The Relationship Between Gender, School Location and Students' Mathematics Achievement in Secondary Schools in Lafia Local Government Area of Nasarawa State, Nigeria

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ABSTRACT

This study examined the relationship between Gender, School Location and students' mathematics achievement in secondary schools in Lafia Local Government Area (LGA) of Nasarawa State, Nigeri. The study employed expo-facto research design. The population for the study comprised of all SS2 students' in Lafia Local Government. Through simple random sampling technique, 460 students (262 males and 198 females) were selected for the study. The instrument for data collection was a proforma which was used to harvest students' scores of 2024 mathematics mock examinations in Nasarawa State. The instrument was validated by experts and validity index of 0.92 was obtained. A reliability coefficient of 0.76 was obtained for the instrument. Descriptive statistic of mean and standard deviation were used to answered the research questions, while correlation coefficient was used to resolved the hypotheses at 0.05 level of significance. The findings revealed that there is no significant relationship between gender and students' mathematicsachievement in secondary schools in Lafia LGA of Nasarawa State. It was further revealed that school location has no significant relationship with students' mathematics achievement. It was concluded that gender and school location has no significant difference in the relationship with students' mathematics achievement in secondary schools in Lafia LGA of Nasarawa State and recommendations were made that refreshers courses and workshops as well as seminars should be organized to re-orientate teachers, students and parents that when considering gender and school location, there is no significant difference in the relationship with students' achievement in mathematics among others.

Keywords-Relationship, Gender, School Location, Mathematics, Achievement

INTRODUCTION

The development in the academic achievement of secondary school Mathematics students in Nigeria in the past years has become a major source of concern to all stakeholders in the Science, Technology and Mathematics (STM) Educational sector [11]. Mathematics educators believe that any nation that hopes to develop must not neglect the teaching and learning of Mathematics in its schools [5]. The application of Mathematics knowledge to real life problemsis the most powerful instrument for enabling society to face global challenges and innovations in education.Reference [8]maintained that mathematic education is at the centre of empowerment of students toward self-reliant and industrial skills that are needed for survival especially in this era of global economic crisis. Mathematics therefore, is the chief corner stone of all sciences without which there will be no technology and without technology, there will be no modern society. This implies that a strong background in mathematics is critical for the nation's scientific and technological development.Reference [7],[8]opined that underachievement in mathematics among secondary school students could be attributed to several factors such as poor teaching, psychological factors, unpreparedness on the part of the students, poor learning environment, school locations, gender stereotyping, dearth of qualified teachers among others. As a result of the decline in mathematics students' achievement, stakeholders in STM agree that the huge investment in science and technology education is not yielding the desired dividend.

Gender remains an important factor to be considered in the determination of students' academic achievement. Gender has been identified as a major factor that affects students' achievement in mathematics examinations[13].Reference [14]posited that in Nigeria, women are marginalized while men are given greater opportunities to advance based on their mathematics background. In the Nigerian setting, this factor has been found to offer males an unfair advantage over their female counterparts. Reference [1] reported that women are hindered from progressing through discrimination on the basis of gender, early marriage and child bearing and as a result, they are deprived sound education, job opportunities and incapacitated and rendered passive generally in the society. Researchers [12][8]in their various studies observed that there is no significant difference between male and female achievement. On the other hand, [15],[3],[7]found out that a significant difference did exist between the achievement of male and female students in favour of the male students. Nevertheless, there is no specific study on the influence of gender and school location on Mathematics students' achievement in Lafia Local Government Area (LGA) of Nasarawa State; hence the need for this study.

Reference [9]perceived that the location of school is a possible factor responsible for the differences in academic achievement of students.The extent to which school location determines students' achievement lies with the particular type of school, its buildings, usage, capacity, teachers, students, environment and other parameters for rationalization of both rural and urban school map [7].The location of secondary schools in Nigeria is done haphazardly, without recourse to laid down statutes. The unplanned location of secondary schools has therefore, limited their spatial distribution resulting in their concentration to very few locations [19].The implication is that while some students spend little time to reach their schools from their homes, others have to travel long distances.

Another impact of rural and urban schools' location is the preference teachers have for urban schools where social amenities avail, to the detriment of rural schools where population is low and only subsistence livelihood prevails [16]The resultant effect of these factors on secondary schools is that qualified teachers refuse posting to rural locations, rural dwellers refuse sending their children to schools because they rely on them for subsistence living and help, and where parents hesitate to entrust their daughters to male teachers, fearing promiscuity [10]and[18].

Researchers [4], [2]have shown significant difference in students' achievement between rural and urban located schools. Such achievements in favour of urban schools, for instance, must have been borne out of many facilities available which were not available in the rural schools. Reference [16]observed a significant influence of school location and students' achievement, where large schools in urban locations performed better than small schools in rural locations.

Other researchers [17],[2]have found contrary results from the ones particularized above. For instance, [2]found students from rural locations performed better than their counterparts in verbal aptitude and English language. Reference[6]found that school size could not exert direct effect on achievement in Science between students in urban and rural locations. This present study therefore set to examine the relationship between gender, school location and students' mathematics achievement in Lafia LGA of Nasarawa State.

Statement of the Problem

The persistent underachievement of students in Mathematics is alarming, this calls for a review of current strategies in teaching and learning of the subjects. In addition, teaching and learning of Mathematics has been a problem to teachers and educators for years now. There is also the worrisome decline in students' enrolment in mathematics and other related areas in higher institutions. This is an indication of a serious gap between the expectations of the National Policy on Education (NPE) on Mathematics, Science and Technology and the actual situation in terms of achievement and enrolment of students in Mathematics, Science and Technology. The present study therefore, focuses on relationship between gender and school location on Mathematics students' achievement in secondary schools in Lafia LGA of Nasarawa State.

