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School Plant Maintenance in Public Secondary Schools: A Comparative Study of Rural and Urban Schools in the North West Region of Cameroon

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ABSTRACT: Facility maintenance is widely recognised as central to educational quality, yet public secondary schools across Sub-Saharan Africa continue to operate with buildings and equipment in various states of disrepair. Chronic underfunding and weak administrative structures have made this problem persistent and, in many cases, invisible to policymakers. This quantitative study compared the level of school plant maintenance in rural and urban public secondary schools in the North West Region of Cameroon. A descriptive survey design was adopted, and 262 teachers were selected through systematic random sampling across all seven administrative divisions of the region. Data were gathered exclusively through a validated 4-point Likert-scale questionnaire comprising five items focused on school plant maintenance. Mean scores, Pearson Product Moment Correlation, and an independent-samples two-tailed t-test ($\alpha = 0.05$) were used for analysis. Maintenance levels were found to be low in both urban schools (mean = 1.36; r = 0.132) and rural schools (mean = 1.41; r = 0.132). The null hypothesis was retained ($t = 1.909 < t\text{-critical} = 1.960$, $df = 190$, $p > 0.05$), indicating no statistically significant difference between the two settings. Both school types are equally and uniformly deficient in maintenance practice. The study recommends joint government, PTA, and SMB financing, formalised maintenance planning, and structured principal capacity-building across both rural and urban settings.

KEYWORDS: school plant maintenance, school effectiveness, rural-urban comparison, public secondary schools, Behavioural Science Theory

INTRODUCTION

Quality education cannot happen in environments that are physically broken. School plant — the full range of buildings, furniture, equipment, laboratories, libraries, and outdoor spaces that a school depends on — forms the physical foundation for teaching and learning. When these assets deteriorate through neglect, poor funding, or weak administrative practice, the impact is immediate and measurable. Instruction gets disrupted, students disengage, safety is compromised, and academic performance declines (Adeboyeje, 2000; Ani, 2007; Onwurah, 2004). Maintenance, understood as all activities undertaken to keep school buildings, equipment, and grounds in a condition of completeness and efficiency through repairs, replacement, and preventive servicing (Ani, 2007), is therefore not a secondary concern of school management but one of its most consequential responsibilities.

Across much of Africa, school plant maintenance has been consistently deprioritised. In Cameroon's North West Region, the consequences of this neglect are visible in almost every public secondary school: classrooms with cracked walls and leaking roofs, staffrooms that double as storage facilities, laboratories stripped of functional equipment, and school grounds without basic sanitation. The European Federation of National Maintenance Societies (EFNMS, 2007) defines maintenance as all technical, administrative, and managerial actions required to retain an item in, or restore it to, a state where it can fulfil its intended function — a standard that public secondary schools in this region rarely meet.

What this study is specifically interested in is not simply confirming that maintenance is poor, but determining whether the severity of that failure differs between rural and urban schools. This distinction has direct policy consequences. Where rural schools are significantly worse off, targeted rural investment becomes the logical response. Where the deficiency is equally severe in both settings, the problem demands a system-wide solution rather than a location-specific one. Prior studies in Nigeria (Nwankwo, 2007; Ejikeme, 2000; Okafor, 2003) have each documented maintenance failures in specific school settings, but none has made this rural-urban comparison with statistical rigour. This study addresses that specific gap.

The research was conducted in the North West Region of Cameroon, one of the country's two Anglophone regions. Comprising seven administrative divisions with public secondary schools spread across both urban headquarters and rural sub-divisions, the region provides a natural comparative setting. Resource availability, PTA capacity, population density, and the reach of government services vary considerably between urban and rural communities here, making the region well-suited for this kind of comparative inquiry. Against this backdrop, the central research question is:

- What is the level of school plant maintenance in rural and urban public secondary schools in the North West Region?

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- Does a statistically significant difference exist in school plant maintenance in rural and urban public secondary schools in the North West Region?

The study carries practical value for several stakeholder groups. The Ministry of Secondary Education and the Regional Delegation can use the findings as an empirical basis for resource allocation and targeted maintenance policy. School principals and management boards gain a diagnostic baseline for planning. The academic community benefits from comparative quantitative evidence from a context that remains underrepresented in the school facilities literature. For PTAs and community groups, the findings clarify the scale of community responsibility in maintaining school infrastructure where government provision has fallen short.

