

## COMPARATIVE ANALYSIS OF GENDER PERFORMANCE OF MATHEMATICS STUDENTS ENROLLED FOR SENIOR SECONDARY CERTIFICATE EXAMINATION BETWEEN 2013-2018 IN ABUJA METROPOLIS.

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### Abstract

*This study comparatively analyzed the gender performance of Mathematics students enrolled for Senior Secondary Certificate Examination from 2013-2018 in Abuja Metropolis during MDGs and SDGs period. The study used ex-post-facto research design and employed a secondary data using existing records review. The SSCE Mathematics examination results for 5,453 students comprised 2,639 male and 2,814 female students who sat for SSCE mock examinations from 2013-2018 were collected from Education Resource Centre (ERC) and the schools selected for the study from Abuja Municipal Area Council (AMAC) in Abuja Metropolis. The research questions were answered using descriptive statistics such as percentage and frequency counts and the null hypotheses was tested using Chi-square. The results revealed among others, progressive and stable increased in the enrolment rate for male and female students during the MDGs and SDGs periods and the performance of male and female students in MDGs period were better than the performance in SDGs period. It is therefore, recommended among others that the present programme that sustained the increased in the current enrolment rate of both gender should be sustained and extents to other states in Nigeria.*

**Keywords:** Gender, Gender enrolment, performance, MDGs and SDGs.

### Introduction

In the contemporary Nigeria, greater emphasis is being placed on industrial and technological development. As a result, students are being encouraged to take up science related subjects and a subject that cut across all the sciences is Mathematics (Adedeji, 2012). Today, Mathematics is required literally in every field of human endeavour and plays a fundamental role in economic development of any country. Different researchers in the field of education have acknowledged the place of Mathematics in scientific and technological developments (Musa & Dauda, 2014). They further stressed that the catalytic effect of education on national development emanates mainly from the area of Science and Mathematics.

In the realization of the significant role of Mathematics to the nation building, the government of Federal Republic of Nigeria made the subject compulsory at basic and secondary school levels of education in Nigeria. This provision has been made because Mathematics is said to be mother of all sciences (Buari, 2014). It was also aimed at ensuring the inculcation of Mathematics literacy and to equip students with logical and abstract thinking needed for living, problem solving and education furtherance (Badru, 2015). The choice of this topic, comparative analysis of gender performance of Mathematics students enrolled for Senior Secondary Certificate Examination from 2013-

2018 in Abuja Metropolis was informed based on the current world trend and research emphasis on gender issues and the current United Nations new developmental programme after the expiration of MDGs declaration in 2015; Sustainable Development Goals also known as Global Goals which was built on MDGs goals and adopted on 25<sup>th</sup> September, 2015 by the UN member states.

Global end-point report of Millennium Development Goals (MDGs, 2015) reported that the primary schools enrolment rate in the developing world has reached 91 percent in 2015, up from 83 per cent in 2000 and the number of out-of-school children in primary schools age worldwide has fallen by almost half to an estimated figure of 57 million in 2015, down from 100 million in 2000, and it also reported that the gap between women and men has narrowed. National Bureau of Statistics (NBS, 2015), on MDGs performance tracking survey reported using Gender Parity Index (GPI) as an indicator to monitor target, in primary schools, the GPI in 2012 was 1.00 percent which increased in 2014 to 1.02 percent. In secondary schools, the GPI ratio was 1.02 percent in 2012 and decreased by barely to 1 percent in 2014 to 1.01 percent. This indicates that for every male, there is a female being enrolled into schools, that with this Nigeria has achieved the MDGs target.

Unfortunately, the issue of gender on students' academic performance in science subjects and Mathematics has become the global debate. Gender refers to the social meanings associated with being a male and a female, including the construction of identities, expectations, behaviours and power relationships that drive from social interaction (Olutola & Dosunmu, 2015).

Similar reports on poor performance in Mathematics was observed to be at all levels starting from primary school level to the tertiary level involving both male and female students (Bashir, 2017). Similarly despite the remarkable success recorded by MDGs, available records from WAEC and NECO on the general performance of students showed a poor performance among Secondary School Students. Now we are more than two years down after the expiration of the MDGs declaration and more than two years into the UN new developmental programme; Sustainable Development Goals (SDGs) in place, then what is the trend in gender performance of Mathematics students enrolled for SSCE examination between MDGs and SDGs periods in Abuja Metropolis.

### **Statement of the Problem**

The persistent underperformance of students in Mathematic and students' low enrolment rate in some part in Nigeria has call for concern among researchers and stakeholders in education to establish the causes of such failures and low enrolment rate.

