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GENDER, LOCATION, SOCIO-ECONOMIC STATUS AND SCHOOL OWNERSHIP AS DETERMINANTS OF STUDENTS' PERFORMANCE IN GEOMETRY IN DELTA CENTRAL SENATORIAL DISTRICT

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ABSTRACT

The study examined gender, location, socio-economic status and school ownership as determinants of students' performance in geometry in Delta Central Senatorial District.. Five research questions and five hypotheses guided the study. A descriptive research design was adopted. The population of this study consisted of all senior Secondary school class three students in Delta central senatorial district. The proportionate stratified random sampling technique was employed geometry achievement test (GAT) and socio-economic status whose reliability indices were 0.858 and 0.772 respectively were used to collect data. The research questions were answered using mean and standard deviation while t-test was used to test the hypotheses. The finding revealed that there was a significant difference between the performance of male and female students in geometry in Delta Central Senatorial District, there was significant difference between the performance of urban and rural students in geometry in Delta Central senatorial district, there was significant difference between the performances of students from high and low socio-economic status in geometry in delta central senatorial district, and was no significant difference between the performance of public and private school students in geometry in Delta Central Senatorial District. The study concluded that there was a difference that existed in the performance between male and female students; urban and rural students; students from high and low socioeconomic status in geometry in Delta Central Senatorial District. While in public and private school students, there was no difference in their performance. Based on the findings and conclusion, it was recommended, among others, that government should work in collaboration with Ministry of Education and Post Primary Education Board to educate students on the drawback of geometry in mathematics. School administrators should prioritize teachers with geometrical skills, school counselors should develop varieties of strategies that will help and allow students to make the best and positive use of geometrical skills, parents should encourage their ward in providing geometrical instruments to enhance societal development.

Keywords: Gender, Location, Socio-Economic Status, School Ownership Students' Performance, Geometry

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INTRODUCTION

Mathematics as a subject affects all aspects of human life at different degrees. This include social, economic, political, geographical, scientific and technological. All aspects of man arecentred on numbers. This is because it supports the development and maintenance of our scientific and technical culture. According to Elaine (2013) our economic network requires mathematics to develop critical thinking and problem solving skills commonly found in mathematics classes with the logic of shape, quantity and arrangement. Mathematics as a body of knowledge is a collection of techniques and methods, and the product of human activity and even as the activity itself. Oginni (2013) says mathematics is an asset to all knowledge, since it influences all facets of human endeavour. Therefore, it is essential for mathematics teaching and learning to be given serious attention. One of the general purposes of Mathematics is for students to appreciate the concept of Mathematics since most students irrespective of background need it to pursue a professional course for nation's development. In order to achieve this purpose, mathematics must be connected to our environment through technology; this cannot be achieved by enumerating formulas one after another. For example, if we say that the Earth is surrounded with Geometrical shapes, in classes we can have students perceive that Mathematics is a powerful device to understand the world, and have them appreciates mathematics by relating Mathematics and our environment. Mathematics has different branches; which geometry is one of them.

Geometry is the branch of Mathematics that deals with shapes and space. Betiku (2015) views geometry as the science of space which describes and relates with shapes. Betiku continued by stating that basic geometry allows students to determine properties such as the areas and perimeters of two dimensional shapes, and surface areas and volumes of three-dimensional shapes. The importance of geometry can never be over emphasized since it improves knowledge and provides method of teaching students to think logically (Obi, 2014). The application of geometry helps in the understanding of other areas of Mathematics. The geometry of most areas of mathematics can be understood using geometrical interpretations, while geometrical techniques can be used to solve most problems in the fields of mathematics (Odili, 2014). In support of this, Agwagah (2008) opined that, knowledge of shapes, numbers, and operations on the shapes help to describe and predict things about the world around us. Despite the importance of geometry and its usefulness in everyday life as an aspect of mathematics, students still perform poorly in mathematics particularly in geometry (Agwagah, 2008).

