

Effective Maintenance of Physical facilities in Secondary Schools Bauchi State, Nigeria

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Abstract. This study investigated the effectiveness of maintenance of physical facilities in Bauchi State Secondary Schools, Nigeria. The study adopted a descriptive research design populated with Principals, vice principals, and Maintenance Officers, numbering 72. The samples were based on twenty-four Senior Secondary Schools, derived through stratified random sampling techniques based on the senatorial districts using SPSS Software, Version 23. Statistical methods used in analysing the data include percentage, mean, standard deviation, and independent t-test statistics. Results show poor maintenance culture in public schools, which implies that the physical facilities are seldom maintained. Funding was part of the major problems that hindered the maintenance of the school facilities. It was recommended that there is the need for a thorough understanding of the practical principles and practices of managing school physical facilities by the school administrators in secondary schools to enhance facilities' lifespan and ensure maximal usage, which will guarantee optimal efficacy in the utilisation of facilities in the long run.

Keywords: Effective; Maintenance; Physical Facilities; Secondary Schools.

INTRODUCTION

Education is an indispensable tool for personal and social development. Many people view education as a good investment for national development due to the quality of human resources produced for economic growth using the right mix of inputs. Facilities management is an integral part of the overall management of the school. The actualisation of these goals and objectives of education requires the provision of maximum utilisation and appropriate management of these facilities [9]. Furthermore, advances in science and technology necessitate that the school manager adopts modern facilities management methods to maintain the facilities for a conducive atmosphere for teaching and learners [14]. This will improve the quality of teaching and learning.

School facilities constitute the significant components of direct and indirect action elements in the learning environment. Several studies have shown a close relationship between the physical environment and students' academic performance. Authors [14, 8] reported that the "quality of education that children receive bears direct relevance to the availability or lack of physical facilities and overall atmosphere in which learning occurs". The school facilities consist of buildings and equipment for academic and non-academic activities, areas for sports and games, landscaping, farms and gardens, including trees, roads and paths [1]. Others include furniture and toilet facilities, lighting, acoustics, storage facilities and packing, security, transportation, ICT, cleaning materials, food services and special facilities for the physically challenged persons [1]. These facilities play a pivotal role in actualising

the educational goals and objectives by satisfying the physical and emotional needs of the school's staff and students.

According to [12] the committee that was set up to look into the reasons behind rotting in Zamfara schools came out with the following findings: most boarding schools have no beds for students, and where there are, students sleep in triple-decker beds due to lack of space. And the results also revealed that the condition was awful as some rooms have cracked walls, no lockers for students, most ceilings in both classrooms and hostels are sagging, and doors and windows are broken. There were also poor sanitary conditions in most schools and bad stinking toilets. The toilet facilities in the state are grossly inadequate and are of poor quality, and the available toilets are substandard, with most collapsing after their construction.

Author [4] stated that utilisation is the degree or extent to which an item has been put into practical usage. There are various degrees of utilisation: non-utilisation, under-utilisation, maximum utilisation, optimum utilisation and over-utilisation. Non-utilization occurs when a facility is not put into use at all. When a facility is not used at its total capacity, underutilisation occurs. There is over-utilisation when a facility is used more than its capacity. These degrees of utilisation constitute a waste of resources and are counterproductive. On the other hand, maximum utilisation occurs when facilities are put into practical usage according to primary objectives. Optimum utilisation occurs when facilities are used for many purposes by the school and community members. Resources put into maximum and optimum usage is not wasted. Instead are likely to enhance the achievement of educational objectives [4].

Facilities tend to depreciate as soon as they are provided and used. Therefore, maintenance needs to be done through repair and servicing components to restore their physical condition and sustain their working capacity. Maintenance enhances performance and durability and prevents wastage. Maintenance is categorised as preventive, corrective, breakdown and shutdown maintenance services [4].

The phenomena that some schools have surplus facilities and others lack them indicates poor planning. Author [9] reported that physical facilities problems emerged during successful enrollment. The school facilities seem to affect learning,

which is hard to measure indirectly. The population of students has continued to grow every year at the expense of the only available physical facilities for their usage. This was evident in the Teacher Registration Council Nigeria (TRCN) release of 2006/2007 enrolment for Nigerian secondary schools, revealing that secondary schools' figures grew from 10,608 in 2006 to 13,462 in 2007 [7, 13]. This indicates that the population of students, teachers and other personnel also increased in the schools, a situation where greater demands would be mounted on the available facilities. Similarly, in the study conducted [3] on the Universal Basic Education in Nigeria, it was established that school facilities were inadequate or not available at all. However, there has been a consensus among scholars, researchers, educational planners and administrators that most of the existing physical facilities in our secondary schools are in a state of disrepair [8].

In the same vein, like what operates in the industrial sector, ensuring that the existing physical facilities in the schools are utilised and maintained is imperative and incumbent on the school administrators and the staff (both teaching and non-teaching). According to [6], the school system needs infrastructure investments and improvements resulting from growth in student population, compliance with class size standards, actual wear and tear, neglect, age of the structure, state and federal mandates and technology [7].

Beyond the utilisation variable, the researcher observed further that some facilities were dilapidated, constituting themselves into a death trap that usually affects classroom pedagogy convenience. The above scenario is subjective to low maintenance culture [2]. Therefore, on the strength of these observations, therefore; this research intends to empirically investigate the extent of physical facilities' effective maintenance in Bauchi State Secondary Schools. Since Educational conditions and needs are constantly changing, the policy of developing school building programmes should be a continuous one and should be recognised in the continuing development of the teaching-learning process. A study of physical facilities and equipment in secondary schools in Bauchi State and the maintenance culture of these facilities has become necessary.

