School Plant Provision and Academic Performance of Secondary School Students in Tai and Eleme Local Government Areas, Rivers State

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ABSTRACT
The study investigated the relationship between school plant provision and academic performances of secondary school students in Tai and Eleme Local Government Area of Rivers State. To achieve this purpose, four research questions and four null hypotheses were formulated to guide the study. A survey design was adopted. A sample size of 416 students were randomly drawn from a populations of 1664 senior secondary school (SS II) students of six selected public schools in the area. The reliability of the selected public schools in the area. The reliability of the instrument was established, using test-retest results and correlations computation which yielded a coefficient of 0.71. The data gathered were analyzed using mean rating and standard deviation for the research questions, while Pearson Product Mount correlation was used to analyze the hypotheses at 0.05 alpha level. The results of the analyses showed that a significant relationship exist between school plant provision and academic performance of students in the secondary schools. The conclusion was that school plants are basic necessities in educational system and their provision improves teachers teaching skill and students' academic performance. The study recommended that school building should be designed with adequate space, ventilation, lighting, humidity and temperature. Instructional materials, library facilities and science laboratory should be adequately provided. The study further recommended that school administrators should take the challenge of providing adequate school plant seriously to ensure and sustained higher academic performance.
Keywords: School plant, academic performance, secondary school students.

INTRODUCTION
Globally, education has been considered to be the corner-stone for development. It forms the basis for literacy, skills acquisition, technological advancement and the tool to harness human and material resources towards the achievement of societal goal (FRN, 2013). Education is very important in any given society and Nigeria is not left out. It is a process by which abilities and capacities of individual are developed. These abilities might be physical, emotional, social and intellectual abilities. Secondary education in Nigeria has witnessed continuous increase in students' yearly enrolment, leading to the establishment of more institutions. Expectedly, this increment weighs heavily on the available facilities, equipment and material resources with attendant effects on students' academic performance.
Okafor (2010) identified poor state of infrastructure in schools as one of the foremost factors militating against the effective performance in secondary schools. Ehiametalor (2001) views school plant as operational inputs of every instructional propgramme. Also, Akpan (2003) states that the environment, facilities, equipment and buildings constitute school plant. Thus, modern schools require suitable classroom, librarie recreational facilities, assembly hall, school farm, staff rooms, office etc. for the comfort and convenience of both staff and students. The nature, conditions, adequacy and relevance of

school plant have direct impact on the learning engagement; Mgbodile (2004) defines school plant as the physical expression of the school programmes and activities. It is consciously designed and controlled environment with the aim of achieving instructional objectives within the school. Oyewele (2010) notes that for effective teaching and learning situations, school plant and educational goals should be viewed as being closely interwoven and interdependent. School plant, apart from protecting students from sun, rain, heat and environment has tremendous impact on comfort and safety for everyone within the school premises.

The function of school plant generally is to provide the most suitable environment for effectives teaching and learning. Piaget and Roger cited in Ugbe and Okafor (2015) assert that a supportive and responsive environment, which permits the learners to interact freely with one another and with the subject matter, is best for learning and that in such an environment, students will not need extensive reward or punishment as they learn naturally through their own activity secondary school is the stage of education that follows primary school. Webster (2009) saw secondary school as an intermediary between elementary school and college where general, technical, vocational or college preparatory courses are usually offered. Collins (2003) referred to it as a school for young people, usually between the ages of eleven and eighteen.

Since the academic performance of secondary school students depends partly on the school plant, its provision, management and maintenance are very important. The responsibility of effective school plant management rests on the principal, Post Primary School Board and the teachers. The teacher, according to Aguokogbou (2002) has a crucial role in the curriculum implementation. Ubom (2002) remarked that the teacher is the one to formulate, design, assemble, control, supervise, select, explore, assess, facilitate and manipulate the teaching learning materials. Nwankwo (2014) added that the teacher is the one who translates the curriculum into practice. Thus there are bound to be problems in a system with excellent curriculum and functional school plant but with necessary moral and financial support needed by teachers to implement it.

Mboto (2002) lamented that most secondary schools have dilapidated buildings, broken windows and leaking roofs due to poor maintenance culture. A pilot inspection, through visitation of some of the schools in Tai and Eleme Local Government Area (LGA) confirmed this state of affair. Unfortunately, this situation is usually linked to poor student's performance in examination (Takwate, 2018; Dada, 1987; & Yelkpieri, 2009). Although a close look at public secondary schools in Tai and Eleme LGAs reveal a state of general disrepair, inadequate facilities and equipment, poor maintenance culture, there has not been any imperial study to determine the relationship between school plant provision and academic performance of secondary school students. This study therefore investigated the relationship existing between school plant provision and academic performance of students in the LGAs.