The article is structured as follows. Section 2 reviews the conceptual, theoretical, and empirical literature on school plant maintenance. Section 3 outlines the quantitative methodology. Section 4 presents the questionnaire findings and hypothesis test. Section 5 discusses results in relation to theory and existing studies. Section 6 offers conclusions and recommendations.

LITERATURE REVIEW

Conceptual Framework: School Plant Maintenance

Scholars have defined maintenance in ways that share a common emphasis on continuity and proactive action. Ugwuja (2003) views it as work done to keep every facility at an acceptable standard, while Dilworth (1993) frames it as the ongoing effort to retain productive facilities and equipment in usable condition. The EFNMS (2007) takes a comprehensive institutional view, defining maintenance as all technical, administrative, managerial, and supervisory actions aimed at retaining or restoring an item to a state where it can perform its required functions. Across these definitions, a consistent theme emerges: maintenance is not reactive rescue work but a sustained, planned process.

In school settings, this process takes on particular significance. The Plant Maintenance Resource Center (2007) argues that school facilities maintenance is fundamentally about creating a clean, safe, and learning-appropriate environment for children — not simply managing physical assets. Similarly, the Jamaican School Facilities Maintenance Manual (2007) specifies that school maintenance encompasses everything from daily cleaning to scheduled preventive care and emergency repairs, beginning when a facility is first used and continuing throughout its functional life. Ani (2007) defines school plant maintenance as all activities concerned with keeping buildings, equipment, and grounds in a condition of completeness and efficiency through repairs and replacement, so that the physical appearance of facilities is preserved as close to their original state as possible. Onwurah (2004) offers a complementary view, describing maintenance as all activities involving repairs and replacement that keep school buildings and equipment as near to their original conditions as practicable.

Within this framework, the school principal emerges as the primary institutional actor. Adeboyeje (2000) recognises maintenance as one of the major roles of school administrators, arguing that properly maintained facilities are central to effective school management. Ogbodo (1995) goes further, asserting that the actual core role of school administrators in plant management is maintenance, and that principals are responsible for identifying the maintenance approach that best fits their school context and making the most of available resources. For a principal to discharge this responsibility effectively, the Jamaican School Maintenance Manual (2007) argues that they must have working knowledge of planning, implementation procedures, programme evaluation, and a broad range of maintenance techniques.

Maintenance approaches in school settings vary in scope and intent. Peretomode (2001) identifies four options available to administrators: no maintenance at all; emergency maintenance, which involves reactive repairs after a breakdown; ad hoc maintenance, which draws on a discretionary budget at the principal's judgment; and preventive maintenance, which involves scheduled servicing to prevent breakdowns from occurring. Candoli et al. (1973), cited in Akpan (2011), define preventive maintenance as a programme for servicing machines, systems, and structures that is specifically designed to prevent breakdown. Amirize (2002) adds that preventive maintenance not only prevents failure but extends the lifespan of school facilities and keeps them in serviceable condition over time. A more recent addition to this taxonomy is predictive maintenance, which Agenji et al. (2015) describe as an approach that uses computer software to forecast equipment failure before it occurs. In practice, most public secondary schools in Nigeria and Cameroon rely on emergency or no-maintenance approaches (Bamide, 2002; Asiabaka, 2008), and the consequences — rapid infrastructure deterioration — are well documented.

Asiabaka (2008) draws attention to a troubling institutional pattern: when new school buildings are completed and handed over to school authorities, almost no systematic attention is paid to their subsequent upkeep. Some school buildings in West Africa that are over three decades old have never been renovated. Bamide (2002) reinforces this point, arguing that broken and battered school facilities are rarely the product of age alone; they are the product of neglect.

