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# Infrastructural amenities as Correlate of Academic Performance in Secondary Schools in Rivers East, Nigeria

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***Abstract***
*The study determined the relationship between school basic infrastructural amenities and academic performance of students in Public Secondary Schools in Rivers State East Senatorial District,Nigeria. The study was guided by two specific objectives, two research questions and two null hypotheses. The correlation research design was used. The population of this study was 23,670 Senior Secondary students. The sample size of 1142 respondents were drawn from the population of the study. The multi stage sampling technique was used in this study. The instruments developed by the researcher for data collection were Achievement Tests' Items (ATI) on Biology and English Language and Questionnaire which was titled "Infrastructural Basic Amenities Questionnaire (IBAQ) The instruments IBAQ and ATI reliability were tested using Cronbach Alpha and Kuder Richardson Statistical tool which yielded reliability coefficients of 0.79 and 0.71 respectively. The study used Simple Linear Regression Statistic for data analysis. The R-value was used to answer the rsearchquestions,while the F-value was used to test the null hypotheses at 0.05 level of significance. The findings revealed very high significant extent of relationship between all the variables of Infrastructural Basic Amenities (classroom and science practical equipments) and academic performance of students in the study area. The relationships were significant. The researcher concluded that relationship exist between Infrastructural basic infrastructural amenities and academic performance of students in the study area. Based on the findings of this study, it was recommended that government should specifically allocate funds for erecting adequate classrooms for learning, while the school principals should also ensure they recommend lacked science practical equipments in schools as to enhanceacademic performance of students*

**Keywords:** Infrastructural amenities, Academics performance

## Introduction

Infrastructure is a major element for successful teaching and learning in school, the objective of infrastructure is to boost turnout of students and pupils in every learning setting, improve students' enthusiasm and advance academic performance of students. Infrastructure includes, classroom settings, science equipment tools, , sporting equipment and hygiene equipments among others. It is in classroom setting that transfer of knowledge though teaching and learning is achieved., with science practical tools students get the chance to conduct practicals in science

subjects and disciplines and carryout different projects. Infrastructure is therefore considered as a relevant factor to ensure thriving education in Nigeria. Generally, it is of immense belief that the situation of schools learning setting, specifically the infrastructure has a relevant impact on students' academic performance and success. The amenities that are needed to improve helpful teaching and learning in educational setting consist of adequate electric power and water supply, better information communication and technology system, enhanced movement system, sufficient class room blocks ,library books, science practical (amenities) equipments as with good fittings and games apparatus, The provision of school fittings has high positive pressure on the academic performance which in turn give rise to quality assurance in educational system. Earthman (2002), revealed that suitable classroom erection motivates learner's effectiveness and increase their chances for participating in debate and discussion in classes, also increase good performance of students in schools.

Education does not exist in an empty space but in educational settings with material facilities and with teaching aids used in teaching and learning process. School amenities have a great degree of contribution in the academic performance of students in the educational system. These infrastructures also display the worth of the institution in terms of their personnel or learners, friendliness, protection and relevance.

**Adequate Classroom Erection and Academic Performance of Students**

Classroom has been described as the site, the building itself, and other essential structures, permanent and semi-permanent needed for effective teaching and learning (Amanchukwu & Ololube, 2015). Kennedy (2011) stated that schools need classrooms that possess good ventilation because children have a greater volume of air in proportion to their body weight than adults do. Hence, classrooms that has been embodied with poor designs, positions, and unventilated blocks is capable of blocking air flow in the environment that would cause unhealthy life experience of the students in school. This is because; every classroom erected contains a build-up of carbon dioxide which may cause by human respiration. Knowledge of science indicates that when carbon dioxide levels reach 1000 parts per million, headaches, drowsiness and inability to concentrate ensue. Thus, buildings of the school where there is no free flow of air, incorrect position of the classroom may contribute to students' inability to concentrate which could lead to poor performance as well as achievement in education.

