INFLUENCE OF SCHOOL LOCATION AND SOCIO-ECONOMIC STATUS ON MATHEMATICS STUDENTS' ACHIEVEMENT IN NIGER STATE, NIGERIA

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Abstract
The study examined the influence of school location and socio-economic status on Mathematics students' achievement in Niger State, Nigeria. The study adopted ex-post facto research design. A sample of 198 students was drawn from a population of 11, 275 senior secondary two Mathematics students in 240 co-educational public schools in 2020/2021 academic session using Multi-stage sampling technique. Two research questions guided the study and two null hypotheses were formulated and tested at 0.05 level of significance. Two instruments were used for data collection namely; Mathematics Achievement Test with a reliability coefficient of 0.83 and Socio-Economic Status questionnaire with a reliability coefficient of 0.81 established using Kuder Richardson. Research questions were answered using means and standard deviations while z-test was used to test the hypotheses. The findings revealed that students in urban schools achieved significantly better than their counterparts in rural schools and students of parents with high socio-economic status achieved better than students of parents with low socio-economic status. It was recommended among others that government should raise the standard of rural schools to the level of urban schools where the students achieved better in Mathematics than students in rural schools in terms of facilities and personnel.

Keywords: *School location, Socio-economic status, Mathematics, Students' achievement*

Introduction

For over four decades, many Nigerian students are performing below expectation in Mathematics achievement. The trend or an issue in the Mathematics achievement of secondary school students in Nigeria and other parts of the World has become a major source of concern to all stakeholders in the educational sector (Nwadinigu & Azaka-Obieke, 2012). There is a mass decline in the achievement of students in both the West Africa Senior Secondary Certificate Examination (WASSCE) and National Examinations Council (NECO) (Dawa, Adamu and Olayomi, 2005). Adesemowo (2005) further stressed the issue by clarifying that the annual release of senior secondary certificate examination (SSCE) conducted by West Africa Examination Council (WAEC) portrays the problematic nature and generalization

of poor secondary school students' achievement in different school subjects particularly Mathematics and English language among secondary school students. The stakeholders in education agree that the huge investment on education is not yielding the desired dividend.

To Nwadinigu and Azuka-Obieke, poor achievement refers to an achievement that is adjudged by the examiners as falling below an expected standard. It is when a student performance is below his actual capability. It could be as a result of several factors such as poor teaching, psychological factors, unpreparedness on the part of the students, poor learning environment, location of schools and the evaluation process.

Mathematics has been the hinge on which any true science can rest and no true science can succeed without going through mathematical expression and hence not left out in this issue. The students' achievement in Mathematics at the SSCE from 2014 to 2018 indicated that the percentage of students that passed at credit level and above (A1-C6) was consistently less than 50% and has not been encouraging (WAEC, 2018). Similarly, from 2005 to 2011 the percentage of students who obtained five credit including English and Mathematics ranges between15% to 31% (Uwadiae, 2008 & All African. Com, 2012). Ukeje in Onah (2004) stressed that without Mathematics, there is no science; without science, there is no modern technology, and without modern technology, there is no modern society. The implication of this statement is that there could be no actual development, technologically without a corresponding development in Mathematics. Hence, this is not surprising the interest of WAEC, educationist, Mathematics teachers, parents, government and other stakeholders in finding solutions to the problems that affect the teaching and learning of Mathematics in secondary schools. According to Asikhia (2010); Akomolufe and Olorumfemi-Olabisi (2011), many factors such as study habit, attitude of students and teachers, teaching methods, teachers' qualification, school environment, government policy, family types and school location have been identified in many researches as factors influencing students' academic achievement.

School location refers the community in which the school is situated or where a given school situated such as a village, hamlet, rural or urban (Joseph, 2015). School located in a rural area will have all the characteristics of a rural environment; similarly an urban school will have an environment-based activities peculiar to its environment but different from a rural location. Thus, as the school environment differs, the level of academic achievement may also differ. The consequence is that the quality of education may not be even; and the national policy of education for a democratic, egalitarian society cannot be attained unsentimentally. Determining the factors that negotiate academic achievement in schools is paramount to both government and educational administrators.

Students attending rural schools face a lot of challenges of higher poverty than those attending urban schools. In

Nigeria, rural life is uniform, homogenous and less complex than that of urban centres, with cultural diversity, which often is suspected to influence students' achievement. This is because urban centres are better favoured with respect to availability of resources, library, opportunities, good environment, teachers etc while the rural areas are less favoured. Nevertheless, one of the benefits of rural schools is the tendency for smaller classes, which promise better student evaluation, and provide greater flexibility in teaching strategy. However, Isa (2018); Chianason (2012); Owoeye and Yara (2011) have shown locational influence on academic achievement of students using designed visual teaching models on the learning of Mathematics and basic Science (favouring urban school students). Igboegwu and Okonkwo (2012) also reported a significant difference in students' achievement with respect to location of school, students in urban schools achieved significantly better than students in the rural schools. On the other hand, Kissau (2006) demonstrated that students in urban and rural location have equal achievement.

