Relative performance of students by gender in public examinations (Biology)
A case of selected urban secondary schools in Benue State, Nigeria

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ABSTRACT

Relative performance of students by gender in public examinations was assessed using questionnaires and standardized test on one hundred and eighty students from some selected urban centered schools in Benue State. Casual comparative design and correlation design were used and the results showed that socio-economic status of parents affects the performance of their children/wards (students), and there is no significance difference in the level of performance between boys and girls in public examinations. Parent should be enlightened through seminars and workshops on the importance of educating themselves and their children/ward. Governments, non-governmental organization (NGO'S) and individuals should establish more schools for more education of both sexes. These were the suggestions advanced.

1. INTRODUCTION

Students are mandated to register, write and pass external examination(s) with regulated bodies saddled with the responsibility of conducting examinations in the region of West Africa and Nigeria in particular. Kanno [2000] opined that students' performance in public examinations especially senior secondary school certificate examinations conducted by WAEC and NECO is one criterion for measuring and establishing the effectiveness of Nigerian secondary school system.

Gender roles have stirred up a lot of issues in the imagination of people in the society. The word gender when used in grammar simply refers to the grammatical grouping of words like noun and pronoun into masculine and feminine and neuter classes. But the meaning of the word has changed since the movement of women liberation especially the fourth World Conference held in Beijing, China in 1996 [Orhungur, Agbe, and Egbe-Okpenge, 2003].

Studies have established relationship between access to education, particularly for women and increase in level of development, [UNESCO, 2003]. This shows that the higher the level of women educational status, the more developed the nation will be. This supports the saying that, "if you educate a man, you educate an individual, but if you educate a woman, you educate a nation" Adeyemo [2014].

The Population of women in Nigeria as revealed by the Population census report, [2006] indicates that women constitute 68,293,633 with 70% of them being illiterate.

The EFA Global monitoring Report [2008] also revealed that more than 22 million people in Nigeria are illiterates and 65 % of them are women. The high level of illiteracy among women has been attributed to cultural, religious, social and economic factors.

The candidates need credits in five subjects, including Mathematics and English Language, to gain admission into many of the tertiary institutions in the country. Recent fall in academic performance in secondary schools in Benue state is a matter of concern to parents, administrators, and school counselors. This fall in the standard of education is evident in the poor academic performance released by NECO/WAEC on written and oral examinations taken by secondary and even students of tertiary institutions [Omole, 2001]. This paper aims to assess whether gender affects the performance of students in public examinations (biology) in some secondary schools of Benue state.

2. MATERIAL AND METHODS

2.1 Area of study

The area of study covered students from post-secondary schools within the three geopolitical zones (A, B, and C) of Benue State. Benue state coordinates are: Latitude 8^0 08' 00"N, 6^0 26' 00"S and Longitude 9^0 54' 00" E, 7^0 30' 00"W as shown in Figure 1.
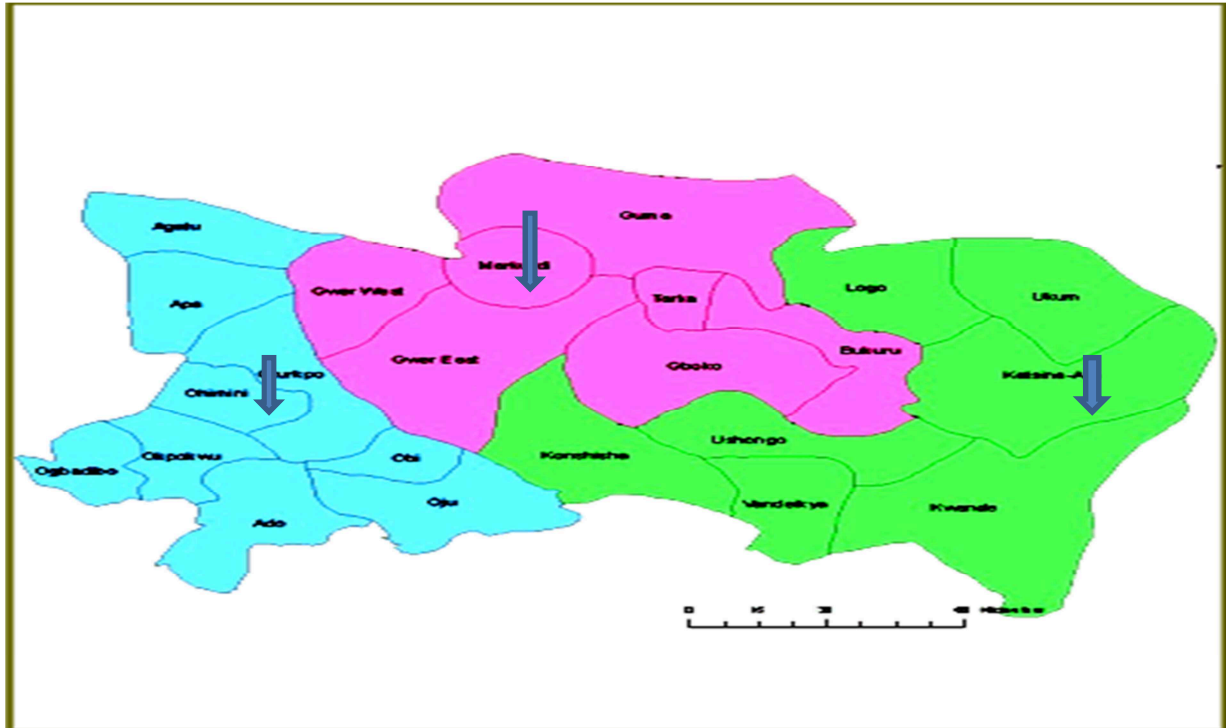
Figure 1: Map of Benue state showing the three Senatorial Zones (A, B and C)