Taking basic geometry in junior secondary school gives students a strong foundation for understanding higher levels of geometry. Many mathematics students have difficulty learning geometry because of its abstract nature. Many teachers have trouble teaching geometry without instructional materials. For students to pass a geometry exam, they must memorize questions regarding shape, size, relative position, areas, volumes, equations, and formulas. As a result, students have bad impression about mathematics and tend to lose interest in it. This poor performance was revealed in statistics that performance of students in Delta state in mathematics senior secondary schools' examination that was conducted by the West Africa Examination Council (WAEC) in Nigeria from 2017 to 2020 is poor as shown in table 1 below.

Table 1: performance of mathematics students in Delta State

Year	Total No. of candidates	Total passed A1-C5	% passed	Total D7-F9	% failed
2017	86612	30338	35	56274	65
2018	72896	31348	47	41548	53
2019	76233	32780	43	43453	57
2020	66274	28979	45	37295	55

Source: WAEC Chief Examiner's Report (2017-2020)

According to WAEC Chief Examiner's Report (2017, 2018, 2019 and 2020), candidates that sat for WASSCE at this period lack skills in answering almost all the questions asked in general essay and objective mathematics test in geometry. The problem areas as identified are geometry of circles, 3-dimensional problems, algebraic expressions and word problems. The difficulty experienced by students on these topics can be attributed to the method of teaching or the test items that are developed (Enuwah, 2014). Scholars and education stakeholders have in the past identified several factors as the causes of poor performance of students in public examinations. Among such factors identified are poor location of the school, frequent change in government policies, unwanted strike by workers, closure of schools, home- school distance, high student teacher ratio, lack of good geometrical textbooks, poor content and context of instruction, lack of supervision, monitoring and evaluation, poor and unwanted environment used in teaching and learning of geometry (Adah, 2021). One of these could have serious influence on the downward poor achievement by students in mathematics particularly in geometry. It is not specifically certain whether the test items in geometry usually administered to students are appropriate for the level of students in terms of quality like standardized test administered by examination bodies such as WAEC. This present study aims to address these inadequacies with special attention to gender, location, socio-economic status and school type as they affect or influence the performance of students.

A person's gender can be viewed as a psychological phenomenon and a socio-cultural phenomenon as well. Females and males are taught how to behave and think according to gender roles. The concept of gender-role classification involves a personality-trait-like categorization of a person. However, it is important to think of personality in terms of traits and contexts rather than the personality traits alone. Understanding culturally prescribed behaviour for women and men around the world is a great example of the importance of considering gender in context. As far as social roles are concerned, women are less powerful, have less status, and control fewer financial resources than men. According to the social cognitive theory of gender, adolescents are influenced by the gender behavior of others as they observe and imitate it. In addition, they are influenced by rewards and punishments for gender–appropriate and gender– inappropriate behaviour. Parents and siblings influence adolescents' gender roles. Peers reward gender-appropriate behaviour. However the researcher is of the opinion that this idea can be readjusted for a better socio- economic society where all individuals are given equal opportunity to perform all tasks irrespective of their gender and location.

Location in this study could be seen as the environment of the learner, on the issue of location, Witkin and Goodenough (2017) opined that urban students learn mathematics better when compared to rural students. The urban students with little guidance from their teacher were found to learn better in mathematics and science subjects (Biology, Chemistry, Physics)

than their rural counterparts. Students from different environment also differed in their ways of learning. Learning is a relatively permanent change in behaviour as a result of experience and skill acquisition. The learning process to a larger extent affects the performance of students. If the child does not learn well he/she cannot perform well or achieve much in that subject compared to students attending urban schools, those in rural schools' experience higher levels of poverty. The preferred language in Nigeria is English, which is not commonly used in rural schools. What language is spoken there on a daily basis? Since maths is taught and evaluated in schools using the English language, this can have a significant impact on how well pupils succeed in maths. Urban schools benefit from a variety of factors, including easy access to materials, libraries, opportunities, a positive learning environment, and teachers. Smaller classes are one of rural schools' greatest benefits, though. These courses promise improved student evaluation and more freedom in the educational methods used (Okagbare, Ossai, & Osadebe, (2023). Owoeye (2011) discovered that urban pupils outperformed rural children on all types of achievement assessments, nonetheless. Mathematics deficiency among learners was found in major urban centers rather than other locations.

