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Gender Differentialsin Students' Basic Education Certificate Examination(BECE) Mathematics and Basic Science Achievement in Obio/Akpor, Rivers State

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Abstract
The study investigated gender differentials in students' Basic Education Certificate Examination (BECE) Mathematics and Basic Science Achievement in Rivers State. The study employed an ex-post facto design. A sample of 1150 students was used for the study. A simple random sampling technique was used to draw students from public schools in Obio/Akpor Local Government Area of Rivers State. The study was guided by two research questions and two corresponding hypotheses that were tested at a 0.05 level of significance. Data for the study was collected from students' 2018/2019 BECE Mathematics and Basic Science results conducted by the Rivers State Ministry of Education. The data were analysed using frequency counts, percentages, the Chi-square test for independence, the mean, and independent samples t-test statistics. The findings of the study showed that there was no significant difference between the performances of male and female students for both BECE Mathematics and Basic Science (P > .05, d < 0.1). Although male students outperformed females in both BECE Mathematics and Basic Science, the effect size was not statistically significant. In general, students performed significantly better in BECE Mathematics than in Basic Science, with a pass rate of 90% versus 65%, respectively. To enhance quality instruction in Basic Science, it was recommended that the management of public schools should increase the provision of infrastructure, laboratories, teaching materials and methodologies, and science-related excursions and field trips.
Keywords: *Gender, Mathematics, Basic Science, Achievement.*

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I. Introduction

Education has been shown to be the most effective weapon for human development, nation-building, and socioeconomic empowerment. Education, regardless of field or perspective, aims to prepare a person for life. Since it is intended to prepare a person for a better life, a person must be certain of what he or she may achieve through it and from which subject,be it science, engineering, medical or the arts (Awai & Njigwum). We live in a time when modern education is primarily reliant on the application of science and technology, as such, knowledge of these areas has become essential, especially because practically everyone relies on some form of technology to operate successfully in society. Therefore, to function properly in this age of science and technology an individual must have a good foundation in the area of Mathematics and Basic Sciences.

The science of numbers and their operations is characterized as mathematics. Nurudeen (2007) in Njigwum and Oye (2020) describes Mathematics as a tool that enhances abstract thinking and facilitates the learning of a variety of subjects in several disciplines. The objectives of Mathematics in the Universal Basic Education (UBE) curriculum are to provide learners with the opportunity to: acquire the mathematical literacy necessary to function in an information age, cultivate understanding and application of mathematical skills, and prepare for further studies in mathematics and related fields, among other things (Federal Ministry of Education (FME), 2012). More importantly, mathematics is essential to modern society's everyday existence since it underpins knowledge in the physical sciences, technology, engineering, ICT, and the economic sector, including business and financial services, to name a few.

Science is defined "as a body of knowledge, a method of inquiry or research, and a way of thinking (scientific attitudes) in the pursuit of nature" (Joshi, 2008in Njigwum & Agugoesi, 2019). Science education prepares students to become scientifically literate, and it begins with Basic Science or Integrated Science in junior secondary school, followed by science disciplines such as Chemistry, Physics, and Biology in senior secondary school. The goal of science integration is to demonstrate the unity, wholeness, and interdependence of the several subjects that make up the larger area of science (Njigwum & Longjohn, 2019). Science is not a solitary discipline; it analyses everything that surrounds man, so it's no surprise that it's tied to every human endeavour that may be examined as a body of knowledge or as a method of problem-solving (Scientific method). "Education in schools should equip people to function in the new era of globalization (i.e. science and technology)," according to the National Policy on Education (FRN, 2007). Indeed, the centrality of science to national economic goals has a big influence on the massive commitment and support that most emerging countries are presently giving to science and technology education.

The Basic Education Certificate Examination (BECE), formerly known as the Junior Secondary Certificate Examination (JSCE), is an external examination taken by students in the final class (Basic 9 or JSS 3) of the Universal Basic Education (UBE) programme. As a result, BECE Mathematics and Basic Science are standardized achievement (summative) tests used to evaluate students' knowledge of Mathematics and Basic Science at the end of Junior Secondary school. As a result, students are selected or enrolled in Senior Secondary School based on their BECE grades. Students' BECE exam results can also be used to assess the UBE program's effectiveness in achieving its purpose of delivering quality basic education to all, regardless of gender or socioeconomic position.

