

SCHOOL ENVIRONMENT VARIABLES AS PREDICTORS OF SECONDARY STUDENTS ACADEMIC PERFORMANCE IN ESAN NORTH EAST LOCAL GOVERNMENT AREA OF EDO STATE, NIGERIA

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Abstract

This paper examined the school environment variables as predictors of secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria. Five research questions and five hypotheses guided the study. The study adopted a correlational survey research design to achieve the purpose of the study. The population comprised of 5,129 students. A stratified sampling procedure was used to select nine public secondary schools from a total of 14 public secondary schools in Esan North East Local Government Area of Edo State. A simple random sampling procedure was used to select 20 students from each of the nine public secondary schools, giving a total sample size of 180 students. The instrument for data collection was a structured questionnaire constructed by the authors, titled: "School Environment Variables and Students Academic Performance". The instrument was validated using face and construct validation procedures. A test re-test reliability method was conducted and a reliability coefficient of 0.62 value was obtained. Linear and multiple regression statistics were used for data analysis. The analysis showed that school environment variables (e.g. school location, class size, physical facilities, and instructional materials) predicted secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria. Based on the findings, it was recommended, among others, that government should endeavour to ensure the provision of conducive instructional environment, in turn, enhance effective teaching and learning as this would further help to improve the current state of students' academic performance.

Keywords: Academic Performance, Physical Facilities, School Environmental Variables, School Location, School Size.

Introduction

Education is the most important instrument of human resources development and is accorded a pride of place in many countries developmental activities. There is no doubt that the importance of education cannot be underscored because there is no country across the world that has succeeded without educating its people. Education helps to improve peace and security, health, prosperity and ecological balance in the world. It encourages social, economic and cultural progress, tolerance, national and international cooperation. Akomolafe (2009) described education as a single most effective means of curbing population growth, reducing child mortality, eradicating poverty and ensuring democracy, peace and sustainable development. Education system focuses on effective teaching and learning processes which is expected to bring about in the learners' desirable change in

behaviour resulting from experience through critical thinking and enhanced students' academic performance.

Students' academic performance encompasses students' ability and performance. It is multidimensional and also intricately related to human growth, cognitive, emotional, social and physical development. Academic performance is basically a measure of how well students have performed in the various assessment items set for them based on some educational criteria determined by professional educators (Ekhatior, 2019). However, there seems to be school environmental variables that may help to predict the academic performance of students in secondary schools. Adediwura and Tayo (2007) opined that academic performance is generally referred to how well a student is accomplishing his or her tasks and studies. Pruet (2010) asserted that academic performance is how students deal with their studies and responsibilities given to them by their teachers. Louis (2012) stated that academic performance is the ability of students to obtain high grades in standard test scores in school subjects especially subjects that are part of the core academic curriculum. However, there are quite a number of factors that determine the level and quality of student's academic performance. For instance, Nicholas (2004) noted that the most current information on factors improving increased academic performance showed that there are three environmental influences that are linked to levels of academic performance among school students.

School environment on the other hand, refers to the set of relationships that occur among members of a school community that are determined by structural, personal, and functional factors of the educational institution, which provide distinctiveness to schools and the school environment is an important factor when evaluating student well-being. The school environment is broadly characterized by facilities, classrooms, school-based health supports, and disciplinary policies and practices. It sets the stage for the external factors that affect students. Learning environment is a major component of school environment represent a place where teachers impart knowledge of the various subjects to students thereby bringing them up morally and guide them as regards to career choice. Learning environment should have good infrastructural development, adequate trained teachers, good leadership and adequate instructional materials, among others. All these characteristics as exemplified by the author have positive impact on academic achievement of students in secondary schools (Aliade, 2014). Asemhe (2021) examined the availability and utilization of school facilities as predictors of secondary school students' academic performance in Edo North Senatorial District, Nigeria and found that the level of availability of library facilities in secondary schools in Edo North Senatorial District was moderate and the available facilities were highly utilized. The study also showed that the availability and utilization of library, audiovisuals facilities, chalk/white facilities, tables and chairs predicted students' academic performance in English and Mathematics in secondary schools in Edo North Senatorial District. School environment variables may include learning recourses, quality of teaching staff, adequacy of teaching staff, the principals' factors, science and computer laboratory, library facilities, classroom facilities, workshop facilities, play grounds, buildings, topography/landscape, class size, school physical facilities, school instructional facilities and interactions between student and teachers. However, the school environment variables which are of interest to the authors of this study are school location, class size, school physical facilities and school instructional facilities. It is expected that these constructs of school environment could serve as predictors of secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria.