Several attempts and policies have been made by educational stakeholders and researchers to find the ways to curb such abysmal performance, some of which focused on identifying the appropriate causes of students poor performance in Mathematics (Al-Zoubi & Mohammad, 2015) similarly Federal Government of Nigeria on her own, make Mathematics subject compulsory at basic and secondary school levels to improve the consciousness of students on the subject (Ekwueme et al., 2015), there are others global programmes like MDGs and SDGs which gear towards improving students enrolment rate and performance in school. According to Clark (2015), Sustainable Development Goals (global goals) and a broader sustainability agenda, go much further than MDGs , in addressing the root causes of poverty and universal needs for development that work for all people. Therefore, the role of Mathematics to the needed

achievement of sustainable MDGs and SDGs and universal goals cannot be overemphasized. Though there was a report of tremendous achievement made by MDGs as it was reported particularly in the area of enrolment rate. Despite all these efforts, the performance of students in Mathematics is still below expectation (Anaduaka & Okafor, 2013). The problem is that, it was not clear whether these achievements recorded in increased in gender enrolment rate in the last 3year of MDGs is still sustained in the first three years of SDGs in Abuja metropolis, and whether these achievements particularly in increased in enrolment rate is replicated in the Mathematics students' performance in SSCE examination.

Therefore, this research work is designed to comparatively analyze gender performance of Mathematics students enrolled for SSCE Mathematics Examination in Abuja metropolis.

### **Aim and Objectives of the Study**

The study seeks to achieve the following research objectives

- (i) To determine the enrolment rate of male and female Mathematics students between the last three years of MDGs (2013-2015) and the first three years of SDGs (2018-2018)
- (ii) To determine the difference in the performance of male and female Mathematics students in last three years of MDGs.
- (iii) To determine the difference in the performance of male and Mathematics students in the first three years of SDGs.

### **Research Questions**

- (i) What is the enrolment rate for male and female Mathematics students between MDGs and SDGs years?
- (ii) What is the difference in the performance of male and female Mathematics students during MDGs years?
- (iii) What is the difference in the performance of male and female Mathematics students during SDGs period?

### **Null Hypotheses**

The following null hypotheses were formulated and tested at 0.05 alpha levels.

- (i) **HO<sub>1</sub>**: There is no significant is the difference in the performance of male and female Mathematics students during MDGs period.
- (ii) **HO<sub>2</sub>**: There is no significant difference in the performance of male and female Mathematics students during MDGs period.

### **Methodology**

The study used ex-post-facto research design. The population of the study consists of all the Senior Secondary School students who sat SSCE mock Examination in Abuja Municipal Area Council (AMAC). The sample size for this study comprised of 5,453 students, with 2,639 male and 2,814 female students selected from six Government Senior Secondary School in Abuja metropolis. A multi-stage sampling technique was employed in selecting the sample. A stratified sampling technique was used to stratify the schools for the study along the following districts: Wuse district, Asokoro district and Nyanya district. Secondly a simple random sampling technique was used to select two schools from each of the district using hat-and-draw method. The instrument for data collection was existing record review, of SSCE mock Mathematics examination results, collected from Educational Resource Centre (ERC) and the respective schools

selected. Data collected were analyzed using percentage, frequency counts and Chi-square.

**Research Question One:**

What is the enrolment rate for male and female Mathematics students between MDGs and SDGs period?

**Table 1: Summary Analysis of difference in Enrolment rate of Male and Female Students between MDGs and SDGs Period.**

Gender	MDGs	(%)	SDGs	(%)
Male	1219	48.1	1420	48.6
Female	1314	51.9	1500	51.4
Total	2533	100	2920	100

The result from table1 above showed the enrolment rate for male and female students between MDGs and SDGs period with the male students having the enrolment rate of 1219 (48.1%) and 1420 (48.6%) during MDGs and SDGs period and female students had the enrolment rate of 1314 (51.9%) and 1500 (51.4%) respectively in the same periods, with the overall enrolment rate between MDGs and SDGs for both gender stood at 2,533 and 2,920 respectively.

**Research Question two:**

What is the difference in the mean performance of male and female Mathematics students in MDGs period?

**Table 2: Summary Analysis of difference in the Performance of Male and Female Students that Obtained Credit Pass and above during MDGs Period.**

Gender	f	(%)
Male	500	51.5
Female	470	48.5
Total	970	100

The result in table2 above showed the performance of male and female students in SSCE Mathematics examination in Abuja metropolis with male students having a better performance of 51.5% over female students with 48.5% respectively.