In response to the alleged marginalization of the girl child in developing nations, the United Nations (UN) adopted various resolutions to ensure equal opportunities for all gender in education and empowerment through the SDGs- a sequel to the MDGs that spanned between 2000-2015 (Nnamani & Oyibe, 2016). In July 2014, the UN General Assembly Open Working Group (OWG) proposed a document containing 17 goals to be put forward for the General Assembly's approval in September 2015. The new set of Sustainable Development Goals (SDGs) will carry on the momentum generated by the MDGs and fit into a global development framework beyond 2015 (last between 2015-2030). The 2030 Agenda for Sustainable Development, adopted by all United Nations Member States in 2015, provides a shared blueprint for peace and prosperity for people and the planet, now and into the future.

Consequently, the government of the Federal Republic of Nigeria began the Universal Basic Education (UBE) initiative in 1999 to eradicate illiteracy, ignorance, and poverty, as well as to stimulate and accelerate national development, political consciousness, and national integration (Okwilagwe & Nwazota, 2010). The UBE programme did not begin in earnest until April 2004, when the Federal Government of Nigeria signed the UBE Act. The UBE Act was enacted in Rivers State in 2005, hence, the Rivers State Universal Basic Education Board (RSUBEB) is a state agency charged with providing free, mandated and universal basic education to school-aged children in the state.In addition, the UBE aligns with the fourth and fifth SDGs to ensure quality education and gender equality respectively. The fourth Sustainable Development Goal states thus, "ensure inclusive and equitable quality education and promote lifelong learning opportunities for all (United Nations-UN, 2021). " This objective is related to the third EFA goal, which aims to increase the learning success of 80 percent of children under 14 years old" (WCEFA, 1990 in Alikor, 2020). In addition, the fifth SDG is to "achieve gender equality and empower all women and girls." Similarly, these goals are hinged on providing universal Basic education to all without gender bias. As a result, this study is conducted to determine if gender still affects students' performance at the conclusion of the 9-year UBE course in previously male-dominated areas such as Mathematics and Basic Science.

The issue of gender differences in students' achievement has generated a lot of reactions from researchers and authors, which makes it a key factor in learning and achievement in different subjects. In fact, the concept of gender has been debated byliberals and conservatives. Merriam *Webster's* dictionary provides a clear guide on the evolution of gender and sex, as well as its application in specific situations, stating that the word gender has become very complicated in contexts outside medical and technical settings.A clear distinction between *sex* and *gender* is often advocated among those who study gender and sexuality, with sex being the "preferred term for biological forms (Male and female)" and, gender being "limited to its implications regarding behavioural, cultural, and psychological features."Gender refersto psychological and social characteristics. However, when direct comparisons are made between men and women, the word "gender" is often used, and words like "gender differences," "gender gap," "gender equality," "gender bias," and "gender relations" are most common. Gender is often used in these situations because it has both psychological and social meanings. The fact that the word has two meanings makes it twice as useful. This means that for this study, the word "gender" refers to the biological differences between men and women and all the characteristics that it embodies.

Next, the researchers explored scholarly perspectives on the concept of gender and its impact on academic attainment based on the positions of liberals and conservatives. For liberals, Lahey (2003), as cited in Oyibe and Nnamani (2016), defines gender as the psychological experience of being male or female, which has