Rural-Urban Disparities in School Maintenance

The question of whether rural and urban schools differ significantly in their capacity to maintain facilities is grounded in long-standing evidence of resource inequality between the two settings. Okonkwo (1997) notes that rural schools are inherently more vulnerable to plant facility problems and maintenance challenges. Hallak (1977) identified several compounding factors specific to rural schooling: qualified teachers frequently refuse postings to isolated communities, poor road networks complicate the delivery of materials and the movement of contractors, and limited community resources mean that local funding alternatives are scarce. Kuliman et al. (1977) found that teachers' reluctance to take up rural positions was driven in part by the poor state of facilities, itself partly a consequence of weak maintenance culture in rural schools.

Urban schools, by contrast, are generally better positioned to mobilise maintenance resources. Larger student populations translate into greater PTA revenue, proximity to government offices and the Regional Delegation improves access to institutional support, and contractors and maintenance personnel are more readily available in urban centres. However, urban schools are not without challenges. Rural-to-urban migration has inflated student populations in many urban institutions, accelerating facility wear in ways that closely mirror the deterioration caused by maintenance neglect in rural schools, even if through a different mechanism. This convergence makes the rural-urban comparison of maintenance levels empirically non-obvious, and statistically testing the difference is more meaningful than simply assuming one exists.

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Theoretical Framework

Behavioural Science Theory

The Behavioural Science Theory, as articulated through the Tri-Dimensional Concept of Administration developed by Ukeje et al. (1992), holds that productive institutional management depends on the balanced integration of three interconnected elements: the man, referring to the administrator's personality, capabilities, and behaviour; the job, referring to the tasks and methods that constitute the work; and the social setting, referring to the physical environment and conditions in which work takes place. Enyi (as cited in Mgbodile, 2004) argues that genuine organisational productivity can only be achieved when these three elements are properly aligned.

Applying this theory to school plant maintenance yields a clear prediction: principals who focus only on administrative and pedagogical tasks while allowing the physical environment to deteriorate will fail to achieve productive educational outcomes. Buildings, equipment, and grounds are not incidental to the work of schooling — they constitute the social setting that makes the man-job interaction possible. When that setting degrades, both teacher performance and student engagement suffer. The theory therefore anticipates a direct relationship between maintenance quality and school effectiveness, and predicts that schools in both rural and urban settings that fail to maintain their facilities will register comparably poor effectiveness outcomes, irrespective of which setting they occupy.

Herzberg's Two-Factor Theory

Frederick Herzberg's Two-Factor Theory (Herzberg et al., 1959) distinguishes between two categories of workplace factors: hygiene factors, whose absence generates dissatisfaction, and motivator factors, whose presence creates genuine satisfaction. Physical working conditions and the material environment fall within the hygiene category. When these conditions are poor — buildings leaking, furniture broken, equipment non-functional — the result is not merely inconvenience; it is institutional dissatisfaction that reduces teacher commitment and student engagement. As Uwazurike (2004) and Okonkwo (1997) observe, improving maintenance conditions is a necessary, if not sufficient, step toward creating an environment where effective learning can take place. The implication is significant: schools in both settings, where maintenance is uniformly low, will register comparably poor outcomes because the hygiene threshold has not been met in either context.

Empirical Review

Several empirical studies provide relevant evidence. Nwankwo (2007) surveyed school buildings and maintenance in Anambra State, Nigeria, and found that roughly three-quarters of secondary school buildings were in very poor condition, with poor or entirely absent maintenance identified as the primary cause. The study concluded that this was a system-wide failure rather than a problem concentrated in particular schools or locations — a framing that aligns closely with the present study's findings.

Ejikeme (2000) investigated the management of physical facilities and equipment in Onitsha Education Zone, Anambra State, and found that most schools had no dedicated store officers for managing plant, that principals relied entirely on PTAs for maintenance funding, and that teachers routinely improvised instructional materials because proper equipment was unavailable. These findings highlight the informal and reactive character of maintenance governance that is also evident in Cameroon.

Okafor (2003) evaluated school plant adequacy, utilisation, and maintenance in Idemili North Local Government Education Area in Nigeria. The study found that students were not expected to replace equipment they damaged through carelessness, that management boards had not employed dedicated store officers, and that no overarching national maintenance policy existed. A recommendation for educational authorities to conduct regular school plant assessments applies with equal force to the Cameroonian context.

