. Machines and other mechanical devices should be lubricated to make them run smoothly. Vehicles should be regularly serviced and faulty spare parts and tyres changed when they expire. Laboratory and workshops equipments should always be kept in top condition. And safety devices such as fire extinguishers should always be checked to ensure that they are in good condition.

8. Water supply infrastructure such as pipes, taps, wells, boreholes, tanks and other equipments should be kept in good condition.

9. Road network and walkways in the school need to be beatified and kept in good condition for smooth traffic and pedestrian movement.

III. METHODOLOGY

The study adopted a survey research method, utilizing both primary and secondary data to address its objectives. Primary data were collected via questionnaires distributed to 186 staff and teachers in public primary and secondary schools across Oshimili South, Warri South, and Ughelli North Local Government Areas in Delta State. Supplementary data collection methods included oral interviews, direct observations, and walkthrough evaluations of 56 public school buildings. Secondary data were sourced from literature, publications, and online resources. Stratified random sampling and purposive sampling techniques ensured representation and relevance of the target population of 348, comprising SUBEB and PPEB staff and teachers. Data were analyzed using SPSS (version 22) and MS Excel, employing descriptive statistics such as frequency, mean scores, Pearson correlation, and Relative Importance Index (RII) for ranking variables. The validity and reliability of the instruments were established through professional review and internal consistency testing using Cronbach's Alpha

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IV. RESULTS AND DISCUSSION

Table 1: Effects of Maintenance on Public Primary School Building

S/N	Sets	Level of agreement					∑f	∑fx	RII	Rank
		SD	D	U	A	SA				
a	Ensure health and safety of students, staff, parents and visitors	0	0	0	6	59	65	319	0.9815	3rd
b	Increase students' academic performance	0	0	0	11	54	65	314	0.9662	4th
c	Increase productivity of teachers	0	0	0	17	48	65	308	0.9477	6th
d	Increase student's enrollment	0	0	0	5	60	65	320	0.9846	2nd
e	Increase pride of students and teachers	0	0	0	18	47	65	307	0.9446	7th
f	Extend life span of school buildings	0	0	0	13	52	65	312	0.9600	5th
g	Beautify the environment	0	0	0	7	61	65	321	0.9877	1st
h	Reduce high cost of maintenance	0	0	0	29	36	65	296	0.9108	8th
Where SA= Strongly Agree, A = Agree, UD = Undecided, D= Disagree, SD= Strongly Disagree										

The result in Table 1 presents the effects of maintenance on Public Primary School Buildings. To beautify the environment ranked 1st. Increase student's enrollment ranked 2nd. Ensure health and safety of students, staff, parents and visitors ranked 3rd. Increase students' academic performance ranked 4th. Extend life span of school buildings ranked 5th. Increase productivity of teachers ranked 6th. Increase pride of students and teachers ranked 7th. Reduce high cost of maintenance ranked 8th. This implies that to beautify the environment, increase student's enrollment and ensure health and safety of students, staff, parents and visitors are the major effects of maintenance on public primary school buildings. To reduce high cost of maintenance is not the major effect of maintenance on public school buildings to public primary school teachers hence the need for a maintenance manager who has the basic knowledge and skills to efficiently manage the maintenance of public schools.

The study tested the hypothesis that stated that "The level of maintenance of school buildings does not significantly affect the teaching and learning of pupils and students". The result are presented in Table 2 and 3.

Table 2: Descriptive Statistics summary for hypothesis.

	Mean	Std. Deviation	N
Effect on Pupils	4.80	.318	65
Effect on Students	4.73	.374	38

Table 2 reveals the descriptive summary for the correlation analysis carried out for hypothesis two which states that the level of maintenance of school buildings does not significantly affect the teaching and learning of pupils and students. From the result as presented in the Table 2, the, mean for the responses on the effects of maintenance on public school building on both the pupils and students are 4.80 and 4.73 indicating their strong level of agreement to the options provided.

Table 3: Correlations output for hypothesis

		Effect on Pupils	Effect on Students
Effect on Pupils	Pearson Correlation	1	.968**
	Sig. (20tailed)		.000
	N	65	38
Effect on Students	Pearson Correlation	.968**	1
	Sig. (20tailed)	.000	
	N	38	38
**. Correlation is significant at the 0.01 level (20tailed).			

Table 3 shows the Pearson's correlation result for hypothesis two which states that the level of maintenance of school buildings does not significantly affect the teaching and learning of pupils and students. From the Table, 3 the correlation coefficient is .968 showing that there are 96% effects of maintenance of school buildings on teaching and learning of pupils

and students. The p-value as seen in the Table 3 is .000 which is less than the level of significance of .05. Going by this therefore, the alternate hypothesis is accepted and it is sated that the level of maintenance of school buildings does significantly affect the teaching and learning of pupils and students.

Decision: Reject the null hypothesis;

V. CONCLUSION AND RECOMMENDATION

This study has demonstrated the significant impact of maintenance on public school buildings in Oshimili South, Warri South, and Ughelli North Local Government Areas of Delta State, Nigeria. The findings revealed that maintenance plays a critical role in enhancing the educational environment, as evidenced by the high ranking of factors such as beautifying the environment, increasing student enrollment, and ensuring the health and safety of students, staff, parents, and visitors. These factors underscore the necessity of prioritizing maintenance as an integral component of school infrastructure management.

The correlation analysis confirmed that the level of maintenance of school buildings significantly affects teaching and learning outcomes for pupils and students, with a strong positive relationship evident from a Pearson correlation coefficient of 0.968. This indicates that well-maintained school environments foster better academic performance, productivity among teachers, and pride in the school community, thereby directly influencing the educational experience.

However, the relatively lower emphasis on reducing the high cost of maintenance as a priority suggests a need for the implementation of a comprehensive maintenance management strategy. Such a strategy would optimize resource allocation and ensure the long-term sustainability of school infrastructure. The findings support the appointment of dedicated maintenance managers equipped with the necessary skills to oversee and coordinate maintenance activities effectively. In conclusion, the study highlights the indispensable role of maintenance in achieving a conducive learning environment and calls for deliberate policies and actions to enhance the maintenance of public school buildings. This approach will not only improve the quality of education but also safeguard the investments in public school infrastructure in Delta State. The pare recommended that State and local governments should establish structured maintenance policies to ensure the sustainability of public school buildings

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