to do with personality and core aspects of self-concept. In contrast to sex, which focuses solely on the distinction between male and female based on biological characteristics, gender contains other personality traits such as roles, orientation, and identity based on an individual's self-concept. Similarly, Mangvwat (2006) characterised gender as a socially manufactured entity resulting from the ascription of distinct tasks, responsibilities, behaviours, and mannerisms to the two sexes. It is a social connotation with a solid psychological foundation, and it refers to certain cultural patterns of behaviour attributed to human sexes. In this concept, a person's gender is determined by society, exposing them to social stereotyping. Avulata and Oniyama (1999), cited in Oyibe and Nnamani (2016), characterised gender stereotypes in school as a "hidden curriculum" that sends messages to girls to comply with role expectations. This was believed to have caused significant psychological estrangement or sadness among female pupils that may have affected their performance in some subjects (Joel & Aride, 2006). As a result, boys dominate Social Studies, Chemistry, Physics, mathematics, and environmental studies courses, whilst ladies choose reading languages and the arts. Okeke (1997), cited in Oyibe and Nnamani (2016), stated that the percentage of women enrolled in science courses at secondary and postsecondary institutions or employed as scientists, engineers, and technicians in Nigeria is quite low. Therefore, the liberal school believe that social stereotyping is the cause of the gender gap in academic performance in Science and Mathematics.

On the other hand, conservative scholars still maintain aholistic worldview on the concept of gender. Here, gender is defined as a spectrum of physical, biological, mental, and behavioural qualities distinguishing the feminine and masculine (female and male) populations (Joseph et al, 2015). In this view, sex and gender are synonymous, as they cover all qualities associated with being biologically male or female. Denga (1998), cited in Oyibe and Nnamani (2016), discussed the inequalities in academic accomplishment between men and women. Girls tend to exceed boys in the language arts, such as English and music, whereas boys tend to outperform girls in mathematics and the sciences. This position lends credibility to the emotional and relationship-oriented character of females, which predisposes them to outperform boys in English Language and the arts, while boys' rational and analytical nature predisposes them to surpass girls in mathematics and the sciences. However, this assumption is not an ideal basis for proving the academic success discrepancies between men and women.On the other hand, conservative scholars still maintain a holistic worldview on the concept of gender. Here, gender is defined as a spectrum of physical, biological, mental, and behavioural qualities distinguishing the feminine and masculine (female and male) populations (Joseph et al, 2015). In this view, sex and gender are synonymous, as they cover all qualities associated with being biologically male or female. Denga (1998), cited in Oyibe and Nnamani (2016), discussed the inequalities in academic accomplishment between men and women. Girls tend to exceed boys in the language arts, such as English and music, whereas boys tend to outperform girls in mathematics and the sciences. This position lends credibility to the emotional and relationship-oriented character of females, which predisposes them to outperform boys in English Language and the arts, while boys' rational and analytical nature predisposes them to surpass girls in mathematics and the sciences. However, this assumption is not an ideal basis for proving the academic success discrepancies between men and women.

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Empirically, several studies have been done in the past to assess the impact of gender on academic attainment in Science and Mathematics. From the plethora of works reviewed, it can be stated that researchers arrive at two main submissions. On one hand, Jia, et al (2020) reported that the majority of the studies on academic gender differences have shown that boys outperform girls in science and mathematics. Cleary (1991) in Jia, et al (2020) also affirmed that boys outperformed girls on science tests across all age groups, and this advantage increased with age. While, the other group of researchers submitted that there has been a reduction in the gender disparity in academic tests (Linn, 1991, Hyde & Mertz, 2009 in Jia et al, 2020). They concluded that the majority of gender differences in cognitive skills are modest and have gotten less evident over time. In addition, it was assumed that the slim gender gap in test performance may be due to consideration of item bias (differential item functioning due to gender) in the process of construction and screening of tests in recent years. Some of the studies on gender differences are given below. Abudulahi (2014) stated that there is a significant effect of gender-difference of students on the performance of secondary school students in mathematics. Also,

Abdu Raheem (2012) reported that Males performed better than females in Mathematics and Science. Jia et al (2020) found that there was no gender difference in science academic achievement in both Grade 4 and Grade 8 in China ($P > .05$, Cohen's $d < 0.1$).