Ebimura (2021) took a different angle, examining school plant maintenance and student academic performance in Bayelsa State, Nigeria. The study found a clear positive relationship: maintained ICT buildings enabled more effective participation in ICT learning, and consistent library maintenance made current materials reliably available to students. This established that maintenance is not merely a physical matter but an academic one, reinforcing the theoretical position that maintenance quality is a direct input into educational effectiveness.

Wanjiku (2013) examined the availability and utilisation of educational resources in Kenyan secondary schools and found that library services were largely inadequate, laboratory utilisation was impeded by poor equipment, and government funding was insufficient to sustain maintenance. The study confirms that maintenance deficiency in African secondary schools is not a problem specific to Cameroon; it reflects a broader regional pattern driven by structural underfunding.

Baradan (2021) studied school plant planning and utilisation in relation to academic performance in Ikungi District, Tanzania, and found that schools operating in conducive physical environments consistently produced stronger academic results. Where facilities were insufficient, pupils' interest in learning deteriorated. The study attributed facility shortages primarily to inadequate government funding, pointing to a structural driver of maintenance failure that transcends national boundaries and is deeply familiar in the North West Region.

These studies point to a consistent and cross-national pattern: school plant maintenance in public secondary schools across Sub-Saharan Africa is systematically inadequate. What none of these studies has done is test, with statistical rigour, whether rural and urban schools within a single region differ in the level of that inadequacy. This study does exactly that.

METHODOLOGY

Research Design

A quantitative descriptive survey design was employed. This approach is well suited to studies that aim to describe existing conditions across a large population and to compare defined groups without any manipulation of variables (Ali, 2006). All data in this study were drawn from a structured questionnaire, enabling numerical measurement of teacher perceptions of school plant maintenance in rural and urban settings and statistical comparison between them.

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Area of Study

The study took place in the North West Region of Cameroon, which is divided into seven administrative divisions: Boyo, Bui, Menchum, Mezam, Momo, Ngoketunjia, and Donga Mantung. The urban stratum comprised divisional and regional headquarters, including Bamenda and Kumbo. Sub-divisional communities made up the rural stratum. All seven divisions were included in the sample to ensure regional representativeness.

Population and Sample

The target population was 1,031 teachers across public secondary schools in the seven divisions. Systematic random sampling was used to select 280 teachers for the study. After administration, 262 questionnaires were successfully retrieved and used in the analysis: 166 from urban schools and 96 from rural schools. The sampling approach maintained proportional representation across both divisions and school location types, and all respondents were teachers with direct working experience of school plant conditions in their institutions.

Instrumentation

The School Plant Management in Public Secondary Schools Questionnaire (SPMPSS) served as the sole data collection instrument. This is a structured 4-point Likert-scale questionnaire, with response options ranging from Strongly Agree (SA = 4) to Strongly Disagree (SD = 1). For the purposes of this study, only Cluster C was used, comprising five items that specifically addressed school plant maintenance: (i) whether teachers carry out regular repairs of damaged facilities and equipment; (ii) whether they perform routine servicing of school facilities; (iii) whether maintenance units are established to monitor the school plant; (iv) whether students are required to replace equipment damaged through carelessness; and (v) whether proper supervision is exercised to detect areas of the plant requiring attention.

Validity and Reliability

The questionnaire was validated across three dimensions. Face validity was assessed by two Educational Leadership supervisors who reviewed item clarity, adequacy, and alignment with the study's focus. Content validity was established using a Content Validity Index (CVI) of 0.95, calculated from the proportion of items rated as highly relevant by the expert reviewers. Construct validity was confirmed through pilot testing with 5 principals and 10 teachers in Mezam Division. Test-retest reliability for Cluster C, computed using SPSS, yielded a coefficient of r = 0.132. Although this falls short of conventional thresholds, it is attributable to the highly variable and context-sensitive nature of maintenance conditions across schools in the region, where standardisation of maintenance practices is essentially absent. The robust validity procedures and the large sample size partially offset this limitation.

Data Collection

The researcher personally administered the questionnaire at each school using the Direct Delivery Technique (DDT), remaining on site while participants completed the instrument and collecting it immediately afterwards. Of 272 questionnaires distributed, 262 were returned and usable, representing a retrieval rate of 96.3%. This rate is sufficiently high to support confidence in the representativeness of the final dataset.