Statement of the Problem

The predictive influence of school environment on students' academic performance has been an issue of concern to all major stakeholders in education. The school climate is becoming uninteresting and uncondusive for teaching and learning because instructional materials are inadequately provided, infrastructural facilities are in dilapidated conditions, technology such as internet are misused, qualified teachers and facilities that promote teaching and learning are in short fall. The cumulative effect of these precarious situations is that some of the students perform poorly in class, some drop out of school while others engage in examination malpractices because the materials which would have been used for their education are elusive.

Robert (2019) lamented that the influence of school environment on academic achievement of students has been an issue of concern to all stakeholders in education as this is evident in the rate of mass failure of students in both internal and external examinations such as West African Examination Council (WAEC), Joint Admission and Matriculation Board (JAMB) and the National Examination Council (NECO). In the result released by WAEC for the 2015 May/June Senior Secondary School Examination, only 31.28% (529,425) candidates out of 1,692,435 candidates who sat for the examination had credits in five subjects and above including Mathematics and English Language as against 38.81% and 36.57% in 2016 and 2017 May/June examinations respectively. Though the result of May/June 2018 had recorded increase in the pass rate with 923,486 candidates representing 59.22% of a total of 1,471,151 candidates who sat for the examination scoring a minimum of five credits including Mathematics and English Language as against 52.97% in 2019. In recent times, there has been improvement in academic performance of students as performance rate in 2020 was 62.04%, and in 2021, it rose to 73.81% and in 2022, it was 76.36% and in 2023, 79.81% pass rate was recorded for students who scored five credits and above including Mathematics and English Language. With regards to the above reports, there is a lot more to be done to ensure continuous pass rate in schools. The question arising from this subject matter is that: To what extent does school environment variables predict secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria?

Research Questions

The following research questions guided this study.

Research Question 1: To what extent do school environment variables predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria?

Research Question 2: To what extent does school location predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria?

Research Question 3: To what extent does class size predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria?

Research Question 4: To what extent do school physical facilities predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria?

Research Question 5: To what extent do school instructional materials predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria?

Hypotheses

The following null hypotheses were tested at a 0.05 level of significance.

Research Hypothesis 1: School environment variables do not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Research Hypothesis 2: School location does not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Research Hypothesis 3: Class size does not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Research Hypothesis 4: School physical facilities do not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Research Hypothesis 5: School instructional materials do not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Method

Research Design

The study adopted the correlational survey research based on expo-facto research design. Ex-post facto research design is a category of research design in which the investigation starts after the fact has occurred without interference from the authors. Despite studying facts that have already occurred, expo-facto research design shares with experimental research design some of its basic logic of inquiry. If fact, non-experimental quantitative designs such as this could serve as the lynchpin or foundation upon which future quasi-experimental and experimental research are to be built (Edopkolor, Imeokparia & Egbri, 2023, 2024). Therefore, expo-facto research design was found appropriate for this study because it helped the authors to establish the extent of interplay between the independent variable and its related constructs and the dependent variable.