The academic performance of school-enrolled children has been seen to be highly influenced by the socioeconomic status of the students. Parents' educational background and the availability of reading resources at home have an impact on their children's academic performance, according to Siah, Christina Ong, Tan, Sim, and Xian Thoo (2018). In the same vein, Sulaiman, *et al.* (2020) opined that adequate facilities, adequate teachers, parental support and favourable environment affect students' academic performance. The effect of socio-demographic profile of the family, significantly affects academic performance of school learners in geometry and mathematics in general. There is a correlation between socio-economic status of the parent and students' educational attainment in schools and this correlation cuts across all subjects that are taught in primary, post primary and tertiary institution. In Nigeria, socioeconomic factors are directly related to pupils' academic achievement. Usman, Mukhtar, and Auwal (2016) claim that parental participation, occupation, interest in education, access to educational resources at home, family size, stability, background, social class, and socioeconomic status are key determinants of students' achievement in school. Moreover, Amoo, Adeyinka and Aderibigbe (2018) claimed that students whose parents have higher socio-economic status and higher levels of education might have an enhanced regard for learning and more positive ability beliefs on education compared to children of parents with lower socio-economic status and lower levels of education in mathematics.

Public and private school ownership are both types of school ownership. Private schools could be owned and founded and funded by individuals, organizations, friends and family whereas public schools are owned and funded by anybody in office of government. Private schools, according to research, outperform their public counterparts in terms of academic achievement. Adesokan (2017) in a study opined that private school students have more desire skills in drawing and applying lines to angles than public students due to lack of special attention in public schools. Shemndolwa (2016) however opined that although children are integrated in special schools and inclusive schools and cater with special and regular teachers still in mathematics they are not performing well. Moreover, some few general teachers who were posted to teach in schools with children with VI are said to have inadequate knowledge and skills of teaching mathematics most especially in shapes, measurement and angles. Students' attitude towards mathematics influences the efforts they put in understanding and practicing mathematical concepts and skills.

Complaints have been made by parents, teachers, and state government on poor achievement and performance of students in mathematics at junior secondary school certificate examination (JSSCE) conducted by the Ministry of Basic and Secondary Education in Delta State especially in the area of geometry. Many reasons have been attributed for the high failure rate of students and the inability to understand the principles of mathematics. Some students view it as abstract subject which cannot be understood. As a result, some of our students including male and female and the urban and rural ones have the notion that mathematics is a difficult subject as such many of them will not take up careers involving mathematics in future. Thus, the demographic variable of gender, location, socio-economic status and school ownership need to be determine as it relates to students achievement in geometry. On this note therefore, the present study seeks to determine some factors such as gender, location, socio-economic status and school ownership as it relate to student achievement in geometry.

Statement of the Problem

Research findings, publications of government and examinations bodies over the years have shown that there is a poor level of Mathematics achievement by students at every level of education in Nigeria, particularly at the Senior Secondary School level. As reflected by poor student performance in Mathematics in the Senior Secondary Certificate Examinations (SSCE) conducted by the West African Examinations Council (WAEC) during the period 2018 - 2020, a general unsatisfactory state of affairs is evident. Even the statistics published by the Education Resource Centre as of (2014) of the Delta State Ministry of Basic and Secondary Education shows that only 15.90% of 31,117 (2006), 26.10% of 24,960 (2007), 41.0% of 25,859 (2008), 42.10% of 29,761 (2009), 36.30% of 38,705 (2010), 38.70% of 51,042 (2011) and 49.10% of 56,443 (2012) of the candidates who enrolled for Mathematics in the Senior Secondary Certificate Examination, passed. At the Mathematical Association of Nigeria's (MAN) fifty-first annual conference, which was held in Asaba, this degree of unsatisfactory mathematics achievement was the main topic of debate.

