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**GENDER AS A FACTOR IN STUDENTS ACHIEVEMENT IN MATHEMATICS IN
WAEC SENIOR SCHOOL CERTIFICATE EXAMINATION (SSCE) IN EZEAGU LGA
OF ENUGU STATE**

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Abstract

The objective of the study was to ascertain if gender is a factor in students' achievement in mathematics in SSCE in Ezeagu LGA of Enugu State from 2010/2011 to 2014/2015. One research question and one research hypothesis were formulated. The design was survey. The sample consisted of 688 SS3 students sampled from ten sampled secondary schools. A questionnaire was used for data collection. The Cronbach Alpha reliability index of the questionnaire was 0.61. Mean and standard deviation was used to answer the research question t-test was used to test the hypothesis at 0.05 level of significance. The results showed that male and female students achieved poorly at ordinary pass level in each of the five years studied. There was no significant difference between the mean scores of male and female secondary school students in Ezeagu LGA in SSCE in mathematics starting from 2010/2011 to 2014/2015. It was recommended that more qualified mathematics teachers should be recruited and posted to rural secondary schools.

Introduction

It is indeed true that students in secondary schools who sit for the Senior School Certificate Examination (SSCE) in Nigeria in mathematics achieve very poorly in the subject. Studies have shown that the average achievement of students in mathematics in SSCE is ordinary pass level (D7 or E8) (Azuka, 2012; Ogbu 2015). Mathematics has continued to pose a serious threat to secondary school students who sit for the SSCE. However, both parents and the government alike (Federal and State) are worried about the poor achievements of students in Mathematics. According to Amadi (2015), the problem of poor achievement in mathematics in Senior Secondary Schools is more with the female students than with the male students. In other words, although all students achieve poorly in SSCE in mathematics, female students achieve poorer than their male counterparts. Some researchers have found out that male students in secondary schools achieve better than female students in mathematics (Ogbu 2015; Albert, 2015; and Ozomadu, 2015). Various reasons have been adduced on why male students achieve better than female students. One of these reasons is that mathematics is more of male oriented domain (Ndukwe, 2015). Others indicated that because mathematics is a difficult subject, it is more suitable to males than females (Ozomadu, 2015). These categories of researchers, stereotype mathematics as more of male activity than female activity. In other words, mathematics is more suitable and amenable to the male students than to female students. Some parents believe this

and have sold the idea to the female children. This has led some female students to develop fear for mathematics, which is popularly known as mathemaphobia (Obodo, 2004).

Another school of thought believe that female students achieve better than male students in mathematics, particularly in Arithmetic (Number and Numeration) (Obodo, 2004; Amadi 2015). Researchers and scholars in this school of thought have carried out researches in school mathematics and found out that female students achieve better than their male counterparts in mathematics at secondary school level (Kravitz, 2013 and Ndukwe, 2015). A third group of thought believes that male and female students in secondary school mathematics achieve at par (Azuka 2012 and Ogbu, 2015). In other words, there is no significant differential achievement between the mean achievement scores of male and female students in secondary school mathematics. This third school of thought believes that any difference between the mean achievement scores of male and female students in secondary school mathematics is due to chance or other inherent errors/reasons. The above excerpts connote that gender (male/female) is a factor in students' achievement in mathematics at secondary school level. The above explanations suggest immensely that there is a controversy shrouding the differential achievement of male and female students in SSCE in secondary school mathematics. In the midst of this controversy, there is need to continue to carry out researches to ascertain whether or not there is differential achievement in secondary school mathematics between male and female students. Hence, the researchers decided to investigate gender as a factor in students' achievement in mathematics in SSCE.

Purpose

The purpose of the study was to find out if gender is a factor in students' achievement in mathematics in WAEC Senior School Certificate Examination (SSCE) in Ezeagu L.G.A of Enugu State from 2010/2011 to 2014/2015.

Research Question

The research question that guided the study was as follows.

1. What are the mean achievement scores and standard deviations of male and female students in Ezeagu LGA of Enugu State in SSCE in mathematics starting from 2010/2011 to 2014/2015?

Hypothesis

The hypothesis that guided the research was as follows: It was tested at 0.05 level of significance.

1. There is no significant difference between the mean achievement scores of male and female secondary school students in Ezeagu LGA in SSCE in mathematics starting from 2010/2011 to 2014/2015.

Method

The research design was descriptive survey. Ogbu (2015) defined survey research as a kind of research design where a group of people or items is studied by collecting and analyzing data from only a few people or items that are considered to be relevant to the entire group. This study was carried out in Ezeagu LGA of Enugu State that has 27 secondary schools. The population of SS3 students who sat for SSCE in mathematics from 2010/2011 to 2014/2015 was 6,885. This comprised of 3,432 and 3,453 male and female students respectively. The sample constituted

10% of the population of male and female students from 10 sampled schools using balloting method. This sample comprised 343 and 345 male and female students respectively resulting to a total sample of 688 SS3 students. Stratified proportionate random sampling technique was used in determining the sample size. The population was stratified based on type of school – male schools, female schools and co-educational schools. Data for the research was collected from WAEC SSCE examination results kept by each school. The researchers visited each of the 12 sample schools to collect the data for each school. Mean and standard deviation were used to answer the research question while t-test was used to test the hypothesis at 0.05 level of significance. The reliability index of the questionnaire was 0.61 using Cronbach Alpha method. The reverse Stanine scale for WAEC grades A1, B2, B3, C4, C5, C6, D7, E8 and F9 were 9,8,7,6,5,4,3,2 and 1 points respectively.