On the contrary, Mercy, et al (2021) studied the effect of gender on Basic Science students' academic achievement in secondary schools in Enugu, Nigeria. The researchers adopted a quasi-experimental research design using two intact classes of seventy-two (72) JSS 2 students (males = 30; females= 42). The finding indicated that gender had no significant effect on students' achievement in Basic Science. The result of the study cannot be generalized because of the small sample size and type of design used. Godpower-Echie and Owo (2019) reported that gender did not significantly influence students' achievement in Basic Science in private secondary schools. Also, Godpower-Echie and Ihenko (2017) found out that gender does not have a significant influence on students' achievement in Integrated Science.

Statement of Problem

In the past, the issue of gender disparity in science and mathematics-related courses such as Engineering and the Physical Sciences remained obvious in developing African nations such as Nigeria, where more men than women pursue such careers because they tend to perform better in these fields. To address these educational disparities, Nigeria enacted the Universal Basic Education (UBE) in 2004, in line with the world declaration of Education for All (EFA), to grant every Nigerian child between the ages of 6 and 15 (school age), regardless of gender, the right to "free, universal, and compulsory basic education"(UNESCO, 2015). Similarly, the third and fourth goals of EFA, which aimed to increase the learning achievement of 80 percent of children under the age of 14 and reduce the rate of adult illiteracy by 2015 with an emphasis on female illiteracy, were all geared toward providing equal educational opportunity for both the girl and boy child (WCEFA, 1990 in Ogbondah, 2016). Therefore, it is anticipated that years after the implementation of these commendable programmes to secure gender parity in access to excellent education and reduce female illiteracy, the learning achievements of students should not be influenced by their genders. Thus, the major aim of this study is to investigate gender differentials in students' Basic Education Certificate Examination (BECE) Mathematics and Basic Science Achievement in Rivers State.

Research Questions

The following research questions were stated to guide the study:

1. What is the difference in the mean score of male and female students in their BECE Mathematics?
2. What is the difference in the mean score of male and female students in their BECE Basic Science?

Hypotheses

The following hypotheses were also stated to guide the findings of the study:

1. Students' gender does not significantly make for their mean scores in BECE Mathematics in Riversstate.
2. Students' gender does not significantly make for their mean scores in BECE Basic Science in Rivers state.

II. Methodology

Research Design

The study employed an ex-post facto research design. It is ex-post facto because the study was carried out after the event has taken place and data are already in existence (i.e. there was no manipulation of data) (Asika, 2012). According to Nwankwo (2016), ex-post facto design involves collecting and analyzing data about some variables retrospectively or about variables which are already in place without manipulating any of them, in order to find out how some of them influence, or are related to other variable. Here, the data of students' past academic records (2018/2019 BECE Mathematics and Basic Science result) was utilized for the study.

Population of the Study

The population for this study consists of all the Basic 9 or JSS3 students that sat for the 2018/2019 BECE in Obio/Akpor LGA of Rivers State. The target population for the study included all public Junior secondary school three students (JSS 3) in Obio/Akpor LGA in Rivers State. The population consists of about 14,607 students (Rivers State Ministry of Education, 2021) drawn from 26 schools in the region. The population is drawn from only public junior secondary school students.

Sample and Sampling Technique

A sample of 1150 students was used for the study. This sample size is above the minimum sample size appropriate for a population of over 25,000 as statistically proposed by Krejcie and Morgan (1970) sample size graph as cited by Kpolovie (2011). More so, the researcher employed a simple random sampling technique to select three co-educational schools (school A= 364, school B= 150, School C= 636) from the target area from

which all the students (Male= 543, Female= 607) that sat for the 2018/19 BECE in the selected schools were purposively selected to compose the sample of the study.

Instrument for Data Collection

The data for the study is a secondary data that was obtained directly from the official result document. The raw scores for the BECE letter grades (A = 80-100%, B = 70-79%, C = 50-69%, D = 40-49% and F = 39% and Below; note that CA is 30%) and were transformed using weighted average (A = 85, B = 75, C = 59, D = 45 and F = 35) for data analysis.

Validity and Reliability

Basic Education Certificate Examination (BECE) uses standardized achievement tests developed and vetted by subject specialist and test experts in the respective examining bodies with regards to the school syllabus. Therefore, the validity and reliability for the exam has long been established.