In a study by the Mathematical Association of Nigeria (2013), government, teachers, and students might all contribute to poor mathematics performance. A number of factors have been identified as affecting students' performance in Mathematics in Nigeria by the Association, including inadequate and poorly trained teachers, parental laxity, underfunding, gender differences, school location, politics, socioeconomic differences, etc. The MAN emphasized on the need to give attention to the impact demographic characteristics has on students' performance in Mathematics in Senior Secondary Certificate Examination, as a way to reducing the level of poor performance in Mathematics most especially in geometry which is one of the branch of mathematics that is among the abstract and complex aspects of mathematics that have been described by students as a difficult mathematics which they do not understand. Geometry topic involves equations and formula that must be memorized in order to pass examination.

It appears that students believe that geometry topics are boring, difficult and terrifying to them, as a result they show unfavourable attitude towards the learning of geometry. As a result, the researcher believes there is an urgent need for the assessment of these variables viz-a-viz how they impinge on performance, since situations are not static. In the area of gender, there seem to be differences in students' mathematics achievement and performance. Could it be that male students perform better than female students? In terms of location, there seems to be differences in students' mathematics achievement and performance. Could it also be that urban students have differences in mathematics than their rural counterparts? In same vein, student socio-economic status could also differ. Therefore, the problem which the study

seeks to solve is, what is the performance of students' gender, location, socio-economic status and school ownership in Geometry? The central focus of this study therefore, is to find out the performance of students gender, location, socio-economic status and school ownership in geometry in Delta Central Senatorial District.

Research Questions

The following research questions were raised to guide the study:

1. What is the performance among male and female students in geometry in Delta Central Senatorial District?
2. What is the performance of urban and rural students in geometry in Delta Central Senatorial District?
3. What is the performance of students from high and low socio-economic status in geometry in Delta Central Senatorial District?
4. What is the performance of public and private school students in geometry in Delta Central Senatorial District?

Hypotheses

The following hypotheses were tested in the study at 0.05 level of significant;

1. There is no significant difference between the mean performance of male and female students in geometry in Delta Central Senatorial District.
2. There is no significant difference between the mean performance of urban and rural students in geometry in Delta Central Senatorial District.
3. There is no significant difference between the mean performances of students from high and low socio-economic status in geometry in Delta Central Senatorial District.
4. There is no significant difference between the mean performance of public and private school students in geometry in Delta Central Senatorial District.

Purpose of the Study

The major purpose of this study was to investigate gender, location, socio-economic status and school ownership as determinants of students' performance in Geometry. Specifically, the study seeks to:

1. investigate the performance of male and female students in geometry in Delta Central Senatorial District;
2. examine the performance of urban and rural students in geometry in Delta Central Senatorial District;
3. investigate the performance of students from high and low socio-economic status in geometry in Delta Central Senatorial District;
4. explore the performance of public and private school students in geometry in Delta Central Senatorial District;

Significance of the Study

The outcome of this study will be of significance to educationists, parents, counsellors, and future researchers. Findings from this study may give a better understanding to parents on the need to capture the appropriate position in terms of location and their socioeconomic status in geometrical achievement.

Findings from this study may give a better understanding to counsellors on the need to capture the appropriate challenge of students to determine if location or socio-economic status is their challenge.

Findings from this study will also focus on the need to bring greater understanding in terms of socioeconomic status when it comes to funding of children education.

The findings from this study may provide useful information that will enhance the teachers and students psychological, emotional, sociological and educational adjustment towards studying mathematics and achieving good results in it.

Information provided by the researcher may help learners to develop the right attitude to learning mathematics irrespective of their gender and location when exposed to teaching and learning

The outcome of this study may help curriculum planner in suggesting best ways to increase the achievements of students to classroom teachers irrespective of gender and location.