In the context of this study, Socio-economic status (SES) deals with the social standing or class of an individual or group which is often measured as a combination of education, income and occupation. In other words, (SES) deals with ways people are classified or divided into category/groups in a society such that they have certain economic or/and social characteristics in common. To Hart (2014), socio-economic status refers to the level of education, income, and professionalism of an individual or group. Hart further stated that students with a lower SES usually face additional challenges including poor motivation, unavailability of learning materials/resources and difficult learning conditions that negatively influence their achievement. In Nigeria today, many families are very poor; at lower class; they regularly struggle to provide academic support for their wards/children. This could affect the students' achievement from such background (home). Okofor (2007) argued that while poverty and students low socio-economic status (SES) background could be considered a worry regarding students' achievement, but the strongly determined and motivated students are likely to beat the odds of greater risk of academic failure and perform with distinction in school. Studies conducted by Eamon (2005) and Barry (2005) have demonstrated that socio-economic status (SES) affects students' achievement. Based on prior studies, there is no identical study on the influence of school location and socio-economic status (SES) on Mathematics students' achievement in Niger State, Nigeria. Hence, the need for this study.

Statement of the Problem

Location of schools and socio-economic status has been identified as some of the factors that can influence students' achievement in Mathematics. Prior studies on the influence of these variables on students' achievement are inconclusive. While some of the findings of the studies found that there is a significant influence of these variables on students' achievement. Some studies equally found that these variables do not have significant influence on students' achievement. There is need to actually find out the influence of

school location and parents SES on Mathematics students' achievement. The problem of this study therefore, can be posed in question form; what is the influence of school location and parents' socio-economic status on Mathematics students' achievement in Niger State, Nigeria?

Objectives of the Study

The purpose of the study was to investigate the influence of school location and socio-economic status on Mathematics students' achievement in in Niger State, Nigeria. Specifically, the study sought to:

1. Determine the mean achievement scores of students in Mathematics based on school location.
2. Ascertain the mean achievement scores of students in Mathematics based on parents' socio-economic status (SES).

Research Questions

The following research questions were stated and answered in the study:

1. What are the mean achievement scores of students in Mathematics based on school location?
2. What are the mean achievement scores of students in Mathematics based on parents' socio-economic status (SES)?

Statement of Hypotheses

The following null hypotheses (H_o) were formulated and tested at 0.05 level of significance:

Ho_1: There is no significant difference in the mean achievement scores of students in Mathematics based on school location

Ho_2: There is no significant difference in the mean achievement scores of students in Mathematics based on parents' socio-economic status (SES).

Methodology

The research design adopted in this study was ex-post factor in which the variables were not controlled nor manipulated since they have already existed. It focused on school location and parents' socio-economic status (SES) and students' achievement in Mathematics. The dependent variable was students' achievement in Mathematics while independent variables were school location and socio-economic status (SES). The population of the study comprised 240 public senior secondary two (SSII) Mathematics students in Niger State registered for 2020/2021 academic Session. There were 11,275 Mathematics students (5903 males and 5372 females). The sample for the study consisted of 198 students in 6 coeducational public senior secondary schools in Suleja educational zone of Niger State, Nigeria. Multi-stage sampling technique was used to draw the sample. The two instruments used for data collection for this study were Mathematics Achievement Test (MAT) and socio-economic status questionnaire (SESQ).The Mathematics Achievement Test (MAT) was a 30–item multiple choice achievement test designed by the researchers to measure students' achievement in Mathematics. Each item has 5-options A-E, the test items were adopted from a pool of past West African Examination Council (WAEC) and the National Examinations Council (NECO).

The 30 items were dichotomously scored (i.e. 1 for correct answer and 0 for wrong answer). The maximum score of the MAT was 30 if all items were gotten correctly by the students. A score of 15 and above was regarded as being above average. The SESQ has 20 items on a 3-point scale, most favourable (3), favourable (2) and least favourable (1). The maximum score of the SESQ was 60 while the minimum score was 20 if all items are responded to. For the purpose of this study, the students with 40 and below was grouped as low socio-economic status (SES) while those with 41 and above was grouped as high socio-economic status (SES). The two instruments were duly subjected to face and content validity by experts in the field of Mathematics education, measurement and evaluation. From their comments and suggestions, some of the items were modified to suit the study. A Table of specifications and Mathematics scheme of work for senior secondary schools in Nigeria were used to construct the MAT items. Face and Content validity for SESQ were determined to ensure that the instrument contains items to measure what is purported to measure (such as parent's educational level, family's income, parent's occupation and social status etc.) for classification of individual into high and low socio-economic status using Kuder-Richardson 20 (KR-20) method of determining the reliability coefficients, the MAT and SESQ yielded 0.83 and 0.81 respectively. The MAT and SESQ were administered with the help of research assistants (Mathematics teachers) in the sampled schools. Descriptive statistics of means and standard deviations were used to answer research questions while z-test was used to test the null hypotheses at 0.05 level of significance.