Purpose of the Study

The major purpose of this study is to determine the relationship between school plant provision and academic performance of secondary school students in Tai and Eleme Local Government Areas of Rivers State. Specifically, the study intends to:

1. Determine how instructional materials relate to academic performance of secondary school students in Tai and Eleme Local Government Areas of Rivers State.
2. Determine how literary facilities relate to academic performance of secondary school students in Tai and Eleme Local Government Areas of Rivers State.
3. Ascertain how school building design relates to academic performance of secondary school students in Tai and Eleme Local Government Areas of Rivers State.
4. Examine how science laboratory relates to academic performance of secondary school students in Tai and Eleme Local Government Areas of Rivers State.

Research Questions

The following research question guided the study:

1. How do instructional materials relate to academic performance of secondary school students?
2. How do library facilities relate to academic performance of secondary school students?
3. How does school building design relates to academic performance of secondary school students?
4. How do science laboratory facilities relate to academic performance of secondary school students?

Hypothesis

The following hypotheses were formulated and tested at 0.05 level of significance.

$H0_1$: There is no significant relationship between instructional materials provision and academic performance of secondary school students.

$H0_2$: There is no significant relationship between library facilities provision and academic performance of secondary school students.

$H0_3$: There is no significant relationship between school building design and academic performance of secondary school students.

$H0_4$: There is no significant relationship between science laboratory and academic performance of secondary school students.

METHODOLOGY

The researcher adopted a survey design: the method involved collecting, analyzing and interpreting data across the area under investigation. A sample random sampling technique was used to draw a sample of 416 from a population of 1664 senior secondary year 2 of the six (6) public secondary school in the Local Government Area. A 20 items questionnaire of the Likert type four point scale was used to gather data for the study. The physical plant covered are instructional materials, library facilities, school building and science laboratory. The instrument used was subjected to face validity and reliability coefficient of 0.71 using Pearson product moment correlation statistics. Under the supervision of the researchers, the class teachers were used to distribute and retrieve the questionnaire from the respondent in the schools. The assistance of the class teachers ensured a high return (93%) rate of the completed questionnaire.

RESULTS

The data presentation, analysis and discussions are presented as follows:

Research Question 1: *How do instructional materials provision relate to academic performance of secondary school students?*

Table 4.1: Mean rating and standard deviations on how instructional materials provision relate to academic performance of secondary school students.

N = 46

Item No.	Instructional Materials Provision	SA (4)	A (3)	D (2)	SD (1)	Total	$\bar{X}$	STD	Remark
1.	Enough computer for learning	207 (828)	95 (285)	2 (4)	112 (112)	1229	2.95	1.259	Accepted
2.	Enough charts and pictures	4 (16)	154 (462)	122 (244)	136 (136)	858	2.06	0.856	Rejected
3.	Sufficient audio and visual aids	16 (64)	371 (913)	5 (10)	24 (24)	1211	2.91	0.556	Accepted
4.	Enough chalkboards and marker boards	28 (112)	313 (939)	93 (146)	2 (2)	1199	2.88	0.499	Accepted
				Grand Mean			2.66		

Table 4.1: The grand mean $\frac{\sum \bar{X}}{5}$ = 2.66 and criterion or acceptance mean is 2.50. Since the grand mean (2.66) was greater than acceptance mean (2.50), it was concluded that the provision of instructional materials was related to academic performance of secondary school students. It must be added that the grand mean of 2.66 fells under the region of AGREE.

Research Question 2: *How do library facilities provision relates to academic performance of secondary school students?*

Tables 4.2: Mean rating and standard deviation on how do library facilities provision relate to academic performance of secondary school students.

N = 416

Item No.	Library Facilities Provision	SA (4)	A (3)	D (2)	SD (1)	Total	$\bar{X}$	STD	Remark
6.	Accommodated in a good building	14 (56)	231 (693)	162 (324)	9 (9)	1082	2.60	0.593	Accepted
7.	Well stocked with current and relevant textbooks	40 (160)	281 (843)	89 (8)	6 (6)	1187	2.85	0.589	Accepted
8.	Regular and current magazines and newspapers	28 (112)	313 (939)	73 (146)	2 (2)	1199	2.88	0.499	Accepted
9.	Students taught library use practices to enhance performance	4 (16)	154 (462)	122 (366)	136 (136)	854	2.06	0.856	Rejected
10.	Competent library staff in different subject areas	42 (168)	264 (792)	31 (62)	79 (79)	1101	2.65	1.07	Accepted

Grand mean $\frac{\sum \bar{X}}{5}$ = 2.61   Criterion mean = 2.50

Table 4.2 shows that the grand mean is 2.61 (in the region of AGREE) and the criterion mean is 2.50. The result was that the respondents agreed (concluded) that the library facilities provision related to the academic performance of secondary school students.