Data Analysis

Data were analysed in three stages using SPSS version 25.0. In the first stage, descriptive statistics — including frequencies, percentages, and mean scores — were computed for each questionnaire item. In the second stage, the Pearson Product Moment Correlation Coefficient (r) was calculated for Cluster C to determine the overall level of school plant maintenance, using a three-band classification scale: 0.00 to 0.33 = Low; 0.34 to 0.67 = Moderate; 0.68 to 1.00 = High. In the third stage, an independent-samples two-tailed t-test was run to test the null hypothesis at $\alpha = 0.05$ with df = 190. The decision rule applied was: reject H_0 if t-computed exceeds t-critical (1.960); retain H_0 if t-computed falls below t-critical. The hypotheses tested were:

- **H_0:** There is no significant difference in the level of school plant maintenance between rural and urban public secondary schools in the North West Region of Cameroon.
- **H_1:** There is a significant difference in the level of school plant maintenance between rural and urban public secondary schools in the North West Region of Cameroon.

RESULTS

Level of School Plant Maintenance

Table 1 presents teacher responses on all five maintenance items in urban and rural schools. Both the urban overall mean (1.36) and the rural overall mean (1.41) on a 4.0 scale fall well below the midpoint, confirming that maintenance practice is rated as low in both settings. In urban schools, the most poorly rated item was Item 3, which addressed the establishment of formal maintenance units (mean = 1.27), suggesting that institutional structures for maintenance are almost entirely absent. In rural schools, the weakest item was Item 5, which concerned supervisory oversight of school plant to identify areas needing attention (mean = 1.31), indicating that even informal monitoring is rarely carried out. Across all five items in both settings, Strongly Disagree was the dominant response category, pointing to a systemic rather than situational breakdown in maintenance practice.

Table 1: Mean Responses of Teachers on School Plant Maintenance in Urban and Rural Schools

Questionnaire Item	**Urban Schools**					**Rural Schools**				
	SA	**A**	**D**	**SD**	**Mean**	**SA**	**A**	**D**	**SD**	**Mean**
1. Teachers carry out regular repairs of damaged facilities and equipment to enhance smooth learning.	03	18	34	119	**1.45**	05	05	20	56	**1.46**

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2. Teachers carry out routine servicing of school facilities and equipment.	10	05	18	141	**1.33**	02	04	21	69	**1.35**
3. Teachers establish maintenance units to monitor school plant facilities.	02	07	10	155	**1.27**	16	10	06	74	**1.35**
4. Students are asked to replace equipment damaged through carelessness.	11	16	12	135	**1.44**	08	08	06	74	**1.43**
5. Proper supervision of school plants to detect areas needing attention.	10	06	30	128	**1.46**	04	06	06	80	**1.31**
Overall Mean (x̄)	**1.36**					**1.41**				

Source: *Field Data (Author, 2026). SA = Strongly Agree; A = Agree; D = Disagree; SD = Strongly Disagree. Scale: 4.0.*

Pearson Correlation Analysis

Table 2 presents the Pearson Product Moment Correlation results for school plant maintenance in both school settings. The r-xy computed value of 0.132 falls within the 0.00 to 0.33 range, confirming that the level of school plant maintenance is Low in both rural and urban public secondary schools in the North West Region. This outcome is consistent with the low mean scores reported in Table 1 and further reinforces the picture of uniform maintenance deficiency across both settings.

Table 2: Pearson Product Moment Correlation Analysis of School Plant Maintenance Levels

Variable	N	df	r-xy Computed	Maximum Value	Level
School plant maintenance — rural schools	96	94	**0.132**	1	**Low**
School plant maintenance — urban schools	96	94			

Source: *Field Data (Author, 2026). Level classification: 0.00–0.33 = Low; 0.34–0.67 = Moderate; 0.68–1.00 = High. α = 0.05.*

Hypothesis Testing

Table 3 reports the results of the independent-samples t-test used to test the null hypothesis. At a 95% confidence level with α = 0.05 and df = 190, the t-computed value of 1.909 is lower than the t-critical value of 1.960. Following the decision rule, the null hypothesis is retained. There is no statistically significant difference in the level of school plant maintenance between rural and urban public secondary schools in the North West Region of Cameroon (p > 0.05). Schools in both settings display equally low maintenance levels.

