

School Spatial Distribution and Students' Academic Performance in Oyo State Public Secondary Schools

By

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Abstract

The purpose of this research was to examine the contributions of spatial distribution on students' academic performance in school certificate examinations with respect to English language and Mathematics in Oyo State public senior secondary schools with a view to bringing out optimal productivity. Two hypotheses were formulated and tested.

The population involved all the Senior Secondary School (SSS 3) students' and teachers in senior secondary schools in all the public senior secondary schools in Oyo-State. Data available as at the time of data collection for this study indicated that there are 3,200 SSS 3 students and 2,640 teachers in Senior secondary schools in all the 400 public secondary schools.

Stratified random sampling method was used to select the local government areas, the schools, teachers and students. Two research instruments were used for this study that is Spatial Distribution Questionnaire developed by Olaniyonu (1987) and pro forma for students' results in SSCE English language and Mathematics. The findings revealed that spatial distribution alone significantly contributed to the variance in the urban and rural located students' performance scores in school certificate examinations in English Language and Mathematics. Base on the findings

It is therefore recommended that Oyo State Government must look into spatial distribution of schools and handle spatial distribution of schools with extreme care. School should not be arbitrarily located and politicize and Government should follow the UNESCO recommendation on students' journey to and fro schools hence, the students' journey to the school should not exceed 1.5 kilometer among others.

Introduction

Background to the study

The performance of students in any academic task has always been of special interest to educators, parents and society at large. The primary concern of any

educator who is entrusted with the responsibility of selecting students for any advance training programme in a given field is the ability to estimate as accurately and as early as possible, the probability that such candidates will succeed or fail. The major obstacle to the development of education in Oyo State is persistent poor academic performance of students in senior school certificate examination. The problem of poor academic performance is so great that it has become a necessary for many students to pass the number of subjects for admission into tertiary institutions at once (Ajayi, 2011).

A closer look at the senior secondary school certificate examination results (SSCE) released by West Africa Examinations Council will further substantiate one's lamentation about the present poor performance in different school subjects of secondary school students (Olagunju, 2012). The poor quantity of the products of the present educational system in Nigeria is so irritating in terms of their poorly written and spoken skills in public secondary schools and this is well shown in the SSCE - WAEC examinations results. It is not an over-statement that the rate of failure in English Language at the senior certificate examination level in Nigeria is alarming. Regrettably, communication in English language is a sine qua non to good academic performance while in school and during a fulfilled life thereafter (Akinbode, 2006). English language, apart from being the medium of instruction in the Nigerian secondary schools, is learnt as a special subject. It is the vehicle through which the Nigerian secondary school students communicate. A credit pass in English language is also a pre-requisite for gaining admission to the higher institutions in Nigeria.

On the other hand, Okereke (2006) states that Mathematics is the science of thing that have a pattern of regularity, logical order and finding and exploring the regularity. Mathematics is the foundation of science and technology and the functional role of Mathematics to science and technology and the functional role of Mathematics to science and technology are multifarious, that no idea of science, technology and business enterprise escapes its application. Besides its importance, it is observed that Mathematics is one of the most poorly taught, widely hated and abysmally understood subjects in secondary schools.

Students particularly girls run away from the subject. He further attributes students' poor performance to factors such as the society's view that Mathematics is difficult, shortage of qualified Mathematics teachers, lack of Mathematics laboratory among others (Okereke, 2006). The ability of the students to think critically and tackle Mathematical problems is so lacking and not well developed and the two core subjects English language and Mathematics and very important for the present technological challenges (Olagunju, 2012). Government, parents and guardians are complaining about this situation.

This deplorable condition when compared with huge sums of money spent on education annually, demands and urgent attention aimed at redressing the abnormally (Adeniji, 2003). This situation informs many research efforts like those of Akinwumiju and Orimoloye, (1997); Obilade, (2006) and Oladebo, (2006) which are pre-occupied with factors that are responsible for the dismal state of education in the country. Among the reasons adduced for this mass failure of students in public examinations include spatial distribution (aesthetic, school location, topography, catchment and population, accessibility and experts).