Findings of the study may serve as a guide to curriculum planners and developer in developing the curriculum taking into account the varying socio-economic status as it affect learners.

The outcome of this study may help educational administrators in planning workshops and training for teachers on varying location and socioeconomic status of students towards mathematics teaching and learning.

It may also serve as a guide to the school counselling service on how best students' are taking into cognizance their varying cognitive ability.

The findings and recommendations from the study will contribute to the pool of available literature future researchers who intend to carry out future research on this area.

Scope and Delimitation of Study

This research is on the gender, location, socio-economic status and school ownership as determinants of students' performance in geometry. It is designed for all public and approved junior School III (JSS III) mathematics students in Delta Central Senatorial District. The choice of JSS II is based on the fact that the Mathematical concepts like geometry that study will focus on are prescribed in JSS III mathematics scheme which were used for the study. This study also compared the performance of male and female, urban and rural, socioeconomic status of students as well as school type in Delta Central Senatorial District.

RESEARCH METHOD

Design of the Study

The study employed the descriptive research design. This design involves the systematic collection of data from a target population. The design also allowed the use of questionnaire to generate data for the study. This design was chosen to enable the researcher determine the performance between the variables of the study. The study focused on gender, school location, parents' SES and school ownership as it relates to academic performance of students' in geometry. The dependent variable was students' academic performance in mathematics. The independent variables are gender, school location, socio-economic status and school ownership.

Population of the Study

The population of study consisted of allSSS3 students in the eight local government areas in the Delta Central Senatorial District of Delta State with a population of 7663 (4642 public and 3021 private approved senior secondary school students) as provided by Academic Record Unit of the post primary Education board, Asaba.

Sample and Sampling Technique

The sample size of the study is 364 in accordance with Krejcies and Morgan as cited by Dikoru (2020). In Krejcies and Morgan statistical table the sample size of a population within and above 7000 is 364. This is adequate for .05 confidence level. This statistical table was used to make sure that a controllable sample size from the population of the study. A proportionate stratified random sampling technique based on school ownership (public/private school) was used to draw the sample for the study. Using the stratification, twelve (12) schools which constitute 8% of the entire schools in public was selected and sixteen (16) schools which constitute 5% of the entire schools in private was selected making a total 28 schools that was used for the study. Simple random sampling technique was then used to select 13 students from the selected schools make up the sample.

Research Instrument

Two instruments used in this study, namely Geometry Achievement test (GAT) and socio-economic status questionnaire (SESQ). The GAT was prepared by the researcher from a pool of past West African Examination Council (WAEC) mathematics objective tests. The GAT contains 50 items that are dichotomously scored (i.e. 1 for correct answer or 0 for wrong answer). The GAT was constructed from four topics on plane shape Geometry such as square, rectangle, trapezium and parallelogram. Thus, the shape of various geometrical objects was used so that students can touch and feel the objects. The test items were spread to cover the topics in this manner;

- Rectangle 14 questions (28%)
- Square 13 questions (26%)
- Parallelogram 13 questions (26%)
- Trapezium 10 questions (20%)

  Total 50 items 100%

In drawing up the GAT, the researcher took into account Bloom's (1956) taxonomy of objectives in the cognitive domain. The test is made to cover the six levels – Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation cognitive domain, most of the items were clustered around the five levels: knowledge (22), comprehension (28), application (24), analysis (10), synthesis (8), evaluation (8). The SESQ has 10 items on a four point-scales of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD) which was scored 4, 3, 2 and 1 point respectively.

