



PRINCIPALS' SCHOOL PLANT MANAGEMENT AND ACADEMIC PERFORMANCE OF BIOLOGY STUDENTS IN PUBLIC SECONDARY SCHOOLS IN UYO SENATORIAL DISTRICT, AKWA IBOM STATE

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ABSTRACT

This study investigated the relationship between Principals' School Plant Management and Academic Performance of Biology students' in Public Secondary Schools in Uyo Senatorial District of Akwa Ibom State. The population of the study comprised all principals, and 18,573 SS2 students. However, teachers in the study area were involved in the study as they were used to rate principals ability to manage school plant. Correlational design was adopted. To guide the study, three research questions and three null hypotheses were formulated. Stratified random sampling technique was used to select 281 teachers and 371 SS2 Biology students as respondents for the study. Two-researchers-developed-instruments tagged School Plant Management Questionnaire (SPMQ) and Students' Achievement Test in Biology (SATB) were used to collect data needed for the study. The instruments were validated by experts in measurement and evaluation. The reliability of the two instruments was established using randomly selected members of the population who did not take part in the study. The data obtained was analyzed using Cronbach alpha technique and a reliability co-efficient of .801 and .803 was obtained; The data were analyzed using Simple and Multiple Regression Analysis. The formulated hypotheses were tested at .05 level of significance. Findings revealed that: There is significant relationship between management of instructional facilities, circulation space, and academic performance of Biology students. The result also shows that there is no significant relationship between management of recreational facilities and academic performance of Biology students.. This study therefore concludes that systems approach should be instituted by principals in the management of school plant components under review to improve on academic performance of students. It is recommended among others that, Education Board, Ministry of Education, Institutional planners, and all stakeholders in secondary education should adopt effective and sustainable strategies to ensure adequate provision, utilization, maintenance and management of school plant in the secondary system.

Keywords: Principals, School plant, Management, Academic performance, Public secondary schools.

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Contribution/ Originality

This study uses contributes in the existing literature on the theoretical concept of school plant management.

1. INTRODUCTION

The democratization of education in the country has led to a remarkable increase in the number of schools all over the nation. Thus secondary education in Nigeria has witnessed continuous increase in students' yearly enrolment. With the number of secondary school rising from 400,000 in 1970 to 6 million in 2007 (Source: United Nations Educational Scientific and Cultural Organization (United Nations Educational Scientific and Cultural Organization (UNESCO). Institute for Statistics, 2013). Students' enrolment has also increased accordingly from 3,807,755 in 1985 to 6,536, 038 in 2006 (Mathew, 2013). Also the percentage of enrolment into secondary education has increased as follows 2004 - 34.44%, 2008 - 35.09%, 200 - 39%, and 2010 - 44% (Clark and Ausukuya, 2013). Expectedly, this increment weighs heavily on the available facilities, equipment and material resources with attendant effects on students' academic performance. Nigeria, like other nations of the world has an obligation to prepare her children and youth for life as adults in a world that is characterized by rapid social, economic and technological changes. The federal and state governments have invested huge resources in setting up secondary educational institutions as it is critical to the education of the child, being the bridge between primary and tertiary education. The development, maintenance and operation of these institutions of learning is an important aspect of public schools administration in the country.

Akpan (2003) opined that the environment, facilities, equipment and building constitutes school plant. According to Adeboyeje (2000) the school facility consist of not only the physical structure and the variety of building systems, such as mechanical, plumbing, electrical and power, telecommunications, security, and fire suppression systems. It also includes furnishings, materials and supplies, equipment and information technology, as well as various aspects of the building grounds, namely, athletic fields, playgrounds, areas for outdoor learning and vehicular access and parking.

School plant management therefore involves a number of on-going and related activities-determining the need for school plants, educational programme planning, school facility or building design, building construction, furnishing and equipping the school, school plant operation, utilization and maintenance and school plant, modernization or renovation if and when the need arises.

A number of studies have shown that many school systems are plagued by decaying buildings that threaten health, safety and learning opportunities of students. Many researches have linked students' achievement and behaviour to physical building and overcrowding. Bulama (2000) identified poor state of infrastructure in school as one of the principal factors militating against the effective academic achievement in secondary school in South West Nigeria. Thus, modern school requires suitable classrooms, libraries, laboratories, recreational facilities, assembly hall,

school farm, staff rooms, offices, vehicles etc for the comfort and conveniences of both staff and students. The nature, condition, adequacy and relevance of plant have direct impact on the teaching-learning process. It has been a long held assumption that curriculum and teaching only have impact on learning, but it is now becoming apparent that the physical condition of the school can influence students' achievement. This is commonly measured by continuous assessment or examinations which include procedural knowledge such as and kilos or declarative knowledge such as facts.