According to Aremu (2012) researchers who focus on the academic performance of students have continue to examine diverse phenomena that have been found to predict performance. He also contends that there has been a number of reviewers of researches that have critically examined the relationship between certain explanatory constructs and academic performance with diverse findings. Yet, the battery of variables used to predict students' academic performance in formal face-to-face educational situations, may not adequately serve as predictors of academic performance (Kumar,2012).

Students' academic performance rested on spatial distribution (school location, accessibility, aesthetic, catchment and population, topography, proximity to utility, neighborhood/cultural, and experts). Many parents believed that academic performance of students in urban schools is poor compared with academic performance of students in rural schools and therefore enroll their wards in the rural schools for Senior School Certificate Examinations (Owoeye & Yara, 2011) but Obe (2004) observed a significant difference in rural-urban academic performance. He concludes that students from urban schools were superior to their rural counterpart. As school population continue to improve, the influence of spatial distribution on academic performance is generating more research interest. However, some studies like Daini and Oyeromi (2006), Aremu (2012) and Kumar (2012) have examined spatial distribution and their attendant consequences on examined performance of students in various state of the Federation.

The area where a school is located is expected to affect the students' academic performance due to the fact that the location is linked with teacher retention and provision of school resources such as textbooks, instructional materials and laboratory equipment. It has been observed by Owoeye (2000) and Ayodele (2000) that most of the public secondary schools in the Western Zone of Nigeria (Oyo, Ogun, Osun, Ondo, Ekiti and Lagos states) are arbitrarily located and distributed thereby resulting in poor students' academic performance. In the study by Daini (2005) on school location and students' academic performance in Ogun state public secondary school, she found that decrease in students' academic performance could be traced to school location. Schools located near motor parks, mechanic village where sound or noise distract students' attention may likely affect their

performance. Schools located at the rural areas may likely suffer some education resources. This is because teachers may refuse appointment among others.

The school site should be readily accessible to students and staff by both public and private transportation. The site should be located within 1.5 kilometers of student's residence and there should be minimum of dangerous highway crossings. The students must have a safe way to return home from school after evening activity and in all season of the year. In the study conducted by Daini (2005) observed that long distances to most schools affect the students' academic performance in the sense that, most students may not reach school until noon. The location of school should ensure proximity to build up areas.

Furthermore, consideration for natural beauty (aesthetic) should be stressed in the selection of the site. Natural beauty is as important as the buildings and facilities to be provided on the site. Natural features like trees, shrubs, flower beds, beautiful sceneries should be provided to enhance the image of the school and to produce dramatic results in school performance. In the study by Webb and Chan (2004) on influence of aesthetic on students' academic performance found a strong relationship that is aesthetic contributed high to the performance of the students.

Moreover, topography and soil conditions such as the contours and distribution of natural elements such as soil, rocks, water and sand require careful study in view of the expected utilization. Danenberg (2001); Al-Enezi (2002) and Perry (2002) also confirmed that the element of the school is important factors that contribute to the creation of good learning environment and students' academic performance. Spatial distribution and students' academic performance in English language and Mathematics has been widely reported with conflicting reports. Adepoju (2001), students in urban schools manifested more brilliant performance than their rural counterpart.

Also, Ogunleye (2002), Ndukwu (2002) and Odinkwo (2002) reported a significant difference in the performance of students in urban areas. However, Daramola in Ogunleye (2002), did not found any significant difference in the urban schools. In view of these conflicting reports and huge amount of money spent on education by the government, there is need to carry out a study with a view to determining which of the selected variables will predict the students' academic performance in English language and Mathematics in Oyo State, Nigeria. Therefore, this study investigated the spatial distribution as predictors of students' academic performance in public Senior Secondary Schools, Oyo State, Nigeria.

Objective of the Study

The purpose of this research was to examine the contributions of spatial distribution on students' academic performance in school certificate examinations with respect to English language and Mathematics in Oyo State public senior secondary schools with a view to bringing out optimal productivity.

Hypotheses

The following hypotheses were formulated to guide this study;

H₀₁: There is no significant contribution of spatial distribution to students' performance scores of urban located school in School Certificate English Language and Mathematics examinations.