Results

Research Question 1

What are the mean achievement scores of students in Mathematics based on school location? Data used to answer this research question are presented in Table 1

Table 1: Results of Z-test on differences in the mean Achievement scores of Students in Mathematics based on School Location

Location	N	Mean	SD	df	Z-cal.	Sig.	Decision
Urban	123	19.05	10.11				
				196	6.05	.000	Reject H_o
Rural	75	12.41	5.21				
Total	198						

Table 1 shows that students in urban schools had a mean score of 19.05 with a standard deviation of 10.11 while students in rural schools recorded a mean score of 12.41 with a corresponding standard deviation of 5.21 in that order.

Hypothesis One

There is no significant difference in the mean achievement scores of students in Mathematics based on school location

From Table 1, the computed Z-value of (6.05) with df= 196 is significant at p = 0.000 which is also significant at 0.05 since p-value of (0.000) is less than 0.05 set as level of significance, the null hypothesis was rejected. The result signifies that there is significant difference in the mean achievement scores of students in Mathematics based on school location. Hence, the inference drawn is that the students in urban schools achieved significantly better than their counterparts in rural schools.

Research Question 2

What are the mean achievement scores of students in Mathematics based on parents' socio-economic status (SES)?

Data used to answer this research question are presented in Table 2

Table 2: Results of Z-test on differences in the mean Achievement scores of Students in Mathematics based on Parents' Socio-economic Status (SES)

SES	N	Mean	SD	df	Z-cal.	Sig.	Decision
High	133	27.51	10.17	196	7.03	.000	Reject H_o
Low	65	22.53	15.30				
Total	198						

From Table 2, the mean achievement score of students from high socio-economic status (SES) parents stood at 27.51 with a standard deviation of 10.17 while that of students from low socio-economic status (SES) stood at 22.53 with a corresponding standard deviation of 15.30 in that order.

Hypothesis Two

There is no significant difference in the mean achievement scores of students in Mathematics based on parents' socio-economic status (SES).

From Table 2, the calculated Z-value of 7.03 (df=196) is significant at p=0.000 which is also significant at 0.05. From the fact that p-value of (0.000) is less than 0.05 set as level of significance, the null hypothesis was rejected. The result signifies that there is significant difference in the mean achievement scores of students in Mathematics based on parents' socio-economic status (SES). Hence, the inference drawn is that the mean difference that is in favour of students from high socio-economic status (SES) parents is significant and it shows that the students from high socio-economic status (SES) parents achieved significantly better than their counterparts from low socio-economic status (SES) parents.

Discussion of Findings

The findings of this study revealed significant difference between the achievement of students in urban and rural

schools in favour of urban schools. This finding is in conformity with the earlier findings of Isa (2018); Chianason (2012); Owoeye and Yara (2011) who their separate studies found locational influence on academic achievement of students using designed visual teaching models on the learning of Mathematics and basic Science (favouring urban school students). This finding is also in agreement with that of Igboegwu and Okonkwo (2012) who reported a significant difference in students' achievement with respect to location of school in favour of students in urban schools. However, this finding negates the earlier finding of Kissau (2006) who demonstrated that students in urban and rural schools have equal or similar achievement. The urban students might have performed better than the rural students as a result of teachers not willing to go to rural schools to teach, students spend so much time on farm work at the expense of the time they should spend on their studies. It could be attributed to the fact that urban schools are sometimes better endowed with available resources such as qualified Mathematics teachers, libraries, funds for improving the quality and quantity of teaching and learning compared to rural schools. This might also be due to the fact that the urban schools are regularly supervised by ministry officials as against the rural schools. This means that students from rural schools who may have the same ability with students from urban schools are restricted or limited by some factors that prevent them from doing their best in their academic pursuit.

The findings of this study also revealed that students of parents with high socio-economic status (SES) had better achievement than students of parents with low socio-economic status (SES). This finding is in line with that of Eamon (2005) and Barry (2005). Also, this finding was amply buttressed by Alade, Nwadingwe and Victor (2014) when the researchers asserted that socio-economic status (SES) of parents affects the following areas of the child's school education: provision of books and other materials, early attendance at school, development of interest in school activities, encouragement in school education, academic and job aspirations. Also, the students from high socio-economic status (SES) parents might have performed better as a result of the availability of resources, money and time at their disposal per-time.

Conclusion

The findings of this study have revealed that the students in urban schools achieved significantly better than their counterparts in rural schools. The findings also revealed that the students from high socio-economic status (SES) parents achieved significantly better than their counterparts from low socio-economic status (SES) parents.

Recommendations

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

1. Government should raise the standard of rural schools to the level of urban schools where the students achieved better in Mathematics than students in rural schools in terms of facilities and personnel.
2. Government should motivate Mathematics teachers by providing

incentives that will attract them to the rural areas.

3. The nation's resources should be evenly distributed in order to close the gap between low socio-economic status (SES) and high socio-economic status (SES) individuals in the Society

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