Validity of the Instruments

The two instruments were validated by mathematics teachers and measurement and evaluation experts. Based on their comments and recommendations, some of the items were modified and reworded. A table of specifications and a mathematics scheme of work for Junior Secondary Schools in Nigeria were used to construct the GAT items. The main procedure used in deterring the face validity of the GAT is by giving a copy of it to three experts in Mathematics education: the research supervisor, who is an expert in Test and measurement, and one mathematics teacher in secondary school with experience. They were asked to comment on the suitability of the questions in terms of language level and cognitive domain assessment. After the modifications and corrections, unnecessary items were discarded. The test was considered valid, good, and appropriate for mental ability testing for junior secondary school (JSS III) students. The content validity of the GAT instrument was established via the table of specifications shown in Appendix E. Content validity for the SESQ was established by making sure that the instrument contains items that measure the

yardstick (such as family income, parent's educational level, parent's occupation, social status, etc.) for the classification of individuals into high and low socio-economic status.

Reliability of the Research Instrument

In establishing the reliability of the GAT and that of the SESQ, both instruments were pilot tested using 50 students in a secondary school in Delta South Senatorial District of Delta State, which has similar characteristics as the sampled schools. The test reliability coefficient of the GAT was calculated using Kuder-Richardson formula 21 (KR-21). This formula was chosen because it combines convenience in calculation with satisfactory accuracy in estimation. When the KR-21 formula was used, the calculation yielded a reliability coefficient (r) of 0.858. The reliability of the SESQ was established using Cronbach's alpha statistics. A reliability index of 0.772 was obtained. According to Fraenkel and Wallen (2012), a KR-21 value of 0.7 and above is considered suitable to make group inferences that are accurate enough. This value shows that both instruments are reliable for the study.

Method of Data Collection

The researcher visited the sampled schools with an introductory letter from the Head of Department seeking the permission of the principals to carry out the collection of data for the research work. A consent letter from the researcher was given to the participants seeking their voluntary participation in the research. The researcher, with the assistance of Mathematics teachers, administered the instruments to JSSIII students in each of the sampled schools. To ensure a 100% return rate, the research assistant will be briefed to replace any lost or wrongly filled-in questionnaire or the GAT. The completed SES questionnaire and the GAT were collected on the spot, either from the researcher or the research assistant, and compiled for the analysis. The maximum score of the questionnaire is 40, while the minimum score is 10 when all the statements are attempted. Respondents who scored 20 or higher were classified as high SES, while those who scored less than 20 were classified as low SES.

Method of Data Analysis

The data generated were analyzed using descriptive statistics in computer software SPSS version 21 (statistical package for social sciences) Mean and standard deviation were used to answer the research questions. The hypotheses were tested using the t-test statistical method for in order to determine the mean performance that exists between the variables.

RESULTS AND DISCUSSION

Research Question 1

What is the mean performance among male and female students in geometry in Delta Central Senatorial District?

Table 1: mean and standard deviation of the performance among male and female students in geometry

Variable	N	Mean	SD	Mean difference
Male	151	38.67	6.82	1.69
Female	213	36.98	2.86	

Table 1 shows the mean and standard deviation of male and female students in geometry which are 36.67, 6.82 and 36.98, 2.86 respectively and a mean difference of 1.69 in favour of the male students.

Research Question 2

What is the performance of urban and rural students in geometry in Delta Central Senatorial District?

Table 2: Mean and standard deviation of the performance of urban and rural students in geometry

Variable	N	Mean	SD	Mean Difference
Urabn	216	40.89	9.16	7.04
Rural	148	33.85	2.49	

Table 2 indicates the mean and standard derivation of urban and rural students in geometry. The urban students had 40.89, 9.16 and female students had 33.85, 2.49 respectively and a mean difference of 7.04 in favour of the urban students.

Research Question 3

What is the performance of students from high and how socio-economic status in geometry in delta central senatorial district?

Table 3: Mean and standard deviation of students' performance from high and low socio-economic status in geometry in Delta Central Senatorial District?

Variable	N	Mean	SD	Mean Difference
High socio economic status	213	48.70	2.72	-2.58
Low-socio-economic status	151	49.36	1.78	

Table 3 shows the mean and standard deviation of students from high and low socio-economic status. The students from high had mean of 48.70 and standard deviation of 2.72, while that of low had 49.36, 1.78 respectively and the mean difference of -2.58 which did not favour the students from high socio-economic status.