Results

Table 1 shows the results for the research question and hypothesis.

Table 1: Mean scores and Standard Deviations of Male and Female students in SSCE mathematics from 2010/2011 to 2014/2015 in Ezeagu LGA.

Session	Male students				Female students				Overall		
	Mean	Sd	N	Dec	Mean	SD	N	Dec	t-cal	t-crit	dec
2010/2011	2.69	1.98	68	Pass	2.74	1.49	72	Pass	0.17	1.96	NS
2011/2012	2.78	2.01	70	Pass	2.80	0.99	65	Pass	0.27	1.96	NS
2012/2013	2.86	2.63	60	Pass	2.94	1.61	68	Pass	0.36	1.96	NS
2013/2014	2.91	1.89	74	Pass	2.88	1.49	76	Pass	0.11	1.96	NS
2014/2015	3.06	0.96	71	Pass	2.99	1.38	64	Pass	0.34	1.96	NS
Total	2.86	1.93	343	Pass	2.87	1.59	345	Pass	0.07	1.96	NS

Where NS= not significant

Table 1 shows that mean achievement level of male and female students for each year in mathematics in Ezeagu LGA is ordinary pass level. The mean scores for male students ranged from 2.69 to 3.01 while the mean scores for female students ranged from 2.74 to 2.99. These mean scores are within WAEC grading scale of D7 to E8 (both of which is ordinary pass level). The result for the hypothesis is also shown in Table 1. For each of the five years, the t-calculated values (0.17, 0.27, 0.36, 0.11 and 0.34 for 2010/2011, 2011/2012, 2012/2013, 2013/2014 and 2014/2015 respectively) are each less than the t-critical value of 1.96. Hence, the researchers fail to reject the null hypothesis. This means that there is no significant difference between the mean scores of male and female secondary school students in Ezeagu LGA of Enugu State in SSCE mathematics for each of the five years. For the total mean scores of 2.86 and 2.87 for male and female students respectively, there is also no significant difference between the mean scores of male and female students (put together).

Discussion of Findings

Table 1 shows the results for the research question. For each of the five years (2010/2011, 2011/2012, 2012/2013, 2013/2014 and 2014/2015), the SS3 students in Ezeagu LGA had an average of ordinary pass ranging from D7 to E8 (WAEC grading). In none of the five years did the students make a credit pass. The minimum grading pass using reverse Stanine method as in

s research is 4.00 which is equivalent to WAEC grading of C4. None of the mean scores for each of the five years neared 4.00 (credit pass level). It is essential to note that male and female students achieved alike with ordinary pass level. This indicates that both genders are achieving equally poorly. How then can one say that male students are achieving better than female students in SSCE mathematics? A cursory look at the mean scores of both male and female students in table 1 show that, the mean scores of both genders for each year are close, showing equal poor achievements in mathematics. To confirm that both genders achieved equally very poorly in mathematics, the finding for the research hypothesis show that there is no significant difference between scores of male and female secondary school students in Ezeagu LGA of Enugu State in SSCE Mathematics for each of the five years. The test of hypothesis for the total mean scores of male and female students show that there is also no significant difference between the mean total scores of male and female students in Ezeagu LGA of Enugu State in SSCE mathematics for the five years combined. The above observed poor performances could be as a result of students' lack of interest in mathematics and also their poor attitude to the subject according to Obodo (2004) and Ogbu (2015). The poor achievements could also be attributed to poor quality of mathematics teachers, inadequate number of mathematics teachers and lack of incentives/motivation to mathematics teachers. No matter the reasons behind this poor achievement, efforts should be made by all and sundry to reverse this trend. If this trend of poor achievements in mathematics is not reversed, it spells doom for Nigeria in its scientific and technological progress especially in the areas of ICT. (Information and Communication Technology)

Conclusion

The findings of the study indicated vividly that gender is not a factor in students' achievement in mathematics in WAEC SSCE in Ezeagu LGA of Enugu State. Both genders (males and females) achieved equally poorly. The average performance of male and female students in SSCE mathematics is ordinary pass (D7-E8).

Recommendations

The following recommendations are made;

1. More qualified teachers of mathematics should be recruited by Enugu State Government to teach the subject and many should be posted to rural areas. This will reduce the workload of teachers in the field.
2. The available mathematics teachers teaching in Secondary Schools should be motivated by such things as payment of mathematics teachers' allowance.

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