Many investigations have shown that secondary school students are exhibiting dwindling interest in science (Esiobu, 2005). Science has been regarded as the bedrock on which modern technological breakthrough is built. Most countries the world over, especially developing countries like Nigeria are striving hard to develop technologically and scientifically. Science comprises the basic disciplines such as biology, physics, chemistry and mathematics. Bassey (2002) opined that science is resource intensive, and in a period of economic recession, it may be difficult to find some of the electronic gadgets and equipment for its teaching in schools. If the quality of school plant does not meet the required standard or the condition deteriorates, and there is no moral support needed by teachers to implement an excellent curriculum, it may have some negative consequences on the teaching and learning process, as well as on the staff and students.

1.1. Statement of the Problem

Public secondary schools in Nigeria are observed to be faced with combined challenges of deteriorating school plant, out-of-date design and capacity utilization pressures. The effects of these deteriorating conditions and poor maintenance of school infrastructure are threats to school management, curriculum delivery and students' academic performance. Many studies have revealed that students' academic achievement lags in shabby school buildings, poor or ill-equipped science laboratory and technical workshops, inadequate and poorly maintained instructional facilities and overcrowding. Science has been regarded as the foundation and key to technological development of the modern world. Nigeria as a developing country is striving hard to advance technologically and scientifically. In spite of the desire for technological advancement, coupled with the fact that biology is a vital subject for scientific and technological development, its teaching and learning as well as students' academic performance becomes sources of concern to all stakeholders. The abysmal performance of students in examinations, including persistent mass failure of students in Senior School Certificate Examination (SSCE), conducted by West African Examination Council (WAEC) showed that percentage of students who obtained five credits including English and mathematics in May/June Examination were as follows - 2008-23%, 2009-26%, 2010-24%, 2011-31%, and 2012-39%. Adamolakun (2013) there is increased incidence of drug abuse, cultism, examination malpractices, lateness to school, rudeness to school authority, high rate of indiscipline, absenteeism, stealing, rape etc are daily occurrences in secondary school and has been largely attributed to inadequate and poorly maintained learning facilities.

The current free and compulsory education in Akwa Ibom State has led to increasing demand for education. Thus, there is a big gap in the quality of education resulting from large number of students in crowded classrooms, using inadequate and obsolete equipments and disillusioned teachers. These factors constitute important challenges to the teaching learning process and may prevent the system from achieving the desired secondary education goals. If educational administrators would view the school as a social system, students and the various components of school plant would be seen as inputs that need to be processed to become desired outputs, that would be useful members of the society as well as inputs for tertiary education.

Can effective management of school plant by principals' lead to improved performance of Biology students in public secondary schools?

1.2. Research Questions

To achieve the purpose of this study, the following research questions were raised.

- (1) What is the relationship between instructional facilities management and academic performance of Biology students?
- (2) What is the relationship between circulation space management and academic performance of Biology students?
- (3) What is the relationship between management of recreational facilities and academic performance of Biology students.

1.3. Research Hypotheses

The following research hypotheses were formulated to guide the study.

- (1) There is no significant relationship between instructional facilities management and academic performance of Biology students.
- (2) There is no significant relationship between circulation space management and academic performance of Biology students.
- 3) There is no significant relationship between management of recreational facilities and academic performance of Biology students.

2. METHODOLOGY

The area of the study is Uyo Senatorial District of Akwa Ibom State, Nigeria. The area is made up of nine (9) local government areas. The correlational design was used for the study. The population of the study comprised 18,573 senior secondary two (SS2) students from 86 public secondary schools in Uyo Senatorial District in 2013/2014 school year. However, teachers from public secondary schools in the study area numbering 2813 were used to rate the principals' ability to manage school plant. This was done to avoid bias if principals were allowed to rate themselves. As teachers were used to rate the principals, 281 teachers representing 10% of teachers population and 371 SS 2 students representing 20% of students' population giving a total of 652 respondents constituted the sample for this study. Multi-stage approach was adopted and

stratified random sampling technique was used in selecting schools and respondents from the Local Education Committees (LECs).