H₀₂: There is no significant contribution of spatial distribution to students' performance scores of rural located schools in School Certificate in English language and Mathematics Examinations.

Methodology

Research Design

A descriptive survey research design was employed in this research.

Population

The population involved all the Senior Secondary School (SSS 3) students' and teachers in senior secondary schools in all the public senior secondary schools in Oyo-State. Data available as at the time of data collection for this study indicated that there are 3,200 SSS 3 students and 2,640 teachers in Senior secondary schools in all the 400 public secondary schools (Oyo State Ministry of Education, 2012).

Sample and sampling techniques

Stratified random sampling method was used to select the local government areas, the schools, teachers and students for this study. Oyo State has three senatorial districts. One out of three was picked that is Ibadan central Senatorial District. Oyo State has thirty-three Local Government Areas. The local government was stratified, 11 local government out of 33 Local Government was randomly selected representing 33.3%. The Local Government selected were five (5) local governments in urban area and 6 local governments in rural area. For secondary schools' sample, 40 public senior secondary schools out of 400 schools in the state representing approximately 10%.

Teachers' Sample: Teachers teaching senior secondary schools classes in each school were used for this study. Ten (10) teachers were sampled in each school totaling 400 teachers for the study out of 2,640 teachers representing approximately 15 percent. This was done using simple random sampling.

Students Sample: SS3 students in the year 2011/2012 session were used for this study. Ten (10) students were randomly selected from SS3 students from each of the 40 sampled schools, totaling 400 students out of 3,200 students representing 13 percent for the study.

The calculations of academic performance for each school in English Language and Mathematics were done for 2010/2011 session using WAEC result.

Instrumentation

Two research instruments were used for this study. These are Spatial Distribution Questionnaire developed by Olaniyonu (1987) and pro forma for students' results in SSCE English language and Mathematics.

Spatial Distribution Questionnaire (SDQ)

Spatial Distribution Questionnaire for students and teachers was developed by Olaniyonu (1987). The instrument was designed to seek information from the students and teachers on spatial distribution. The instrument is made up of two sections A and B. Section A contains items to measure the demographic data, while section B of the instrument contains items that seek information on school location, accessibility, size of the land, traffic and related safety, aesthetic, catchment, population, and experts, neighborhood/cultural, topography and proximity to utility services. It consists of seven sub-sections. Section A with 3 items, section B with 4 items, section C with 4 items, section D with 3 items, section E with 4 items, section F with 5 items, section G with 6 items, section H with 5 items, section I with 1 item and section J with 6 items all together 40 items. Respondents are instructed to please indicate YES or NO. Items with YES scored one (1) and items with NO are scored zero (0). This instrument was adopted for the study.

Olaniyonu (1987) showed that the instrument has sound psychometric properties. He reported that the instrument has high internal consistency with Chronbach alpha ranging from 0.68 to 0.70 and two weeks test-retest reliability coefficient of 0.78.

Method of Data Collection

The researcher physically administered the instruments. At the end of the process of data collection, all the 800 instruments on both teachers and students were fully completed and returned. However, the researcher personally visited each of the school sampled principals to collect the Senior Secondary Council Examination result in English Language and Mathematics for 2010/2011 session.

Data Analysis Procedure

The data collected in this study were analyzed using inferential statistics. The study was tested by the Multiple Regression Analysis test (to explain the contributions of the independent variables to the dependent variables) and its accompanying Analysis of Variance (ANOVA) test at the 0.05 level of significance.

Results

Hypothesis One: There is no significant contribution of spatial distribution to students' performance scores of urban located school in SSCE English Language and Mathematics examinations.

Table 1: Contribution of Spatial Distribution to Urban Located Students' Performance Scores

Model	Sum of Square	Df	Mean Square	F	Sig
Regression	2.509	1	2.509	6.269	0.013
Residual	159.314	398	0.400		
Total	161.824	399			
R	0.125				
R^2	0.016				
R^2 (adj)	0.013				

* indicate significance F at $\alpha = 0.05$

The result in table 1 revealed significant outcome ($F=6.269$, $P<0.05$). This outcome implied that spatial distribution alone significantly contributed to the variance in the urban located students' performance scores in school certificate examinations in English Language and Mathematics. The result in table 4.9 revealed that, spatial distribution alone accounted for 1.6% ($R^2 = 0.016$) of the variance in the dependent variable. As a result, the null hypothesis five is rejected. Hence, there is a significant contribution of spatial distribution to students' performance scores of urban located schools, accounting for more than 1% of the variance in the dependent variable.