Method of Data Analysis

Data from the study was analyzed using frequency counts, percentages, bar chart and mean ($\bar{x}$) to answer the research questions while, the chi-square test of independence and independent sample t-test was used to test all the hypotheses at 0.05 level of significance. Also, SPSS software version 23 was utilized for data analysis. Also, the effect size (cohen's d) was computed using online effect size calculator for t-test. (https://www.socscistatistics.com/effectsize/default3.aspx)

III. Results

Table1: Demographics for BECE Basic Science and Mathematics Performance

BECE Basic Science

BECE Grade	Frequency	Percent (%)	Male	Percent (%)	Female	Percent (%)
B	39	**3.4**	21	3.9	18	3.0
C	709	**61.7**	335	61.7	374	61.6
D	356	31.0	167	30.8	189	31.1
F	46	4.0	20	3.7	26	4.3
Total	1150	100.0	**543**	100.0	**607**	100.0

BECE Mathematics

BECE Grade	Frequency	Percent (%)	Male	Percent (%)	Female	Percent (%)
A	13	**1.1**	8	1.5	5	0.8
B	322	**28.0**	161	29.7	161	26.5
C	698	**60.7**	318	58.6	380	62.6
D	107	9.3	54	9.9	53	8.7
F	10	.9	2	.4	8	1.3
Total	1150	100.0	**543**	100.0	**607**	100.0

The above table highlights the demographics of students that took part in the study, thus showing the BECE Basic Science and Mathematics Performanceof students with regards to gender. To start with, 543 males (47%) and 607 females (i.e. 53%)students constituted the sample of the study. This shows more females are in school, thus, confirming that females are given equal opportunity for education.This reveals the progress made withthe implementation of MDG and SDG through Universal Basic Education.The data in Table 1 indicates that the performance of male and female students for the respective subjects did not show a substantial percentage difference.

However, on the whole, the demography shows that students performed better in Mathematics than in Basic Science with a pass rate of 90% and 65% respectively. This percentage was arrived by summing the proportion of students who obtained at least a credit for Mathematics (A= 1.1%, B= 28%, C= 60.7%) and Basic Science (A= nil, B= 3.4%, C= 61.7%) in table 1 above.

Research Question 1: What is the difference in the mean score of male and female students in their BECE Mathematics?

To answer research question 1, descriptive statistics using mean was employed.

Hypothesis 1: Students' gender does not significantly make for their mean scores in BECE Mathematics in Rivers state.

To test hypothesis 1 above, the independent t-test statistics was employed.

Table 2:T-test table to determine gender differentials in students' mean scores in BECE Mathematics

Gender	N	Mean	SD	Effect Size (Cohen's d)	Df	T	Sig. (P)	Decision
Male	543	62.64	9.71	**0.076**	1148	**1.284**	.199	**Not Significant,** P > 0.05
Female	607	61.91	9.47					

There were 543 male and 607 female participants. The datasets were first screened for missing data, outliers, normality, and then test assumption of homogeneity of variance was assessed. There were no outliers in the data, as assessed using a boxplot and stem and leaf plot. The BECE Mathematics scores for each level of gender were not normally distributed, as assessed by Shapiro-Wilk's test (Male p = .00, Female p = .00). However, t-tests are often considered "robust" to violations of normality, especially with large samples (i.e. the test will still provide valid results). Meanwhile, the assumption of homogeneity of variances was upheld, as assessed by Levene's test for equality of variances (p = .174).

To answer the research question, the result from Table 1 showed that male students ($\bar{x}$ = 62.64, *SD* = 9.71) performed better than their female ($\bar{x}$ = 61.91, *SD* = 9.47) counterparts in BECE Mathematics. For testing hypothesis one, the result indicated that there was no significant difference between male and female students' performance $t(1148) = 1.284$, p = .199, d = 0.07. Therefore, the null hypothesis is not rejected. This implies that Students' gender does not significantly affect their mean scores in BECE Mathematics in Rivers state. Similarly, the calculated effect size (d> 0.1) affirmed a negligible mean difference between Male and Female students' BECE Mathematics performance (Effect size interpretation by Cohen includes: 0.2- small effect, 0.5- moderate effect and 0.8- large effect; Cohen 1988).