Table 3: Independent-Samples t-test on School Plant Maintenance in Rural and Urban Schools

Group	N	Mean	SD	df	t-computed	t-critical (α = 0.05)	Decision
Urban	96	11.51	0.266	190	**1.909**	1.960	**Retain H_0**
Rural	96	11.11	0.301				

Source: *Field Data (Author, 2026). Two-tailed test; α = 0.05; 95% confidence level; df = 190.*

DISCUSSION

Equally Poor Maintenance Across Both Rural and Urban Settings

Perhaps the most arresting finding of this study is that school plant maintenance is uniformly low in both school settings, with no statistically significant difference between them (t = 1.909, p > 0.05). Urban and rural schools recorded overall means of 1.36 and 1.41 respectively on a 4.0 scale, and both produced a Pearson correlation of r = 0.132 — squarely within the Low band. This uniformity directly challenges the widespread assumption that urban schools are better managed because they enjoy greater resource access. When it comes to maintenance, the data tell a different story: the disadvantage is evenly distributed.

This finding resonates with Nwankwo (2007), whose survey of secondary school buildings in Anambra State, Nigeria found that approximately 75% were in very poor condition, with the cause identified as systemic maintenance failure rather than any location-specific factor. Ejikeme (2000) similarly found that schools across different settings in Onitsha Education Zone shared a common pattern of absent maintenance staff, heavy reliance on PTA support, and reactive rather than preventive maintenance governance. Okafor (2003) confirmed that maintenance responsibilities were poorly defined and inconsistently discharged regardless of the type of school. The current study extends this pattern to Cameroon's North West Region and, importantly, provides the statistical rural-urban comparison that previous studies lacked.

The item-level analysis adds further texture to this finding. The lowest-scoring item in urban schools was the establishment of maintenance units (mean = 1.27), pointing to the near-complete absence of formal institutional structures for maintenance. This is consistent with Asiabaka (2008), who observed that school buildings across West Africa frequently receive no sustained management attention after they are handed over to school

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authorities, with some structures going decades without renovation. The overwhelming prevalence of Strongly Disagree responses across all five items in both settings signals not merely occasional lapses in maintenance but the near-total absence of maintenance as a practised institutional function.

The Behavioural Science Theory (Ukeje et al., 1992) provides an explanatory framework for this outcome. The theory holds that institutional productivity requires the alignment of three elements: the man, the job, and the social setting. Where the social setting, meaning the physical environment of school buildings, equipment, and grounds, is allowed to deteriorate, the conditions that make effective performance of the job possible are also undermined. The fact that both rural and urban schools share this deterioration points to a system-wide failure in the integration of these elements, rather than to a locational disadvantage that one setting experiences more acutely than the other.

Why the Difference Is Not Significant

The retained null hypothesis deserves analytical attention rather than dismissal. Several structural factors converge to produce equally poor maintenance outcomes across both settings. First, government funding for school maintenance is insufficient throughout the region, and this insufficiency is not differentiated by location. As Bamide (2002) documented, most school managers lack formal maintenance knowledge and default to haphazard, reactive approaches simply because planned maintenance is not budgeted for at the institutional level. Peretomode (2001) confirms that schools across Nigeria, and by implication Cameroon, tend to default to emergency or no-maintenance approaches when preventive maintenance provisions are absent from the school budget. This structural problem applies with equal force in Bamenda as it does in Noni.

Second, the PTA serves as the primary alternative to government funding for school maintenance in both rural and urban Cameroonian schools, but its capacity is limited in both settings. Urban PTAs may generate more revenue through larger enrolments and higher parental income, but they also face proportionally greater infrastructure demands and a broader set of competing priorities. Rural PTAs are smaller but face equally unmet maintenance needs relative to their resources. The net result is that neither setting manages to generate sufficient maintenance funding through community channels.

Third, dedicated maintenance personnel are absent in schools across both settings. Ejikeme (2000) documented this problem in Nigeria, finding that schools routinely lacked store officers or maintenance staff and left the principal to manage plant matters without specialist support. Okafor (2003) confirmed that post-primary management boards consistently failed to employ dedicated maintenance officers. In the North West Region, principals in both rural and urban schools appear to face the same constraint.

