

INFLUENCE OF GENDER AND ACADEMIC SUCCESS OF STUDENTS IN JUNIOR SCHOOL CERTIFICATE MATHEMATICS EXAMINATION ON SENIOR SECONDARY SCHOOL MATHEMATICS ACADEMIC SUCCESS IN ILE-OLUJI/OKEIGBO LOCAL GOVERNMENT AREA OF ONDO STATE, NIGERIA

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Abstract

The study investigated the influence of gender and academic success of students in junior school certificate Mathematics examination (JSCME) on senior secondary school Mathematics academic success in Ile-oluji/Okeigbo local government area of Ondo state, Nigeria. A total of 321, 2023/2024 senior secondary school three (SSS3) candidates from five selected schools who came in by junior school certificate examination (JSCE) and had complete examination records from SSS1 to SSS3 constituted the subject for the study. The JSCME scores, SSSME scores and information on students' gender were collected from schools. Third term examination result was used for SSS1 and SSS2, while first term examination result was used for SSS3. Pearson's product-moment correlation coefficient was employed to find the relationship between the performance of students in JSCME and SSSME while t-test was used to test the influence of gender on the performance of students in the JSCME and SSSME. The results of the data analyses showed that there was significant relationship between the performance of students in JSCME and SSSME ($p < 0.05$); and that there was significant influence of gender on the performance of students in JSCME and SSSME ($p < 0.05$) in favour of the male students. It was recommended among others that JSCE results should remain as a yardstick for admitting Mathematics students into senior secondary schools.

Keywords: Influence, Gender, Academic success, Junior Certificate Examination and Senior Mathematics Examination.

Introduction

The National Policy of Education (NPE, 2012) categorizes the Nigeria system of education into four levels consisting of pre-primary, primary, secondary and higher education. The secondary education is however, in two stages, Junior secondary (JS) and Senior secondary (SS). Each level is of three years duration. The junior secondary school (JSS) is both pre-vocational and academic.

The junior school certificate examination (JSCE) is the system adopted in admitting students into senior secondary schools, the admission is monitored by the Ministry of Education (Federal and State) in Nigeria. Academic performance of students depends, to a great extent, on certain factors. These factors include gender, age and primary school attended (Harson, 2018; Benson and Felix 2019, Olorode 2020; Boboye, 2021, Adedamola 2022). There is considerable research evidence to show that knowledge affects academic performance as the level of understanding of a particular subject by a student depends on his mastery of the prerequisite subjects.

The idea that previous knowledge affecting academic performance is perhaps one of the major reasons for using JSC examinations in admitting students to senior secondary schools. The predictive value of a test may be indicated by the degree of correspondence between scores of the test and future outcomes that are expected to be related to the characteristic measured by the test (Famous 2019; Nelson, 2021,

Omolaye, 2022). A student who is thereby admitted is assumed to possess the abilities and necessary to cope with the academic challenges in SSS.

However despite the unique position in the educational system there have been conflicting reports on the predictive strength of the junior school certificate Mathematics examination at predicting performance in the senior secondary school Mathematics (Harson, 2018). Some educational researchers such as Olusola (2018) and Uwazor (2020) have even advocated for the cancellation of the junior school certificate Mathematics examination on the ground that its predictive value is in doubt.

It is a common knowledge that performance in the senior school certificate Mathematics examination has been low for quite a long time (Omoniyi, 2018) despite the fact that these same students obtained acceptable grades in the JSCME, and were consequently admitted to SSS1. A cursory look at the performance of students in senior school certificate examination in Mathematics between 2014 and 2018 by Ndoma, (2020) is also a clear testimony to this. He reported that 28.12% of the total candidate, who sat for West African Senior School Certificate Examination (WASSCE) May/June 2018 failed Mathematics while 42.82% passed at credit level. Those with credit in Mathematics in Previous years were also given as 46.07% in 2017, 56.29% in 2016, 43.63% in 2015 and 38.72% in 2014 while those who failed were given as 25.22% in 2017, 20.36% in 2016, 22.48% in 2015 and 26.72% in 2014.

Table 1: Five year performance of students in Mathematics in the May/June (2014 – 2018) WASSCE in Nigeria.

S/N	Year	% of pass at credit level grades 1-6	% of failure
1	2014	38.72	26.72
2	2015	43.63	27.48
3	2016	56.29	20.36
4	2017	46.07	25.22
5	2018	42.82	28.12

Source: Ndoma (2020), Report on Quality Assurance in Public Secondary Schools: Issues and concerns.