Myhrrold, Olsen and Lauridsen (2006) established that increased carbon dioxide levels in classrooms owing to poor ventilation decreased students' performance in tests and increased students' complaints of health problems as compared to classes with lower carbon dioxide levels. Infrastructural amenities with good aesthetic classroom climate and their well-equipped scence practical tools, could make learning functional (Amanchukwu and Ololube, 2015). With these experiences of good classroom setting, students may learn and benefit maximally in school and perform credibly. Ayodele (2009) reported that resource situation in Nigerian

schools have relationship with students' academic performance. The author explicated that when the resources situation in schools for teaching are inadequate and properly erected, learning gains are perturbed which may lead to low students' academic achievement. Hence, it is anticipated that school classroom proper erection has relationship with students' academic maintenance in secondary schools in the study area.

**Science practical tools and Academic Performance of Students**

As science teaching has peculiar features and a special characteristic which demands special skills, so as the maintenance of its features is the science laboratory. The laboratory is the work place of the science teacher; it is a place where practical activities are planned and carried out. Muhammad (2017) demonstrated that laboratories contains the resources, equipment and apparatus for science teaching ranging from easily consumable supplies to full range of facilities needed for effective teaching and learning of science. According to Adetero (2009), resource maintenance in education to include physical facilities, available space for teaching and learning, materials such as science practical tools like chemical reagents, furniture among others are pertinent for the functionality in education.

On the importance of infrastructural amenities in learning, Moses (2006) reported that the upkeep of materials whether standard or improvised are the backbone of sustainability of experimental work. Dangbin (2008) asserted that efficient maintenance covers practical activities using sufficient facilities that enable learners to acquire cognitive skills such as formulation of hypothesis, making assumption, designing investigations and understanding variable, observing, recording data and so on, which are necessary for engaging in faithful science investigation. Uyoata (2006) opined that the maintenance and sustainability of meaningful learning requires the use of multisensory approach where appropriate instructional recourses are selected and utilized, even in the teaching of science. According to Umeh (2006), the maintenance of material resources are necessary for used in structured facilities to ensure affective teaching and learning such as the laboratories, the classrooms, equipment, supplies, texture materials, audio-victual aids etc. All science laboratories have certain general features and requirements in addition to which each separate science has its own special demand which requires a special laboratory and facilities maintenance (Muhammad, 2017).

**Purpose of the Study**

The purpose of this study was to determine the relationship between Basic Infrastructural Amenities and students' academic performance in secondary schools in Rivers East Senatorial District. Specifically, the study sought to:

1. Determine the relationship between classroom erection and students'academic performance in secondary schools.
2. Determine the relationship between science practical tools and students'academic performance in secondary schools.

**Research Questions**

The following research questions were formulated based on the specific objectives of this study:

1. What is the relationship between school classroom erection and students'academic performance in secondary schools?
2. What is the relationship between science practical tools and students'academic performance in secondary schools?

**Null Hypotheses**

The following null hypotheses were postulated to guide the study, and were tested at .05 levels of significance:

1) There is no significant relationship between classroom erection and students'academic performance in secondary schools.
2) There is no significant relationship between science practical tools and students'academic performance in secondary schools.

**Methodology**

For the purpose of the study to be accomplished, correlation research design was used. The population of the study consist 23670 secondary school students in Rivers State East Senatorial District, Nigeria.

Sample size of 1142 was derived using five percent of the population size. Multistagesampling technique comprising clustering, proportionate and simple random sampling techniques was used in this study. The Researcher designed instruments known as Achievement Tests' Items (ATI) on Biology and English Language and Questionnaire titled infrastructural Basic Amenities Questionnaire IBAQ) which was used for data collection. Cronbach Alpha were used to the instruments IBAQ and ATI reliability which yielded reliability coefficients of 0.79 and 0.71 respectively. Simple Linear regression statistics was used for the study. Specifically, the R-value answered the research questions and F-value tested the null hypothesis at 0.05 level of significance.