Two researchers-developed instruments 'School Plant Management Questionnaire' (SPMQ) and 'Students' Achievement Test in Biology' (SATB) were used for the study. The school plant management questionnaire was sub-divided into five (5) parts according to the constructs of the study on school plant resources. The second instrument, 'Students' Achievement Test in Biology' (SATB) was used in obtaining data for the respondent's academic performance. It contained ten (10) multiple choice objective tests items, each was assigned 2 marks giving a maximum of 20 marks in all.

The two instruments "School Plant Management Questionnaire (SPMO)" AND Students Achievement Test in Biology (SATB) items were face validated by experts in test and measurement in the Faculty of Education, University of Uyo. The language, contents and structure of items were critically examined and necessary corrections and suggestions were made which were effected by the researchers.

Cronbach Alpha analytical method was used to determine the reliability of the instruments. The result showed that the reliability coefficient of (SPMO) was .801 while (STAB) was .803. On the basis of high reliability indices, the instruments were considered appropriate for the study.

The researchers with the help of three research assistants distributed 281 copies of the questionnaire and 371 copies of students' achievement test throughout the selected schools in Uyo Senatorial District. This was done with the approval of the school principals. Respondents were allowed adequate time to fill and return the instruments on the spot.

Simple regression coefficient were used to answer the research questions, while simple and multiple regression analytical method was used in testing the null hypotheses. In testing the null hypotheses, the calculated F and R value were used. The null hypotheses were rejected if calculated F and R- values were greater than the tabulated F and R values. They were retained when the calculated F and R- values were less than the tabulated F and R values at .05 alpha level and at 1 and 650 degrees of freedom (df).

3. DATA ANALYSIS AND DISCUSSION OF FINDINGS

3.1. Results

Hypothesis 1

There is no significant relationship between instructional facilities management and academic performance of Biology students.

Simple regression analytical method was used in testing the hypothesis and summary data shown in Table 1

Table-1. Regressing Performance in Biology on Instructional Facilities

Regressing coefficient	(R)	=	0.4141
	(R ²)	=	0.1715
Adjusted	R ²	=	0.1326
Standard Error		=	4.3834

Analysis of Variance

Source	Sum of Square	df	Mean square	F _{cal}	F _{cri}	Decision at P<.05
Regression	143.80	1	143.80	4.57	3.84	S
Residual	20445		31.46			
Total	20592.8	651				

S = significant at $P < .05$

As shown in Table 1, since the calculated F of 4.57 was greater than the critical F of 3.84 at df 1 and 650, and at 0.5 significant level, the null hypothesis is rejected. Therefore, there is significant relationship between instructional facilities management and students' academic performance in Biology.

Hypothesis 2

There is no significant relationship between circulation space management and academic performance of Biology students. Simple regression analytical method was used in testing the hypothesis and summary data shown in Table 2

Table-2. Regressing Performance in Biology on Circulation Space

Regressing coefficient	(R)	=	0.4989
	(R ²)	=	0.2489
Adjusted	R ²	=	0.2216
Standard Error		=	4.2965

Analysis of Variance

Source	Sum of Square	df	Mean square	F _{cal}	F _{cri}	Decision at P<.05
Regression	146.25	1	146.25	4.45	3.84	S
Residual	21365.50	650	32.87			
Total	21511.75	651				

S = significant at $P < .05$

As shown in Table 3, the null hypothesis is rejected because the computed F of 4.45 was greater than the critical F of 3.84 at df 1 and 650 and at .05 significant level. Therefore there is significant relationship between circulation space management and academic performance of Biology students

Hypothesis 3

There is no significant relationship between management of recreational facilities and academic performance of Biology students.

Simple regression analytical method was used in testing the hypothesis and summary data shown in Table 3

Table-3. Regressing Performance in Biology on Management of recreational facilities

Regressing coefficient	(R)	=	0.1246
	(R ²)	=	0.0155
Adjusted	R ²	=	0.0115
Standard Error		=	3.9438

Analysis of Variance

Source	Sum of square	df	Mean square	F _{cal}	F _{cri}	Decision at P<.05
Regression	51.16	1	51.16	1.69	3.84	NS
Residual	19656.00	650	30.24			
Total	19707.16	651				

NS = Not significant at P < .05

As shown in Table 3, since the computed F of 1.69 was less than the critical F of 3.84 at df 1 and 650 and at .05 significant level, the null hypothesis is retained. Therefore, there is no significant relationship between management of recreational facilities and academic performance of Biology students.