Population and Sampling Procedure

The population of the study comprised 5,129 students in all the 14 public secondary schools in Esan North East Local Government Area of Edo State. The sample size for this study comprised of 180 public secondary school students. A stratified sampling procedure was employed to select nine public secondary schools from a total of 14 public secondary schools in Esan North East Local Government Area of Edo state. A simple random sampling procedure was thereafter used to select 20 public secondary school students from each of the nine public secondary schools, giving a total sample size of 180 public secondary students, which constituted 3.5% of the total population.

Measuring Instrument

The instrument for data collection was a structured questionnaire constructed by the authors, titled: "School Environment Variables and Students Academic Performance". The instrument was divided into seven sections; Sections A, B, C, D, E, F and G. In section A, the authors elicited information on the respondents' personal characteristics such as class, sex, location of school and age. In section B, five items were raised on school environment variables and secondary school students' academic performance. Section C focused on five items on school location and secondary school students' academic performance. Section D focused on five items on class size and secondary school students' academic performance. In section E, five items were raised on school physical facilities and secondary school students' academic performance. In Section F, five items were also raised on instructional materials and secondary school students' academic performance. In this regard, the respondents were expected to react to the items on a four point rating scale ranging from strongly agree (SA)-4 Agree (A)-3 Disagree (D)-2 and Strongly Disagree (SD)-1.

Validation and Reliability of Measuring Instrument

The instrument was validated using face and construct validation procedures. The authors presented a draft of the instrument to three experts, two in educational management and one in measurement and evaluation who helped to scrutinize the instrument. Their suggestions and inputs were incorporated in the final draft of the measuring instrument. A test-retest reliability procedure was adopted. The authors and research assistants (who were briefed on research procedures) administered the instrument on 50 respondents in five selected schools in Esan West Local Government Area of Edo State. The process was repeated the second time. The two sets of scores were analysed with Pearson's correlation statistic. The reliability coefficient of 0.62 was obtained.

Data Analysis

Linear and multiple regression statistics was employed to analyze the data collected from the respondents. Hypothesis 1 was tested using the multiple regression and hypotheses 2 to 5 were tested using linear regression. Hypotheses 1 to 5 were tested at a 0.05 level of significance. The decision rule for the adoption of linear and multiple regression statistics is based on a probability p -value less than or equal to .05 implied significant (that is, reject H_0), while a probability p -value greater than .05 implied not significant (that is, accept H_0).

Result

Research Hypothesis 1: School environment variables do not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Table 1: School environment variables as predictors of students' academic performance.

School Environment Variables	Panel A			
	Results on School Environment Variables			
	<i>B</i>	<i>t-value</i>	<i>P-value</i>	Decision
School Location.	33.155	48.188	.000	<i>Sig.</i>
Class Size.	.321	2.841	.005	<i>Sig.</i>
Physical facilities.	.162	1.595	.001	<i>Sig.</i>
Instructional Materials.	.343	4.267	.000	<i>Sig.</i>
Interactions between Students' and Teachers.	.088	.599	.002	<i>Sig.</i>

Note: *NS*- Not significant *S*- Significant *significant at 0.05 alpha level
Dependent variable = students' academic performance β = regression estimate (beta).

The data in Table 1 showed the multiple regression analysis of school environment variables as predictors of secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria. The results showed that the β value on school location (33.155), class size (.321), physical facilities (.162), instructional materials (.343) and interactions between students' and teachers (.088) were all significant at P-value of .000, .005, .001, .000 and .002. This therefore implied that school environment variables (school location, class size, physical facilities, instructional materials and interactions between students' and teachers) predicted secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria.

Research Hypothesis 2: School location does not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Table 2: School location as predictor of students’ academic performance.

R = .32 ^a						
R-square (R ²) = .077						
Adjusted R-square =.054						
F _(1,268) = 22.253*						

Model	Unstandardized Coefficients		Standardized Coefficients	t-val.	p-val.	Decision
	β	SE	Beta			
(Constant)	1.441	.129		10.641	.003	Sig.
School Location	.251	.058	.375	5.355	.004	Sig.