Statement of the Problem

It has been said that Mathematics scores in a junior school certificate examination are the best single predictor of senior secondary school Mathematics scores. In other words, scores obtained in the junior examination in Mathematics by a student should predict his academic performance in the senior secondary school Mathematics (Donald 2019, Zenaib, 2020). The JSCE into SSS in Ondo state, as in many states in the country has come under strong criticism in recent times. Many educational researchers have advocated for the cancellation of the examination on the grounds that its predictive value is in doubt (Olusola, 2018, Uwazor 2020).

Gender differences in education are generating much research interest as schools are becoming more and more co-educational(Benson and Felix, 2019) studies on gender differences and academic performance have led to a number of conflicting results. While some find gender as an important factor in academic achievement, others have found no differences between the genders. It is therefore considered necessary to ascertain the veracity of these claims and to investigate predictive value of the examination with particular references to Mathematics and the influence of gender on students' performance.

Purpose of the study

The study was designed to examine the influence of Gender and academic success of students in junior school certificate Mathematics examination on senior secondary school Mathematics academic success in Ile-Oluji/Okeigbo local government area of Ondo state. The study was specifically designed to:

1. determine the relationship between the performance of students in junior school certificate Mathematics examination and their performances in the senior secondary school Mathematics examinations.
2. determine the influence of gender on JSCME and SSSME.

Hypotheses

To achieve the objectives of the study, the following hypotheses were generated

H01. There is no significant relationship between the performance of student in the JSCME and SSSME.

H02. There is no significant influence of gender on the performance of students in JSCME and SSSME.

Methodology

The study was an ex-post-facto research design as the researcher did not have direct control on the independent variables, their manifestation has already occurred (Donald, 2020). They were inherently not manipulable. The data were collected from the examination result sheets sent to schools by the Ondo State Ministry of Education known as JSCE computer sheet and master marks' sheet records in the schools. The population of this study consisted of 2023/2024 SSS3 students who sat for the JSCE in Ile-Oluji/Okeigbo Local Government Area of Ondo state. The study sample consisted of 321 students (156 males and 165 females). Purposive sampling techniques was used to select five schools in Ile-Oluji/Okeigbo local government area of Ondo state. These schools were the top five schools with laboratory and library that have been presenting the students for WACE and NECO over 25 years in the local government area. All 2023/2024 SSS3 students in the selected schools, who sat for JSCE, had complete examination records from sss1 to sss3 constituted the subject for the study.

An inventory titled "Students JSCME and SSSME Academic Performance Proforma" was used to collect the relevant data for the study. The inventory constituted of items that captured information about the students. The items included name of school, local government, gender, students' grades in Mathematics for 2020/2021 junior school certificate examination, students' grades in Mathematics for 2021/2022 SSS1 third term examination, students' grades for 2022/2023 SSS2 third term and students' grades for 2023/2024 SSS3 first term examination. The pattern of grading students' scores in JSSCE are such that the distinction grade is represented by "A" (60 – 100). The credit grade is represented by "C" (50-59). The ordinary pass is represented by "P" (40 – 49) while the failure grade is represented by "F" (0 -39). The pattern of grading students' scores in senior secondary school examination are such that the distinction grade is represented by B3 to A1 (65 – 100). The credit grade is represented by C6 to C4 (50 – 64).

The ordinary pass grade is represented by E8 to D7 (40- 49) and the failure grade is represented by F9 (0 39) Fadotun, (2020). For the purpose of scoring, therefore, JSCE grades of A,C, P and F were awarded 3,2,1 and 0 points respectively while SSSE grades of (B3 – A1), (C4 – C6), (D7 – E8 and F9 were also awarded 3, 2, 1 and 0 points respectively. The Pearson's product-moment correlation coefficient was calculated to find the relationship between the performance of students in the JSCME and SSSME while t-test was used to find the influence of Gender on the performance of students in JSME and SSSME. The hypotheses generated for the study were tested at 0.05 level of significance.

Results

Hypothesis 1: There is no significant relationship between the performance of students in JSME and SSSME.

To test the hypothesis, the students' JSCE scores in Mathematics were correlated with the SSS1, SSS2 and SSS3 examination scores in Mathematics. The results are presented in table 1.

Table 2: Pearson Correlation. Coefficient Matrix for the performance of students in the JSME and SSSME.