4. DISCUSSION OF FINDINGS

Findings of this study reveal that instructional facilities in most public secondary schools in Uyo senatorial district are dilapidated, obsolete and inadequate to provide the desired qualitative education. Classrooms in most of the schools were inadequate in terms of space, ventilation, decency and insulation from heat, no functional library, poorly equipped laboratories and obsolete instructional materials. The available ones were poorly maintained. These deficiencies constituted a major gap in the teaching learning process thereby affecting students' academic performance which was also poor.

If instructional facilities are viewed as major components of school plant by Principals which, according to General systems theory are inputs in the educational process, adequate attention will be given to them. This findings is in agreement with the findings of [Ayeni and Adelabu \(2011\)](#) who stated that poor condition of the school buildings, crowded classrooms, non-availability of instructional and recreational facilities contributed to poor quality teaching-learning process and the non- attainment of quality education by students in secondary schools.

The result of this study reveals that most public secondary schools in Uyo senatorial district lack adequate circulation space. The school environment is bushy, roads leading to sports fields are weedy, inadequate space for car park, sporting activities and other outdoor games. The few available spaces are cramped with limited ventilation, corridors and stairways are few thereby hindering easy movement. These conditions encourage easy spread of communicable diseases, exposes both students' and staff to attack by commonly found reptiles. This threatens the health, security and safety of learners as well as staff. Subsequently, this would result in illness, accidents and injuries, thereby increasing the rate of absenteeism, reducing effectiveness and efficiency that may deter students' academic performance. This study also reveals that although recreational facilities are useful for physical and psychological development, it does not relate to academic

performance of students' in Uyo senatorial district. Most students' perceive leisure hours as "spare time" and the way they spend it has been influenced by factors such as technological advancement, affluence, globalization, population trends and increased social networking. Since recreation is an essential part of human life that is shaped naturally by individual interest and surrounding circumstances, most students' prefer to spend their leisure hours accessing the internet with mobile phones for activities which they consider beneficial to them than games and/sports, via google and social networks like Facebook, Twitter, 2go, Whatsapp messenger etc. other activities include indoor games like scrabble that is used in exercising the brain and increasing vocabulary power, joining clubs like Boys Scout, Girls Guide, Red Cross Society, Youth Clubs, Drama and Debating Clubs. It is apparent that students' perceive these activities as being more beneficial to them in terms of moral, spiritual and academic development as it enhances their ability to interact with people in social relationship, widen their ideas thereby contributing to their behaviour as cultured individuals and also improve academic performance. A positive school environment creates an optimal setting for teaching and learning, therefore since students' conduct could simply be an extension of the physical environment that surrounds them, school plant should be adequately provided, utilized and maintained to provide a stabilizing force for students' and staff both emotionally and academically. The principals should motivate staff as well as students to imbibe and internalize maintenance culture with respect to the school plant.

5. CONCLUSION

Based on the findings of the study, the following conclusions are drawn.

There is an established significant relationship between management of instructional facilities, circulation space, and students' academic performance. No significant relationship was found between management of recreational facilities and academic performance of Biology students'

In Uyo Senatorial District of Akwa Ibom State, these facilities in most public secondary schools are in a state of disrepair. These deplorable conditions of school plants affect the effectiveness and efficiency of the educational system since they are essential tools for the teaching learning process. Therefore systems approach should be instituted by principals in the management of school plant to improve academic performance of students.

6. RECOMMENDATIONS

Based on the findings of the study, the following recommendations are made:

1. The state government should continue to encourage the support of Parent Teacher Association (PTA), philanthropists and lovers of education in the society in providing and improving the state of instructional facilities in public secondary schools.
2. The principal with the support of Parents Teachers Association, Old Students Association, community based organizations etc should ensure there is adequate

provision of spaces for convenience for both teachers and students in the school to enhance their comfort.

3. The principal should ensure adequate provision and maintenance of recreational facilities in the school. The teachers and students should be encouraged to utilize these facilities considering their contributions to normal growth, development and the enhancement of the teaching learning process.

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