Research Question 2: What is the difference in the mean score of male and female students in their BECE Basic Science?

To answer research question 1, descriptive statistics using mean was employed.

Hypothesis 2: Students' gender does not significantly make for their mean scores in BECE Basic Science in Rivers state.

To test hypothesis 2 above, the independent t-test statistics was employed.

Table 3:T-test table to determine gender differentials in students' mean scores in BECE Basic Science

Gender	N	Mean	SD	Effect Size (Cohen's d)	Df	T	Sig. (P)	Decision
Male	543	54.42	8.40	**0.04**	1148	**.692**	.489	**Not Significant,** P > 0.05
Female	607	54.08	8.32					

There were 543 male and 607 female participants. The datasets were first screened for missing data, outliers, normality, and then test assumption of homogeneity of variance was assessed. There were no outliers in the data, as assessed using a boxplot and stem and leaf plot. The BECE Mathematics scores for each level of gender had a non-normal distribution, as determined by Shapiro-Wilk's test (Male p = .00, Female p = .00). However, this does not affect the validity of the result of the t-test. Meanwhile, there was homogeneity of variances between males and females as measured by Levene's test for equality of variances (p = .796).

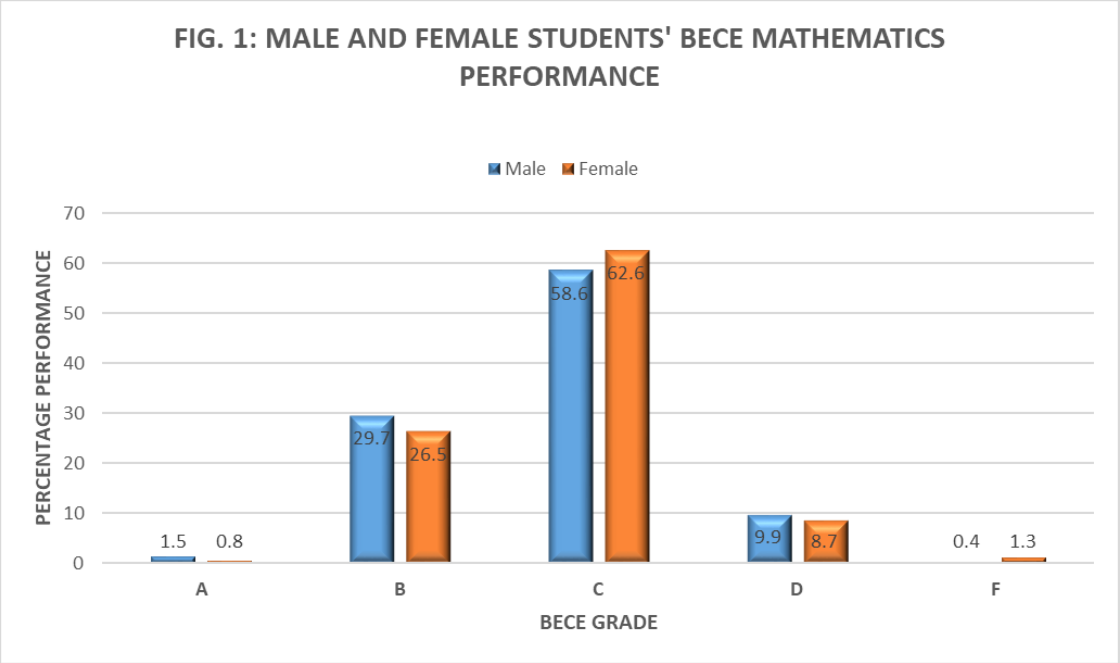
To answer the research question, the result from Table 1 showed that male students ($\bar{x}$ = 54.42, *SD* = 8.40) performed better than their female ($\bar{x}$ = 54.08, *SD* = 8.32) counterparts in BECE Basic Science. For testing hypothesis two, the t-test results in Table 1, showed that there is no significant difference between male and female students' performance $t(1148) = .692$, p = .489, d = 0.04. Therefore, null hypothesis 2 is not rejected. This implies that Students' gender does not significantly affect their mean scores in BECE Mathematics in Rivers state. Similarly, the calculated effect size ((d> 0.1) indicated a very small effect between Male and Female students' BECE Basic Science performance.