**Research Question Three:**

What is the difference in the performance of male and female Mathematics students in SDGs years?

**Table 3: Summary Analysis of difference in the Performance of Male and Female Students that Obtained Credit Pass and above during SDGs Period**

Gender	f	(%)
Male	433	56.7
Female	331	43.3
Total	764	100

The result from the table 4, showed the performance of male and female students in SSCE Mathematics examination during the first three years of SDGs with male students performance stood at 56.7% better than female students with performance of 43.3% over the period. Results from Table1 and table2 clearly showed a decline in students'

performance during SDGs period, overall students' performance during MDGs stood at 970 while students' performance during SDGs stood at 763 respectively.

**Hypothesis One:** There is no significant is the difference in the performance of male and female Mathematics students during MDGs period.

**Table4: Summary Analysis Chi-Square Test for Significant Difference between Male and Female Students performance during MDG Period.**

Gender	Frequenc y	Credit Pass	df	Chi- Square	P- Value	Remark
Male	1005	500 505	1	0.237	0.636	Not significant
Female	966	470 496				

No significant at  $P > 0.05$

Table1 above provides result of Chi square statistics of the relationship between gender and students' performance in Mathematics within three years of MDG programme. About 500 male and 470 female students passed mathematics at credit level, whereas 505 males and 496 females obtained pass grade respectively. Thus,  $X^2(1) = 0.237$ ,  $p = .636$ , which is greater than 0.05. Hence the null hypothesis is retained, no significant difference was found in the performance based on gender. Therefore gender is dependent on performance in Mathematics during MDGs.

**Hypothesis Two:** There is no significant difference in the performance of male and female Mathematics students in MDGs period.

**Table5: Chi-Square Test for Significant Difference between Male and Female Students Performance during SDGs Period.**

Gender	Frequen cy	Credit Pass	df	Chi- Square	P- Value	Decision
Male	971	500 538	1	3.900	0.048	Significant
Female	828	331 497				

Significant at  $P < 0.05$

Table 4.13, above provides results of Chi-square statistics of the relationship between gender and students performance in Mathematics within three years of SDG programme. From the results, 433 male students passed mathematics at credit level as well as 331 females. Also 538 males and 497 females secured pass grades.  $X^2(1) = 3.900$ ,  $p = .048$ , which is less than 0.05. Hence the null hypothesis is rejected, as there was significant difference between the performance of male and female students in mathematics during SDG periods, with male students performing better.

### Discussions of results

The above results showed a progressive increased in the general enrolment rate for both male and female students throughout the last three years of MDGs and the first three years of SDGs in Abuja metropolis with female students having the higher enrolment rate over male students. This result agreed with MDGs (2015) report of, for increased in enrolment rate for every male, there is a female being enrolled into schools. The study also revealed no significant difference found in the performance

based on gender during MDGs. Therefore gender is dependent on performance in Mathematics during MDGs period.

The study similarly revealed a significant difference between the performance of male and female students in mathematics during SDG periods, with male students performing better than female students.

The differences in the performance observed in this study was also agreed with the findings of other researchers such as Kurumeh, et al., (2013) in the study to investigate the differences in the Mathematics and science performance of single-sex schools and mixed school in Makurdi Local Government Area of Benue State. The study established among others the existence of significance difference in both Mathematics and Science performance and between single-sex and mixed schools all in favour of male students.

### **Conclusion**

The results from the findings revealed a progressive increased in enrolment rate for male and female Mathematics students in the last three years of MDGs and the first three years of SDGs programme with the female students having higher enrolment rate over the male during MDGs and SDGs period. Significant difference was also observed between male and female students performance during SDG period, with male students performing better than female students. Therefore the increased in the enrolment rate for both gender observed in the study does not reciprocate their performance during the SDGs period.

### **Recommendations:**

The following recommendations were made based on the finding

- (i) The present policy that sustained the progressive increased in enrolment rate for both male and female students during the MDGs and SDGs programmes in Abuja metropolis should sustained and as well as extend to other states in Nigeria.
- (ii) More qualified Mathematics teachers should be recruited in proportion to increased number of students in Nigerian schools to ensure the teacher and students' ratio of 1:50 for secondary school as enshrined in National policy of Education (FRN, 2004).
- (iii) The role of Mathematics to the national development should not be silent among the global goals like MDGs and SDGs, but its role should be well defined among other SDGs visible goals in Nigeria.

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