Research Question 4

What is the performance of public and private school students in geometry in Delta Central senatorial district?

Table 4: Mean and standard deviation of the performance of public and private school students in geometry.

Variable	N	Mean	SD	Mean Difference
Public school students	177	42.85	3.74	0.53
Private school students	187	42.32	3.55	

Table 4 shows, the mean and standard deviation of public and private school student's performance in geometry which are 42.85, 3.74 and 42.32, 3.55 with mean difference of 0.53 in favour of the public school students.

Hypothesis 1

There is no significant difference between the performance of male and female students in geometry in Delta Central senatorial district.

Table 5: independent t-test analysis of male and female student's performance in geometry.

Variable	N	Mean	SD	DF	T	Sig (2-Tailed)
Male	157	38.67	6.82	362	3.233	0.001
Female	213	36.98	2.86			

The result in Table 5 shows a t-value of 3.233 and a p-value of 0.001. Testing the null hypothesis at an alpha level of 0.05, the p-value of 0.001 was less than the alpha level of 0.05. Thus, the null hypothesis was rejected. This shows that there was a significant difference between the performance of male and female students in geometry in the Delta Central Senatorial District.

Hypothesis 2

There is no significant difference between the performance of urban and rural students in geometry in Delta Central Senatorial District.

Table 6: Independent t-test analysis on the performance of urban and riral students in geometry.

Variable	N	Mean	SD	Df	T	Sig (2-Failed)
Urban	216	40.89	9.16	362	9.115	0.000
Rural	148	33.85	2.48			

Table 6 indicates a t-value of 9.115 and a p-value of 0.00. Testing the null hypothesis at an alpha level of 0.05, the p-value of 0.000 was less than the alpha level of 0.05. Hence, the null hypothesis, which states that "there is no significant difference between the performance of urban and rural students in geometry in Delta Central Senatorial District, was rejected.

Hypothesis 3

There is no significant different between the performance of students from high and low socio-economic status in geometry in delta central senatorial district.

Table 7: independent t-test analysis on the performance of students from high and low socio-economic status in geometry.

Variable	N	Mean	SD	DF	T	Sig (2-Tailed)
High socio-economic status	213	48.70	2.72	362	2.583	0.010
Low-socio-economic status	151	49.36	1.78			

Table 7 shows a t-value of -2.583 and a p-value of 0.05. Testing the null hypothesis, 0.010 was less than the alpha level of 0.05. Therefore, the null hypothesis was rejected. Thus, it was revealed that there was a significant difference between the performances of students of high and low socio-economic status in geometry in the Delta Central Senatorial District.

Hypothesis 4

There is no significant difference between the performance of public and private school students in geometry in delta central senatorial district.

Table 8: Independent t-test analysis on the performance of public and private school students in geometry in Delta central senatorial district.

Variable	N	Mean	SD	DF	T	Sig (2-tailed)
Public school students	177	42.85	3.74	362	1.393	0.164
Private school students	187	42.32	3.55			

Table 8 indicates a t-value of 1.393 and a p-value of 0.164. Testing the null hypothesis at an alpha level of 0.05, the p-value of 0.164 was greater than the alpha level of 0.05. Therefore, the null hypothesis was accepted. This implies that there was no significant difference between the performance of public and private school students in geometry in the Delta Central Senatorial District.

Discussion of Results

The study is an investigation of gender, location, socio-economic status and school ownership as determinants of students' performance in geometry in Delta Central Senatorial District. The findings of the results were discussed under the following subheadings;

Male and female Students mean performance in geometry

The finding in research question 1 shows a mean difference of 1.69 between male and female students performance in geometry, which was in favour of the male students. The result in Hypothesis 1 revealed that there was a significant difference between the performance of male and female students in geometry. The performance of male students over their female counterparts is due to the fact that female students have a lesser skill in answering geometrical questions. This is in line with Asante (2010), who reported a significant difference in mathematics performance among boys and girls. The finding also supports the view of Ezeudu (2013), who found that male students achieve significantly better than female students in both Urban and rural schools.