IV. Discussion

The first result of the study showed that Students' gender does not significantly impact their mean scores in BECE Mathematics in Rivers state. Further investigation using the chi-square test of independence and bar chart in Fig. 1 reveals that students' academic performance (measured with frequency counts of Grades

attained) in BECE Mathematics is not significantly associated (or independent) with gender. Another interesting observation made in the study was the higher number of enrolments for female students (53%) as compared to their male counterparts (47%). This result is in line with UNESCO's 2015 review of education in Nigeria, which reported excellent improvement in students' enrolment. The report concerning gender parity, specifically states that States like Rivers State in the South-South zone have higher enrolment in favour of girls, while, many States in the Northern zones are still grappling with low enrolment for girls (UNESCO, 2015).Although, the male students scored higher than their female counterparts in BECE Mathematics, the effect size was not significant (d >0.1). Additionally, the overall performance highlighted that students' performed excellently in BECE Mathematics with about 90% of them obtaining a minimum of a credit grade.

Meanwhile, the result of the study was not too surprising because female students are now given equal opportunity in this era of Universal Basic Education where free quality education is provided to all, especially to students in public secondary schools. As such, it is expected that being exposed to similar educational content would result in relative performance between both sexes. However, concerning males performing better than females, the common personality of females who tend toward Arts and humanities as opined by some previous authors may have resulted in them performing below their male counterparts (Halpern et al., 2007 in Jia, 2020). The finding is in agreement with Jai and Imoko (2015), indicating that male and female students taught algebra did not significantly differ in achievement and retention scores. However, the finding of the study is dissimilar to Abudulahi (2014) and Abdu Raheem (2012) who showed that males performed significantly better than females in Mathematics.