**Result and Discussion**

**Research Question 1:** What is the relationship between classroom erection and students' academic performance in secondary schools?

**Table 1: Model summary of relationship between classroom erection and academic performance of students in secondary schools n= *1142***

| Variables | | | R | $r^2$ | Adjusted $r^2$ | Decision |
|---|---|---|---|---|---|---|
| Classroom erection | 13.97 | 2.97 | 0.97 | 0.94(94%) | 0.94 | Very High Positive Relationship |
| Students' academic performance | 16.05 | 3.01 | | | | |

Table 1 shows very high positive relationship between classroom erection and academic performance of students in secondary schools in Rivers East Senatorial District of Rivers State, Nigeria. As in Table 1, the result indicates that, the sample of 1142 gave a Person r-value as 0.97, $r^2$ as 0.94 and the relationship is very high and positive. This entails that with the coefficient of determination ($r^2$) of 0.94, which means 94 per cent of the variation in academic performance of students as the criterion variable that was accounted for by classroom erection as predictor variable and only 6 per cent could be explained by student's academic performance. Nevertheless, the fact that the relationship is positive also means that, as the need for classroom erection increase by 94 per cent, so also students' motivation to perform by 6 per cent. Hence, this helps research question to be answered by stating that there is a very high positive relationship between classroom erection andacademic performance of students in the study are

**Research Question 2:** What is the relationship between science practical tools and students' academic performance in secondary schools?

**Table 2: Model summary of relationship between science practical tools and academic performance of students in secondary schools *n = 1142***

| Variables | | | R | $r^2$ | Adjusted $r^2$ | Decision |
|---|---|---|---|---|---|---|
| Science practical tools | 11.98 | 2.97 | 0.96 | 0.93(93%) | 0.93 | Very High Positive Relationship |
| Students' academic performance | 16.05 | 3.01 | | | | |

Table 2 shows very high positive relationship between science practical tools and academic performance of students in secondary schools in Rivers East Senatorial District of Rivers State, Nigeria. As in Table 2, the result indicates that, the sample of 1142 gave a Person r-value as 0.96, $r^2$ as 0.93 and the relationship is very high and positive. This entails that with the coefficient of determination ($r^2$) of 0.93, which means 93 per cent of the variation in academic performance of students as the criterion variable, that was accounted for by school laboratories maintenance being the predictor variable; and only 7 per cent could be explained by students' academic performance. Nevertheless, the fact that the relationship is positive also indicates that, as the need for school laboratories plant maintenance increase by 93 per cent, so also students' academic performance by 7 per cent. Hence, this helps the research question

to be answered by stating that there is a very high positive relationship between science practical tools and academic performance of students in the study area.

**Null Hypothesis 1:** There is no significant relationship between classroom erection and students'academic performance in secondary schools.

**Table 3: Summary of t-test significance of relationship analysis between classroom erection and academic performance of students *n = 1142***

| Variables | f | B | Beta | t-correlated | *p*-value | Decision |
|---|---|---|---|---|---|---|
| Classroom erection | | | | | | |
| | 166.42 | 0.98 | 0.97 | 128.84*** | .000 | Significant |
| Students' academic performance | | | | | | |

***correlation is significant at .05 level, df = 1140(2-tailed)

Table 3 shows that the t-test significance of correlation analysis for the relationship between classroom erection and academic performance of students in Secondary Schools in Rivers East Senatorial District is significant. As presented in Table 3, the relationship between classroom erection and academic performance of students shows f-value of 166.42, B-value = 0.98, Beta = 0.97, the t-correlated value of 128.84***, with 1140degrees of freedom, *p*-value of .000, at $p < .05$ levels, two tailed test is significant. This result indicates significant relationship because of f-value and the t-correlated value that are greater than the *p*-value at .05 level of significant, two tail tests. Hence, the null hypothesis 1 is rejected. This implies that there is significant relationship between classroom erection and academic performance of students in the study area.