Hypothesis Two: There is no significant contribution of spatial distribution to students' performance scores of rural located schools in SSCE English Language and Mathematics examinations.

Table 2: Contribution of Spatial Distribution to Rural Located Students' Performance Score

Model	Sum of Square	Df	Mean Square	F	Sig
Regression	8.398	1	8.398	8.666	0.003*
Residual	385.701	398	0.969		
Total	394.099	399			
	0.146				
R^2	0.021				
R^2 (adj)	0.019				

* indicate significance F at $\alpha = 0.05$

The result in table 2 revealed significant outcome ($F= 8.666$, $P<0.05$). This implied that spatial distribution alone significantly contributed to the variance in the rural located students' performance in school certificate examinations in English

Language and Mathematics. The table further revealed that spatial distribution alone accounted for 2.1% ($R^2=0.021$) of the variance in the dependent variable. As a result, the null hypothesis eight is rejected. Thus, there is significant contribution of spatial distribution to students' performance scores of rural located schools in SSCE English Language and Mathematics examinations.

Discussion of Findings

Hypothesis one stated that there is no significant contribution of spatial distribution to students' performance scores of urban located school in SSCE English Language and Mathematics examinations. This hypothesis was rejected that is, spatial distribution alone significantly contributed to the variance in the urban located students' performance scores in English Language and Mathematics. This might be as a result that most schools located are accessible to students and teachers.

The schools in urban area were located in conducive area which enhanced learning and improved students' academic performance. Most of the schools were not located near Motor Park and all the market shops erected at the gate and surrounding of the schools were demolished. Hence, students concentrated on their study. The result might also be as result that there are adequate and qualified teachers. This is in line with the study by Okonkwo (2000) in his study on spatial distribution and students' academic performance, he found that spatial distribution has a strong effect on students' academic performance in urban located schools.

Hypothesis Two stated that there is no significant contribution of spatial distribution to students' performance scores of rural located schools in School Certificate in English Language and Mathematics examinations. The hypothesis was rejected. Spatial distribution alone contributes significantly to students' academic performance scores of rural located schools in senior certificate examination in English Language and Mathematics. The research found that despite that schools are many in urban areas, the distance students covered are far and most of the parents cannot afford the transport fare cum feeding, so students get to school late thereby resulting to student truancy and poor academic performance. In some urban schools, the late comers are so many that they serve one punishment or the other thereby wasting their time.

This finding corroborates that of Olutola (1980) cited in Lawani (2004) that in a more functional setting, the school environment sets the tone of the school in terms of academic performance. Distance of school has been identified as a factor that may discourage female participation in schooling as parents may be unwilling to allow their female children to travel long distances alone for fear of their safety. Lack of physical access to schooling has been identified as a major cause of drop out in schools.

Conclusion

Based on the findings of this study, the following conclusions are drawn. Spatial distribution will contribute to students' performance scores in School Certificate in English Language and Mathematics examinations. Spatial distribution will contribute to students' performance scores of urban located schools in School Certificate Examination in English Language and Mathematics examinations. Spatial distribution will contribute to students' performance scores of rural located schools in School Certificate Examinations in English Language and Mathematics examinations

Recommendations and Planning implications

The result of this study necessitates that spatial distribution variables should be encouraged to enhance students' academic performance. It is therefore recommended that Oyo State Government must look into spatial distribution of schools and handle spatial distribution of schools with extreme care. School should not be arbitrarily located and politicize.

Government should follow the UNESCO recommendation on students' journey to and fro schools hence, the students' journey to the school should not exceed 1.5 kilometer.

Government should ensure that the catchment area and population must also be considered before given admission to students. So also, government could provide school bus that will convey both students and teachers to their various schools.

School busses could be donated by government and other philanthropists to avoid students' lateness.

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