According to the National Policy on Education, secondary education aims to prepare individuals for good living and higher education. Therefore, school physical facilities are the life wire of any

institution to carry out training within the organisations. The supply in quality and quantity and their utilisation remain essential in school plan maintenance, such that the life span of these facilities is guaranteed if given due consideration. Existing literature, document analysis, and physical observations of school plants in some pilot schools suggested that school facilities directly link teaching and learning are overused and/or underused [6]. They observed that most schools' classrooms were inadequate in decency, space, ventilation, and insulation. The incinerators and urinals were not conveniently replaced, and most schools were poorly maintained.

Similarly, [5] reported that even if the educational curriculum is sound and well operated while the school facilities are in disrepair and poorly managed, teaching and learning activities will be harmful. In a nutshell, the resultant effects of these deteriorating conditions and poor maintenance of school physical facilities could be threats to school management and students' academic performance. To this end, this researcher focuses on finding out the effective maintenance of physical facilities in Bauchi State Secondary Schools, Northeastern Nigeria.

The study *aims* to determine the maintenance culture of physical facilities in Bauchi State Secondary Schools, Nigeria. Specifically, the objective of the study is to:

1. Identify the state of school facilities in terms of availability, adequacy and functionality for effective teaching and learning,

2. Maintenance culture of rural schools as compared to that of their urban counterparts

METHODOLOGY

The study adopted these methods to achieve the objective using research questioners and hypotheses.

Research Questions. The following research questions guided this study:

1. Are there adequate functional facilities for teaching and learning in public senior secondary schools in Bauchi State?
2. What is the Maintenance culture of rural schools compared to their urban counterparts?

Hypotheses. The null hypotheses were tested at a 0.05 level of significance using Statistical Package for the Social Sciences (SPSS) Software Version 23. H_0 means there is no significant difference between the maintenance cultures of rural schools compared to that of their urban counterparts.

RESULTS AND DISCUSSION

The stated research questions did the analysis and hypotheses tested for the study [11, 10].

Data Analysis and Interpretation. Table 1 presents the analysis of facilities in public senior secondary schools in Bauchi State, Nigeria.

Table 1 – Adequacy of Facilities in Public Senior Secondary Schools in Bauchi State

Facilities	Total No. of Students	No. of schools	Total No. of Requirement	Total No. Available	Short fall	Remarks
Laboratories	17,030	24	173	84	89	Inadequate
Computer	17,030	24	44	19	25	Inadequate
W/shop	17,030	24	45	17	28	Inadequate
Classroom	17,030	24	442	392	50	Inadequate
Chalkboard	17,030	24	465	345	120	Inadequate
Exam Halls	17,030	24	41	18	33	Inadequate
Dining Halls	10,400	16	14	8	6	Inadequate
Libraries	17,030	24	46	23	23	Inadequate
Toilets	17,030	24	485	397	88	Inadequate

The Table 1 revealed that Bauchi State Secondary Schools are operating with facilities that are grossly inadequate for an effective teaching/learning process meant for 17,030 students

enrolled in the various programmes of the sampled schools. Furthermore, the Table disclosed that various short-falls exist for different facilities (Laboratories, computers, Workshops and Exam-

ination halls) meant for teaching/learning purposes. This situation calls for concern to improve the effectiveness of the Bauchi Schools' learning environment.

Table 2 presents the facilities culture of rural schools compared to their urban counterpart.

Table 2 – Facilities Maintenance Culture of Rural Schools as Compared to their Urban Counterparts

Location	No of Students Enroll	No of Schools	Mean Maintenance	Remark General
Urban	9830	12	2.6	Seldom Maintenance
Rural	7200	12	2.5	Seldom Maintenance

From the analysis indicated in Table 2 above, the schools in Bauchi State appear to have similar maintenance cultures for both rural (2.6) and urban (2.5) locations. This means that Bauchi Schools seldom maintain their facilities irrespective of their sites.

Hypotheses one (H_{01}) revealed no significant difference between the maintenance cultures of rural schools and that of their urban counterparts, as presented in Table 3.

Table 3 – Mean(\bar{X}), Standard Deviation (SD) and Independent t-test (t) of the Differences Between Maintenance Culture of Facilities in Rural and Urban Schools

Comparing Variables	N	\bar{X}	SD	t	df	Decision
Rural Schools	8	418.8	48.53	1.04	22	Rejected
Urban Schools	16	861.25	439.15			

Results in Table 3 revealed that the calculated variable for both rural schools ($X=418.8$) and urban ($X=861.25$) is more than the critical value (1.04) at 22 degrees of freedom (df) for the hypothesis, which indicates a significant difference between the maintenance cultures of rural schools as compared to that of their urban counterparts. Therefore the null hypothesis is rejected, and its alternative, which indicates no significant difference between the maintenance cultures of rural schools as compared to that of their urban counterparts, is accepted

CONCLUSIONS

Adequate and appropriate physical facilities are critical and indispensable in the educational process. Apart from the fact that they lead to goal attainment, their presence in the required number and their adequacy help the teachers to carry out their designated responsibilities. However, it needs to be richly stocked with necessary physical facilities; it is another thing for such facilities to be effectively utilised and maintained. The organisation gains when the existing physical facilities are maximally used and effectively maintained to keep or restore their longevity. Based on the results of the data analysis, it was concluded that the maintenance culture in secondary schools is poor and not regularly done. Also, the funding is a significant problem inhibiting against proper maintenance of school facilities.

Government should minimise the provision of classroom blocks in the rural areas and increase the same in the urban areas due to the continuous increment in the enrollment of students compared to the rural areas. Adequate attention should always be given to school physical facilities maintenance by the governments, administrators, teachers and students.

Conflict of interest

The authors declared that there is no conflict of interest in this work.

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