Subject	Variables	JSCME	SSS1	SSS2	SSS3
Mathematics	JSCME	1.00			
	SSS1	0.418 P = 0.000	1.00		
	SSS2	0.501 P = 0.000	0.522 P = 0.000	1.00	
	SSS3	0.483 P = 0.000	0.469 P = 0.000	0.506 P = 0.000	1.00

P<0.05

From Table 2, the correlation coefficient matrix shows that there is significant relationship between the performance of students in the JSCME and SSSME, the null-hypothesis is therefore rejected. The larger the value of ‘r’ the stronger the association between the variables with larger correlation coefficients had strong association with each other.

Hypothesis Two: There is no significant influence of gender on the performance of students in JSCME and SSSME.

To test the hypothesis, the performance of male and female subjects in JSC, SSS1, SSS2 and SSS3 Mathematics examinations scores were subjected to t-test analysis. The results are presented in table 2 and 3.

Table 3: Influence of gender on Students Performance in JSCME

Gender	Number of Student	Mean	Standard Deviation	Degree of Freedom	t- Calculated	t-table
Female	165	55.73	5.97	3.20	3.12	1.960
Male	156	50.66	5.78			

P<0.05

In table 3, t calculated was greater than the t table at 0.05 level of significance. The null hypothesis that there was no significant influence of gender on the performance of students in JSCME was rejected. This shows that gender has a significant influence on the performance of students in JSCME in favour of the male students.

Table 4: Influence of gender on students’ performance in SSSME

Gender	Number of Student	Mean	Standard Deviation	Degree of Freedom	t- Calculated	t- table	Gender
SSS1	Female	165	52.45	4.13	320	3.24	1.960
	Male	156	54.45	4.45			
SSS2	Female	165	46.72	4.92	320	2.96	1.960
	Male	156	48.21	4.26			
SSS3	Female	165	49.63	5.25	320	3.42	1.960
	Male	156	51.82	4.97			

P<0.05

Table 4 showed that t calculated were greater than t table at 0.05 level of significance. The null hypothesis that there was no significant influence of gender on the performance of students in SSSME was therefore rejected. That is, there was significant influence of gender on the performance of students in SSSME in favour of the male students. The implication of these findings is that there was a significant influence of gender on the performance of students in JSCME and SSSME.

Discussion

The findings of this study on hypothesis one showed that there was significant relationship between the performance of students in JSCME and SSSME. What this implies is that, we can use the score obtained by a student in JSCME to predict the student's performance in senior secondary school mathematics examinations. In other words, when a student scores high or low marks in the JSCME, it could be categorically said that such a student would also score high or low mark in SSSME. The result obtained in the hypothesis one was not in support of some educational researchers who had earlier advocated for the cancellation of the junior secondary school certificate examination. For instance, Olusola (2018) and Uwazor (2020) advocated for the cancellation of junior secondary school certificate examination on the grounds that its predictive value was in doubt.

Further results showed that students' gender had a significant influence on the academic success in Mathematics at all level of examinations. These showed that an agreement with the work of some earlier investigators who pointed out that gender affects the academic performance of students (Harson 2018, Benson & Felix 2019, Olarode 2020, Boboye 2021, Adedamola 2022). One might wonder why the male students perform better than the female students. Some probable reasons easily come to mind. Firstly, perhaps the female students might not have enough time for their studies at home. Secondly, the imbalance could also be attributed to interest in school work.

Conclusion

The findings of this study revealed that there was significant relationship between the performance of the students in JSCME and SSSME in Ile-Oluji/Okeigbo local government area of Ondo state. That is, JSCME results could be used to predict to a reasonable degree of accuracy students' performance in SSSME in Ile-Oluji/Okeigbo local government area of Ondo state. It also revealed that there was significant influence of gender on the performance of students in JSCME and SSSME in favour of the male students in Ile-Oluji/Okeigbo Local Government area of Ondo state.

Recommendations

In the light of the findings of this study, the following recommendations were made:

1. The JSCE results should remain as a yardstick for admitting Mathematics students into senior secondary schools.
2. The parents should divest themselves of the illusion that the grade obtained by their wards in Mathematics at JSCE is an automatic indicator of the grade they would have at SSSE Mathematics. They should rather get their wards properly equipped to face the greater task that lies ahead them in Mathematics. This could take the form of procuring relevant textbooks in all aspects of Mathematics tested at SSSE
3. An extra lesson on Mathematics should be organized for students.
4. The government teachers and parents/guardians should endeavour to encourage the children as par their education.

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