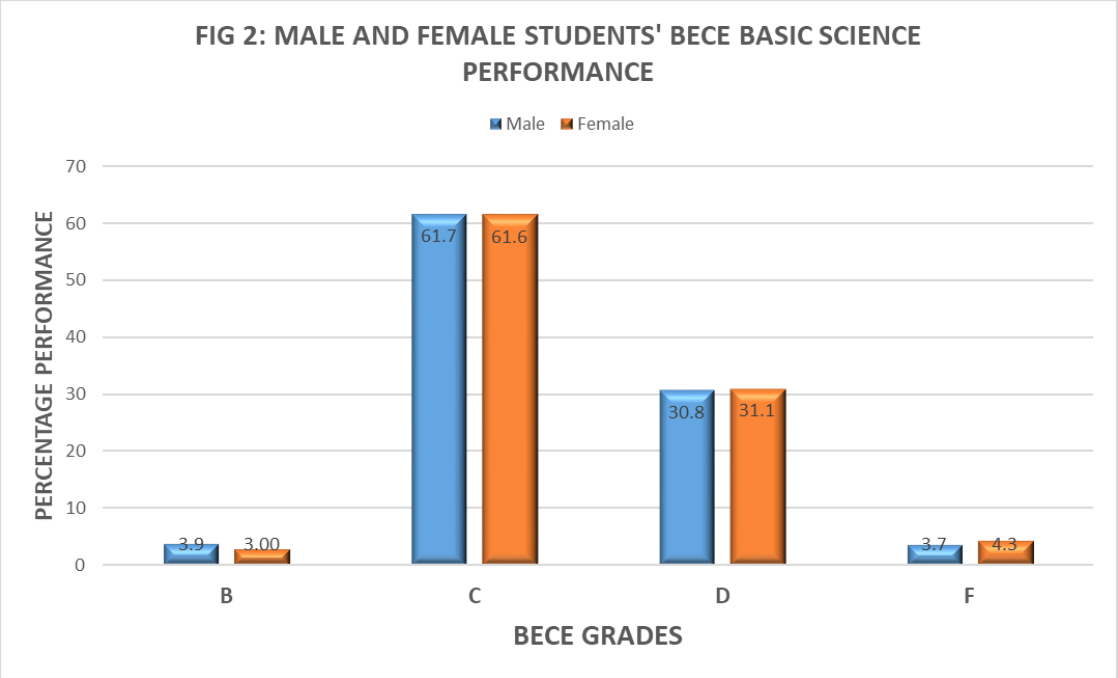


Chi-square X^2 *(4, N=1150) = 6.27, P > 0.05,* ***Not Significant***

The second result of the study also showed that there was no significant difference between the mean scores of male and female students in BECE Basic Science. The study also highlighted that male students performed higher than female students in BECE Basic Science. Further investigation using the chi-square test and bar chart in Fig. 2 indicate that students' academic performance in BECE Basic Science is not significantly associated with gender. Generally, the results showed that the percentage of students that obtained a pass in Basic Science (65% obtained at least a credit grade) is not as encouraging when compared to the usual high percentage pass rate of Rivers State BECE (Njigwum & Longjohn, 2019). Consequently, the drop in BECE Basic Science scores indicates a decrease in the quality of education in Basic science. This result affirms the finding of Longjohn and Njigwum (2021), which states that Basic Science teachers in public schools are yet to move from the traditional approach of teaching where the teacher does all the talking to a learner-centred approach where learners are involved and made to fully participate in most of the learning. They argued that this situation may have resulted from the large class size and lack of regular in-service training for science teachers in the public school setting.

This finding is in tandem with the work of Jia et al (2020) there was no gender difference in science academic achievement (P > .05, d > 0.1). Similar to the current study, the finding produced a non-significant

effect size between gender and science achievement (with $d > 0.1$). Also, corroborating the findings, Mercy, et al (2021) and Godpower-Echie and Owo (2019) reported that gender did not significantly influence students' achievement in Basic Science secondary schools. Similarly, Godpower-Echie and Ihenko (2017) found out that gender does not have a significant influence on students' achievement in Integrated Science although, the male students performed higher than their female counterparts. On the contrary, the findings differ from Abdu Raheem (2012) who showed that males performed significantly better than females in Mathematics and Science. Indeed, the result varies from the common belief that males tend toward sciences more than their female counterparts as affirmed by Temitope (2011), who averred that "due to African culture and traditions, males are more inclined towards the sciences while females tend to tilt more to the arts." Therefore, it can be submitted that the result of the study is sending new signals that females can achieve as well as their male counterparts in Basic science when exposed to the same conditions of teaching and learning.



Chi-square X^2 *(3, N= 1150) = .96, P > 0.05,* ***Not Significant***

V. Conclusion

The findings of the result revealed that there was no significant gender difference in students' BECE Mathematics and Basic Science performance in Rivers state. Next, the result showed slightly higher enrolment of female students (although, the male students performed better but not significantly) than their female counterparts in both BECE Basic Science and Mathematics. Also, the results showed that the percentage of students that obtained a least a credit grade was higher for Mathematics (about 90%) than for Basic Science (65%). Consequently, the drop in BECE Basic Science scores indicates a decrease in the quality of education in Basic science. Therefore, to enhance meaningful advancement in science and technology, today's youth irrespective of gender must be properly equipped with the rudimentary knowledge and operations of modern science.

VI. Recommendations

1. To enhance quality instruction in Basic Science,the management of public schools should increase the provision of infrastructure, laboratories, teaching materials and methodologies, and science-related excursions and field trips.
2. To improve achievement, science teachers should be trained to adopt a structured teaching strategy- a combination of direct instruction, guided practice, and independent learning.
3. To improve performance in Basic Science, school management should encourage the regular use of standardised examinations from the state examining body for internal assessment to prepare students for national examinations.
4. Implement the Back-to-School programme for boys, as suggested by the UNESCO 2015 report, to help more boys enrol and stay in school. This will help solve the problem of boys dropping out of school in the South-South states of Nigeria.

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