Purpose of the Study

Objectives of the study are to:

- determine the relationship of gender with students' achievement in secondary schools' mathematics in Lafia LGA.
- investigate the relationship of school location with students' achievement in secondary schools' mathematics in Lafia LGA.

Research Questions

The following research questions were formulated to guide the study.

- What relationship has gender with students' achievement in secondary school mathematics in Lafia LGA?
- What relationship has school location with students' achievement in secondary school mathematics in Lafia LGA?

Hypotheses

The following hypotheses were tested at 0.05 level of significance.

- Gender has no significant relationship with students' achievement in secondary school mathematics in Lafia LGA.
- School location has no significant relationship with students' achievement in secondary school mathematics in Lafia LGA.

METHODOLOGY

The study employed ex-post facto research design in which the variables of the study were not manipulated or controlled. It focused on gender, school location and students' achievement in Mathematics. The population for this study comprised of all SS2 mathematics students in the secondary schools in Lafia Local Government who wrote 2024 mathematics mock examinations.A simple random sampling technique was used to select 460 students for the study (262 were male and 198 were female respectively). The instrument for data collection was a proforma which was used to harvest students' scores in Mathematics Mock Examinations of 2024. The proforma consisted of information such as serial number, name of school, gender, school location and students' scores in Mathematics.The instrument was validated by experts in measurement and evaluation from Federal University of Lafia and validity index of 0.92 was obtained.A reliability coefficient of 0.76 was established for the instrument.A descriptive statistic of mean and standard deviation was used to answered research questions, while Pearson Product Moment Correlation Coefficientwas used to resolved the hypotheses at 0.05 level of significance.

RESULTS

Research question 1: What relationship has gender with the achievement of students in Mathematics in Lafia LGA?

Table 1: Mean and Standard deviation analysis of gender and mathematics achievement

Variable	N	Mean	SD
Male	262	57.15	10.642
Female	198	59.12	9.816

Table 1 shows the mean of female students (x = 59.12, SD=9.816) and their male counterparts (x =57.15, SD =10.642). This implies that the female students obtained a higher mean performance score in mathematicsthan their male students.

Research question 2: What relationship has school location with students' achievement in mathematics in Lafia LGA?

Table 2: Mean and Standard deviation analysis of school location and mathematics achievement

Variable	N	Mean	SD
Urban	276	62.458	5.532
Rural	184	56.863	6.926

Table 2 shows the mean of urban students (x =62.458, SD = 5.532) and their rural counterparts (x =56.863, SD =6.926). This implies that the urban students obtained a higher mean performance score in mathematics than their rural students.

Testing of Hypotheses

Hypothesis 1: Gender has no significant relationship with students' mathematics achievement in secondary schools in Lafia LGA.

Table 3: Correlation coefficient between gender and students' mathematics achievement

Variable	N	Mean	SD	r	Sig
Male	262	57.15	10.642		
Female	198	59.12	9.816	0.138	0.170

Table 3 shows the correlation coefficient between gender and students mathematics achievement(r = -0138; p = 0.170; p>0.05). This means that the p-value is greater than alpha level of significance.Hence, the null hypothesis was therefore retained and the decision is that gender has no significant relationship with students' mathematicsachievement in secondary schools in Lafia LGA.

Hypothesis 2: School location has no significant relationship with students' mathematicsachievement in secondary schools in Lafia LGA.

Table 4: Correlation coefficient between school location and students' mathematics achievement

Variable	N	Mean	SD	r	Sig
Urban	276	62.458	5.532		
Rural	184	56.863	6.926	0.101	0.301

Table 4 shows the correlation coefficient between school location and students mathematics achievement (r= 0.101; p = 0.301; p>0.05). This implies that the p-value is greater than alpha level of significance. Hence, the null hypothesis was therefore retained and the decision is that school location has no significant relationship with students' mathematics achievement in secondary schools in Lafia LGA.

DISCUSSION OF FINDINGS

Result in table 3 indicates that there is no significant relationship between gender and students' mathematics achievement in secondary schools in Lafia LGA of Nasarawa State. This finding agreed with[12], [8] who all reported that there is no relationship between gender and students' achievement in secondary school mathematics. On the other hand, [15], [3], [7]found out that a significant difference did exist between the achievement of male and female students in favour of the male students.

From table 4 the study revealed that there is no significant difference in the relationship between school location and students' achievement in mathematics. This finding disagreed with the findings of[4], [16]which in their studies found a significant relationship in students' achievement between rural and urban located schools. Such achievements in favour of urban schools, for instance, must have been borne out of many facilities available which were not available in the rural schools. The findings of this study affirmed the findings of [9]who found that there was no significant relationship between school location and students' achievement, where large schools in urban locations performed similar like the small schools in rural locations.

CONCLUSION

It can be concluded based on the findings of the study that there is no significant difference in the relationship between gender, school location and students' mathematics achievement in secondary schools in Lafia LGA of Nasarawa State, Nigeria.

RECOMMENDATIONS

Based on the findings, the following recommendations were made:

1. There is need to improve on the resources (human and material) available in both rural and urban located schools.
2. Refreshers courses and workshops as well as seminars should be organized to re-orientate teachers, studentand parents that when considering gender and school location, there is no significant difference in the relationship with students' achievement in mathematics.
3. Government of Nasarawa State as well as philanthropic organizations should strongly encourage the study of mathematics by creating incentives to motivate prospective mathematicians.

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