Research Question 3: *How does building design relates to academic performance of secondary school students?*

Table 4.3: Mean rating and standard deviation on how the building design relates to academic performance of secondary school students.

N = 416

Item No.	School Building Design	SA (4)	A (3)	D (2)	SD (1)	Total	$\bar{X}$	STD	Remark
11.	Enough number of classrooms provided	48 (192)	342 (1026)	0 (0)	26 (26)	1244	2.99	0.605	Accepted
12.	Classroom sizes are standard	282 (1128)	130 (3900)	0 (0)	4 (4)	1522	3.66	0.532	Accepted
13.	Location of classroom are accessible	340 (1360)	8 (34)	50 (100)	18 (18)	1502	3.61	0.860	Accepted
14.	Classroom are well ventilated	0 (0)	310 (930)	4 (8)	102 (102)	1040	2.50	0.861	Accepted
15.	Buildings are of good conditions	310 (1240)	106 (318)	0 (0)	0 (0)	1558	3.75	0.436	Accepted
	Grand mean						**3.262**		

Table 4.3 shows a grand mean 3.262 (in the region of AGREE) and the criterion mean 2.50. The result showed that the respondents agreed (concluded) that the building design was related to academic performance of secondary school students.

Research Question 4: *How does science laboratory provision relates to academic performance of secondary school students?*
Table 4.4: Mean rating and standard deviation on how the science laboratory provision relates to academic performance of secondary school students.

N = 416

Item No.	Science Laboratory Design	SA (4)	A (3)	D (2)	SD (1)	Total	$\bar{X}$	STD	Remarks
16.	Well equipped biology laboratory	0 (0)	229 (687)	176 (352)	11 (11)	1050	2.52	0.550	Accepted
17.	Well equipped chemistry laboratory	373 (1492)	19 (57)	17 (34)	7 (7)	1590	3.82	0.574	Accepted
18.	Laboratory experiments on better performance	297 (1188)	99 (297)	14 (28)	6 (6)	1519	3.65	0.618	Accepted
19.	Regular practical lessons	2 (8)	231 (693)	175 (350)	8 (8)	1059	2.55	0.545	Accepted
20.	Laboratory consumable are for practical	3 (12)	391 (1173)	11 (22)	11 (11)	1218	2.93	0.367	Accepted
	Grand mean						**3.094**		

Table 4.4 shows a grand mean 3.262 in the region of AGREE) and the criterion mean of 2.50. The result showed that the respondent agreed (concluded) that the science laboratory provision relates to academic performance of secondary school students.

Testing of Hypotheses
Hypothesis 1: There is no significant relationship between instructional materials provision and academic performance of secondary school students.
Table 4.5: Pearson Product Moment correlation analysis of the relationship between instructional materials provision and academic performance of secondary school students

Variables	$\sum X$ $\sum y$	$\sum X^2$ $\sum y^2$	$\sum XY$	df	r-cal	r-crit	Remark
Instructional Material Provision	500	1500					
			1520	414	0.94	0.195	Rejected
Academic Performance	534	1676					

Significant at 0.05 $\propto$ - level.   N = 416

Table 4.5 indicates that the r-calculated value of 0.93 is greater than the critical r-value of 0.195 at 0.05 $\propto$-level with 414 degree of freedom. Hence the null hypothesis is rejected. This implies that there was a significant relationship between instructional materials provision and academic performance.
Hypothesis 2: There is no significant relationship between library facilities provision and academic performance of secondary school students.

Table 4.6: Pearson product moment correlation coefficient analysis of the relationship between library facilities provision and academic performance of secondary school students

Variables	$\sum^1 X$ $\sum y$	$\sum^1 X^2$ $\sum y^2$	$\sum XY$	df	r-cal	r-crit	Remark
Instructional Material Provision	542	1712	1522	414	0.93	0.196	Rejected
Academic Performance	492	147					

Significant at 0.05 ∝ - level.   N = 416

Table 4.6 indicates that the r-calculated value of 0.93 was greater than the r-critical value 0.193 at 0.05 ∝ - level with 414 degree of freedom. Hence, the null hypothesis was rejected. This implies that there was a significant relationship between the instructional materials provision and academic performance.

Hypothesis 3: There is no significant relationship between school building design and academic performance of secondary school students.

Table 4.7 Pearson Product Moment Correlation Coefficient Analysis of the Relationship Between School Building Design and Academic Performance of Secondary School Students.