- a. Dependent Variable: Students’ Academic Performance
- b. Predictors: (Constant), School Location

*t-values and f-value are statistically significant (p<0.05).

The data in Table 2 showed the results of the Simple Linear Regression analysis of school location as predictor of secondary school students’ academic performance in Esan North East Local Government Area of Edo State, Nigeria. The R square (.077) and adjusted R square 0.54) showed the strength of relationship. The Beta value was .375 and p value of 0.004 was significant (.004 ≤ .05). Therefore, the null hypothesis was rejected. This result indicated that school location predicted secondary school students’ academic performance in Esan North East Local Government Area of Edo State, Nigeria.

Research Hypothesis 3: Class size does not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Table 3: Class size as predictor of students’ academic performance.

R = .257 ^a						
R-square (R ²) = .080						
Adjusted R-square =.061						
F _(1,268) = 15.862*						

Model	Unstandardized Coefficients		Standardized Coefficients	t-val.	p-val.	Decision
	B	SE	Beta			
(Constant)	1.210	.149		14.584	.0001	Sig.
School Building Infrastructures	.451	.060	.284	4.355	.0001	Sig.

- a. Dependent Variable: Students’ Academic Performance

b. Predictors: (Constant), Class Size

*t-values and f-value are statistically significant ($p < 0.05$).

The data in Table 3 showed the results of the Simple Linear Regression analysis of class size as predictor of secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria. The R square (.080) and adjusted R square 0.61) showed the strength of relationship. The Beta value was .3284 and p value of 0.0001 was significant ($.0001 \leq .05$). Therefore, the null hypothesis was rejected. This result indicated that class size predicts secondary school students' academic performance.

Research Hypothesis 4: School physical facilities do not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Table 4: School physical facilities as predictor of students' academic performance.

R = .257 ^a						
R-square (R ²) = .073						
Adjusted R-square = .043						
F _(1,268) = 18.962*						
Model	Unstandardized Coefficients		Standardized Coefficients	t-val.	p-val.	Decision
	B	SE	Beta			
(Constant)	1.880	.149		12.641	.0001	Sig.
School physical facilities	.251	.058	.257	4.355	.00002	Sig.

a. Dependent Variable: Students' Academic Performance

b. Predictors: (Constant), School physical facilities

*t-values and f-value are statistically significant ($p < 0.05$).

The data in Table 2 showed the results of the Simple Linear Regression analysis of school physical facilities as predictor of secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria. The R square (.073) and adjusted R square 0.43) showed the strength of relationship. The Beta value was .257 and p value of 0.0002 was significant ($.0002 \leq .05$). In this regard, the hypothesis was rejected. This implies that school physical facilities predicts secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria.

Research Hypothesis 5: School instructional materials do not significantly predict academic performance of students in secondary school in Esan North East Local Government Area of Edo State, Nigeria.

Table 5: School instructional materials as predictor of students’ academic performance.

R = .257^a
 R-square (R²) = .065
 Adjusted R-square = .033
 F_(1,268) = 18.962*

Model	Unstandardized Coefficients		Standardized Coefficients		t-val.	p-val.	Remark
	B	SE	Beta				
(Constant)	1.880	.149			15.235	.001	<i>Sig.</i>
School Building Infrastructures	.551	.058	.367		4.355	.001	<i>Sig.</i>

- a. Dependent Variable: Students’ Academic Performance
- b. Predictors: (Constant), School instructional facilities

*t-values and f-value are statistically significant (p<0.05).

The data in Table 5 showed the results of the Simple Linear Regression analysis of school instructional facilities as predictor of secondary school students’ academic performance in Esan North East Local Government Area of Edo State, Nigeria. The R square (.065) and adjusted R square 0.33) showed the strength of relationship. The Betta value was .365 and p value of 0.001 was significant (.001 ≤ .05). This means that school instructional materials predicted secondary school students’ academic performance in Esan North East Local Government Area of Edo State, Nigeria.