Through the lens of Herzberg's Two-Factor Theory (Herzberg et al., 1959), the physical school environment constitutes a hygiene factor whose deterioration generates dissatisfaction among staff and students. The absence of a significant rural-urban difference in maintenance levels suggests that Herzberg's hygiene deficit operates at the system level here: both settings fall below the minimum threshold of environmental quality required for job satisfaction and effective learning. Addressing this requires systemic action that reaches both settings simultaneously, rather than a targeted intervention focused on one.

What Uniform Deficiency Means for School Effectiveness

The literature consistently establishes that school plant maintenance and school effectiveness are closely linked. Ebimura (2021) demonstrated that maintained ICT facilities directly enabled more effective student participation in ICT learning, while consistent library maintenance kept current materials accessible for study. Baradan (2021) found that schools with conducive physical environments produced stronger academic outcomes, and that facility shortages reduced pupils' interest in learning. Wanjiku (2013) confirmed that unmaintained libraries and laboratories constrained teaching and learning across school types in Kenya. The Plant Maintenance Resource Center (2007) framed this connection in institutional terms, arguing that facilities maintenance directly affects the physical, educational, and financial foundation of the school organisation. When these findings are placed alongside the present study's results — both urban and rural schools recording uniformly low maintenance levels — the implication is sobering. School effectiveness is not merely impaired in pockets of disadvantage across the North West Region; it is systemically undermined across the entire public secondary school landscape. The absence of a significant rural-urban difference in this context does not offer comfort. It signals that the problem is universal in scope and that universal solutions are required.

CONCLUSION AND RECOMMENDATIONS

This study set out to compare the level of school plant maintenance between rural and urban public secondary schools in the North West Region of Cameroon using a quantitative descriptive survey design. Questionnaire data from 262 teachers across seven administrative divisions showed that maintenance levels were uniformly low in both urban schools (mean = 1.36; r = 0.132) and rural schools (mean = 1.41; r = 0.132). The null hypothesis was retained ($t = 1.909 < t\text{-critical} = 1.960$, $df = 190$, $p > 0.05$), confirming that no statistically significant difference exists between the two settings. Both are equally and uniformly deficient in school plant maintenance, a finding that challenges location-based explanations of facility neglect and instead points to structural, system-wide causes rooted in chronic underfunding, absent maintenance governance, and the lack of dedicated maintenance personnel in public secondary schools across the region.

On the basis of these findings, the following recommendations are offered:

Government and the Ministry of Secondary Education: A dedicated, ring-fenced budget line for school plant maintenance should be incorporated into annual allocations to all public secondary schools in the North West Region, applicable to both rural and urban settings. The prevailing default to emergency or no-maintenance approaches must be replaced by a structured preventive maintenance policy backed by adequate and predictable funding.

Regional Delegation of Secondary Education: Regular capacity-building workshops for school principals should be organised across both rural and urban schools. These workshops should address maintenance planning, budgeting, and the practical application of preventive, corrective, and predictive maintenance approaches. Because deficiencies are equally distributed, neither setting should be excluded from such training.

School Principals and Management Boards: Formal school plant maintenance committees should be established in each school, comprising designated teachers, custodial staff, and student representatives. Annual maintenance budgets should be prepared, termly inspection schedules

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implemented, and records of all repairs and replacements maintained. These committees should report to both the SMB and the PTA to ensure accountability.

Parent Teacher Associations: PTAs in both rural and urban schools should place school plant maintenance on their standing agendas and ring-fence a fixed proportion of annual levies specifically for maintenance purposes. Where parents possess relevant technical skills, community-based maintenance programmes should be developed as a practical complement to formal institutional efforts.

Future Research: Subsequent studies should examine which specific maintenance practices most strongly predict student academic performance in the North West Region, and should assess the cost-effectiveness of different maintenance approaches, particularly preventive versus emergency maintenance. Longitudinal research tracking maintenance outcomes before and after targeted policy interventions would also provide valuable evidence for policymakers evaluating reform efforts.

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