Variables	$\sum X$ $\sum y$	$\sum X^2$ $\sum y^2$	$\sum XY$	df	r-cal	r-crit	Remark
Building school design	575	1801	1159	414	0.67	0.195	Rejected
Academic Performance	437	1149					

Significant at 0.05 ∝ - level.   N = 416

Table 417 shows that the r-calculated value of 0.67 was greater than the r-critical value of 0.195 at 0.05 ∝ - level with 414 degree of freedom. Hence the null hypothesis was rejected. This implies that there was a significant relationship between the school building design and academic performance.

Hypothesis 4: There is no significant relationship between science laboratory and academic performance of secondary school students.

Table 4.8: Pearson Product Moment Correlation Analysis of the Relationship between Science Laboratory and Academic Performance of Secondary School Students.

Variables	$\sum X$ $\sum y$	$\sum X^2$ $\sum y^2$	$\sum XY$	df	r-cal	r-crit	Remark
Science Laboratory	562	1758	1127	414	0.66	0.195	Rejected
Academic Performance	435	1131					

Significant at 0.05 ∝ - level.   N = 416

Table 4.8 shows that the r-calculated value of 0.66 was greater than the r-critical value of 0.195 at 0.05 ∝ - level with 414 degree of freedom. Hence the null hypothesis was rejected. This implies that there was a significant relationship between the science laboratory provision and academic performance.

DISCUSSION

The study generally revealed that the academic performance of the students has positive relationship with each of the aspects of school plant components, namely the instructional materials, library facilities, school building design and science laboratory provision. This is in agreement with Osahon (1998) who pointed out that instructional materials are needed to develop cognitive areas of knowledge, abilities and skills, which he said were a necessary prerequisite for higher academic achievement. Usoro (2001) states that appropriate instructional materials were needed for effective teaching and learning. She further explains that this takes place more when students hear, see and touch the stimulus experiences.

On library facilities provision, the America Library Association (2007) affirmed that students in schools with good libraries learn more, get better grades and score higher on standardized test results than their peers in schools without library facilities provision. Ozigi and O'cho (2002) held that a well-equipped

library is a store house of knowledge and a centre of learning, not only for teachers but also for the students.

The findings of the study corroborate the claims of Williams in Easthman (2002) that school building design features and components have been proven to have a measurable influence on students' learning. Among the influential features and components, according him, are those impacting on temperature, lightening, acoustics, and age of the buildings. In a study on effect of school building on elementary schools in Lagos State, Sola (2011) confirmed that a significant differences of five percentage points exist in the achievement scores of students in poor buildings when compared with scores of students in excellent buildings. On science laboratory provision and academic performance of students, Nwankwo (2014) finds outs that practical work or experiment by students in school laboratory helps them develop some manipulative and problem solving skills through opportunities offered them on inquiring discovery and practical investigations. By this, students learn to generalize their ways of thinking and expected these to translate positively in their academic performance. Earlier before this, Ekpo (2001) ascertained that interest in science is increased when opportunities for hands on experience are provided and this especially affects their understanding of the subjects.

CONCLUSION
The importance of school plants in the educational system has necessitated the need for the provision and management of their facilities in school. The provisions of school plant have been found to enhance the achievement of school goals, especially the academic performance of students. In Tai and Eleme Local Government Areas of Rivers State, educational facilities in the schools were not adequate and in most cases, the available ones were in the state of general disrepairs. These deplorable conditions in school affected the efficiency and effectiveness of the educational system since they were necessary tools for the teachers and learners. There is therefore the need to ensure that the situations in public secondary schools in Rivers State were improved upon, especially in the areas of adequate funding, provision of facilities and supervision.

RECOMMENDATIONS
On the basis of the findings and conclusions, the following recommendations were specifically proffered:
1.	Schools in Tai and Eleme Local Government Areas should be provided with good and adequate instructional materials. Both hardware and software, such as audio, visual and audio-visual tools should be provided and sustained.
2.	School buildings design features, such as ventilation, space and height of classrooms should be insisting on. Teachers and students should cultivate positive habits in keeping clean and tidy, in both interior and exterior learning places.
3.	Library facilities, laboratory and workshop equipment should be adequately provided and plan should equally be made to improve and sustain them.
4.	Utilization of school facilities should be considered a priority and users of school facilities should be taught on how to use them to improve students' performance.
5.	Teachers should be encouraged to go for in-service training and professional development on how to acquire and integrate new facilities into their instructional tasks. They should always attend workshops and seminars to keep in touch with new research findings in their subject areas, more importantly now that school curriculum has been expanded to accommodate information and communication technologies and vocational courses.

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