**Null Hypothesis 2:** There is no significant relationship between science practical tools and students' academic performance in secondary schools.

**Table 4: Summary of t-test significance of relationship analysis between science practical tools and academic performance of students in school *n = 1142***

| Variables | f | B | Beta | t-correlated | *p*-value | Decision |
|---|---|---|---|---|---|---|
| Science practical tools | | | | | | |
| | 141.61 | 0.97 | 0.96 | 118.98*** | 0.000 | Significant |
| Students' academic performance | | | | | | |

***correlation is significant at .05 level, df = 1140(2-tailed)

Table 4 shows that the t-test significance of correlation analysis for the relationship between science practical tools and academic performance of students in Secondary Schools in Rivers East Senatorial District is significant. As presented in Table 8, the relationship

between science practical tools and academic performance of students shows f-value of 141.61, B-value = 0.97, Beta = 0.96, the t-correlated value of 118.98***, with 1140degrees of freedom, *p*-value of .000, at *p*< .05 levels, two tailed test is significant. This result indicates significant relationship because of f-value and the t-correlated value that are greater than the *p*-value at .05 level of significant, two tail test. Hence, the null hypothesis 2 is rejected. This implies that there is significant relationship between science practical tools and academic performance of students in the study area.

**Discussion of Findings**

The study revealed that there is a very high positive relationship between classroom erection and academic performance of students in Rivers-East Senatorial District, Nigeria. The result also shows that low academic performance of students was due to negligence in the school classroom erection. The implication of this result is that classroom erection has positive relationship with the academic performance of students in schools. This entails that good classroom erection could motivate students to learn and perform better academically. This study is in line with the study of Kennedy (2011) and Nwankwo (2012), which established that schools whose building plants possess good ventilation for students' needs are very important for effective and efficient school administration and better academic performance. Amanchukwu and Ololube (2015) added that institutional plant facilities with good aesthetic building climate and their structural designs and recreational facilities are stimulating and could make learning functional. This is most likely because good aesthetic classrooms can create opportunities for students learning satisfaction, which are capable of improving academic performance of students.

The study also revealedd that there is a very high positive relationship between science practical tools and academic performance of students in Rivers-East Senatorial District, Nigeria. The result shows significant relationship. The result also indicates that lack of maintenance of science practical tools of the school contribute to the low academic performance of students in secondary schools in the study area. This implies that the maintenance of science practical tools in school is a prominent factor that could help to improve academic performance. The finding of this study is in line with the finding of Dangbin (2008), which established that efficient maintenance covers practical activities using sufficient facilities that enable learners to acquire cognitive skills such as formulation of hypothesis, making assumption, designing investigations and understanding variable, observing, recording data and so on, which are necessary for high performance in academic settings. Accordingly, the finding of this study is in support of the finding of Umeh (2006), which expressed that the maintenance of material resources such as science practical tools, classrooms, supplies, texture materials, audio-victual aids are necessary for use in structured facilities to ensure affective teaching and learning. However, the maintenance of these resources or facilities is capable of promoting and liberating students' attention and enhances academic performance among students.

## Conclusion

Based on the findings of this study, the infrastructural amenities have been identified as the fundamental factors that could help to improve academic performance of students in Rivers-East Senatorial District, of Nigeria. Accordingly, the results of this study showed very high relationships between all the variables of infrastructural amenities and academic performance of students. The results also indicated positive and significant relationships between classroom erection and science laboratory tools and academic performance of secondary school students. Therefore, great attention to the provision of infrastructural amenities would improve academic performance of public secondary school students in the study area.

## Recommendations

The following recommendations are made based on the findings of the study:

1. Nigerian federal ministry of education should allocate funds for the erection of dilapidated classroom blocks timely in order to assist students to learn better towards positively affecting their academic performance.
2. Ministry of education should also endeavour to provide funds for the upkeep of science practical tools to improve the enthusiasm and performance of science education in secondary schools.

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