Discussion

The findings of this study showed that school environment variables (school location, class size, physical facilities, instructional materials and interactions between students’ and teachers) predicted secondary school students’ academic performance in Esan North East Local Government Area of Edo State, Nigeria. This may be attributed to the fact that the present school environment in Esan North East promote sense of belonging and self-esteem and also promote learning and self-fulfillment which may influence the academic performance of students in the study area. The findings of this study is in line with that of Hezekiah, Alfred and Kute (2020) who found that school environmental factors had a strong influence on students’ academic performance.

The results of this study also revealed that school location predicted secondary school students’ academic performance in Esan North East Local Government Area of Edo State, Nigeria. The researchers are of the view that the differential access to resources required for quality teaching and learning in rural and urban areas influence students’ academic performance. This finding supports the findings of Ellah and Itah (2017) who found that there is a significant difference in students’ academic performance in English language on the basis of school location. This finding also support the findings of Onoyase (2015) who found that there was a significant difference in the academic performance among students in urban, semi-urban and rural secondary school in English Language, Mathematics, Biology, Chemistry and Geography.

This study found out that that class size predicts secondary school students’ academic performance in Esan North East Local Government Area of Edo State, Nigeria. The researcher is on

the view that large classless are difficult to manage and teaching may not be effective in such environment. Therefore, students' academic performance may be negatively affected in larger classes. The finding of this study is in agreement with the findings of Omwirhiren and Anderson (2016) who found that there was significant difference in student's attitude to chemistry on their academic performance based on their class size. The finding of this study is in agreement with the findings of Ajayi, Audu and Ajayi (2017) who found that students' population pressure and large class size negatively affect teaching/learning and make it difficult for teachers to administer and mark test/assignment.

The findings of this study showed that school physical facilities predicts secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria. The researcher is on the view that the entire unattractive physical structure of the classroom building could de-motivate learners to achieve academically. This is referring to learner's environment mismatch. The finding of this study supports that of Mudassir, Abubakar and Bichi (2015) who found that the school enriched with modern equipment such as computer, internet, enriched laboratory and library make learning easier and faster and this enhance the academic performance of students.

The findings of this study showed that school instructional materials predicted secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria. This finding might have been informed by the fact that the availability or existence of physical instructional facilities in schools could positively inform students' academic performance and in schools where these facilities are not adequately provided or in schools where these facilities does not exist, the students' academic performance could be negatively informed. The finding of this study is in agreement with the findings of Asemhe (2021) who found that the availability and utilization of instructional facilities such as library, audiovisuals facilities, chalk/white facilities, tables and chairs predicted students' academic performance in English and Mathematics in secondary schools in Edo North Senatorial District. The finding of this study is in agreement with that of Kieti (2017) who found that the learning resources were inadequate and hence affected academic performance to a great extent.

Conclusion

Based on the findings, the study concluded that school environment variables predicted secondary school students' academic performance, and that school location, class size, school physical facilities and school instructional materials predicted secondary school students' academic performance in Esan North East Local Government Area of Edo State, Nigeria.

Recommendations

Based on the findings of this study the following recommendations were made:

- i. Government should endeavour to ensure the provision of conducive environment which enhance effective teaching and learning as this could help improve on the current state of the students' performance.
- ii. Concerned agencies in collaboration with government should endeavour to ensure the provision of teaching and learning resources such as hiring qualified teaching staff and the supply of material resources to both urban and rural schools.
- iii. Government should endeavour to ensure the provision of adequate and modern classroom buildings to ensure proper implementation of school curriculum and also reduce the class sizes to its recommended state.

- iv. Government should endeavour to ensure the provision of adequate and modern physical facilities while teachers should be trained on the effective utilization of such facilities to enhance students' academic performance.
- v. School administrators should endeavour to ensure instructional facilities are sourced for and effectively managed to enhance students' academic performance in secondary schools.

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