Urban and Rural Students Performance in Geometry

The result in research question 2 indicates that 7.04 is the mean difference in the performance of urban and rural students in geometry in Delta Central Senatorial District. The findings in Hypothesis 2 revealed that there was a significant difference between the performance of urban and rural students in geometry in Delta Central Senatorial District. The difference in performance is a result of the fact that urban schools have more skilled teachers who studied engineering and applied their knowledge when teaching geometry than rural schools. This finding supports the studies of Kuyenun and Fejokwu (2018), who carried out a study on the relationship between school location and gender on the academic achievement of secondary school students and found that location had a significant influence on students' academic achievement. The finding was also in agreement with the findings of Bada and Laraba (2018), who examined the influence of school location and school facilities on secondary school students' academic performance in Okitipapa local Government Area of Ondo state and found that there was a significant difference between the academic performance of students in rural and urban areas. The findings were at variance with the study of Abamba (2021), who examined the effect of school location on secondary school students' academic

achievement based on the 5 E-learning cycles and found that there was no significant difference between rural and urban students achievement taught using the 5 E-learning cycles.

Performance of Students from High and Low Socio-Economic Status In Geometry

The finding in research question 3 shows that 2.58 was the mean difference in the performance of students from high and low socio-economic statuses in geometry. The findings in Hypothesis 3 show that there was a significant difference between the performances of students of high and low socio-economic status in geometry in the Delta Central Senatorial District. The difference in performance between students from high and low SES is that students from high and positive backgrounds tend to be provided with better quality learning facilities than students from low and negative backgrounds. This finding was at variance with the views of Gemectiu (2018), who carried out a study on the effect of family socio-economic status on students' academic achievement at the College of Education and Behavioural Sciences at Haramaya University, Eastern Ethiopia, and found that family income did not add anything new to students' academic achievement. This study was also at variance with the finding of Ewuni (2019), who conducted a study on gender and socio-economic achievement in senior secondary schools and revealed that there was no significant relationship between socio-economic status and academic achievement.

Performance of Public and Private School Students in Geometry

The result of the research question and its hypothesis 4 indicates that 0.53 was the mean difference in the performance of public and private school students in geometry in the Delta Central Senatorial District. The finding in Hypothesis 4 shows that there was no significant difference in the performance of public and private school students in geometry in Delta Central Senatorial District. Private school students ought to perform better than their public counterparts as a result of the fact that most Nigerian graduates tend to fix themselves in private schools to search for a better pasture. The finding was at variance with the findings of Anigbo in Enunwah (2014), who reported that the mean achievement scores of pupils from privately owned schools were significantly higher than those of their public school counterparts in general mathematics. The finding was also at variance with Adesokan (2017), who opined that private school students have more desire for skills in drawing and applying lines to angles than public school students due to a lack of attention in public schools. The finding was also at variance with the findings of Ntibi and Edoho (2017), who investigated and analysed the attitudes of public and private school students in mathematics and basic drawing and found that most private school students performed little better than public school students.

Conclusion

Based on the findings, the following conclusions were drawn. The study revealed that differences existed in the performance of male and female students, urban and rural students, and students of high and low socioeconomic status in geometry in the Delta Central Senatorial District. While in public and private schools, there was no difference in their performance.

Recommendations

With regard to the findings, the following recommendations were made:

1. The government should work in collaboration with the ministry of Education and the post-primary Education Board to educate students on the drawbacks of geometry in mathematics.
2. School administrators should prioritise teachers with geometrical skills.
3. School counsellors should develop a variety of strategies and environments that will help students make the best and most positive use of geometrical skills.
4. Parents should encourage their children to use geometrical instruments to enhance societal development.

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