Three local government areas of the twenty –three Local Government areas in Benue state are Katsina-ala from zone A, Makurdi Local Government areas from Zone B and Otukpo Local Government area from Zone C.

2.2. Method of data collection

The researcher visited the sample schools personally to seek official approval and subsequent administration of questionnaires and standardized test to the sampled students. The data collected was handles properly and non-lost in transit.
The research design is causal comparative design since the independent variable (gender) cannot be manipulated.

2.3. Statistical Analysis

Data collected was analyzed using Pearson Product Moment Correlation Coefficient to determine the relationship between parents' socio-economic status and students' performance. The chi-square (χ^2) test was used to determine the relative performance of students by gender in public examinations (Biology).

3. RESULTS AND DISCUSSION

Table 1: Analysis of parents Socio economic status and students performance, NECO/WAEC, 2004 (Biology)

Variables	Students of self-employed parents	Students of government employed parents	Total
Students of literate parents	140 (181.4)	442 (400.6)	582
Students of illiterate parents	90 (48.6)	66 (107.4)	156
Total	230	508	728

$\chi^2 = 30.5$

At probability level of 0.05, the critical value of $\chi^2 = 3.84$ at 1 degree of freedom (2-1) (2-1) =1

The calculated value of 30.5 is greater than the critical value of 3.84, the null hypothesis is accepted. This implies that there is significant difference between parents socio-economic status and students performance.

Table 2: Analysis of parents Socio economic status and students performance, NECO/WAEC, 2005 (Biology)

Variables	Students of self-employed parents	Students of government employed parents	Total
Students of literate parents	89 (106.0)	270 (252.9)	359
Students of illiterate parents	30 (12.9)	14 (31.0)	44
Total	119	284	403

$\chi^2 = 36.0$

At probability level of 0.05, the critical value of $\chi^2 = 3.84$ at 1 degree of freedom (2-1) (2-1) =1

The calculated value of 36.0 is greater than the critical value of 3.84, the null hypothesis is rejected and the alternative hypothesis is accepted. This implies that there is significant difference between parents' socio-economic status and students' performance in public examinations (Biology).

Table 3: Analysis of parents Socio economic status and students performance, NECO/WAEC, 2006 (Biology)

Variables	Students of self-employed parents	Students of government employed parents	Total
Students of literate parents	50 (88.2)	182 (143.8)	232
Students of illiterate parents	88 (49.8)	43 (81.2)	131
Total	138	225	363

$\chi^2 = 57.7$

At probability level of 0.05, the critical value of $\chi^2 = 3.84$ at 1 degree of freedom (2-1) (2-1) =1

The calculated value of 57.7 is greater than the critical value of 3.84, the null hypothesis is rejected and the alternative hypothesis accepted. This implies that there is significant difference between parents' socio-economic status and students' performance in public examinations.

Table 4: The correlation coefficient between the level of performance of Boys and Girls in Public Examination (Biology) NECO /WAEC 2004

Variables	ΣX	ΣY	ΣXY	N=30
Performance of boys (Y)		490		
			7514	r=0.10
Performance of girls (X)	457			

Degree of freedom= 30-2=28

r= 0.10 at d.f. 28 p<0.05

The calculated value of 0.10 is less than the tabulated value of 0.361 at p< 0.05 level of significance, the null hypothesis that the level of boys and girls has no significant relationship in public examinations (Biology) is accepted.
To ascertain the significance of the r-value, the calculated t-value is 1.67 with d.f. of 28 and significance level of 0.05, the critical value is 1.701, the calculated value is low enough to accept the null hypothesis.

Table 5: The correlation coefficient between the level of performance of Boys and Girls in Public Examination (Biology) NECO /WAEC 2005

Variables	ΣX	ΣY	ΣXY	N=30
Performance of boys (Y)		400		
			5282	r=0.30
Performance of girls (X)	384			

Degree of freedom= 30-2=28, the correlation coefficient r= 0.30 at d.f. 28 p<0.05

The calculated value of 0.30 is less than the tabulated value of 0.361 at p< 0.05 level of significance, the null hypothesis that the level of boys and girls has no significant relationship in public examinations (Biology) is accepted.

Table 6: The correlation coefficient between the level of performance of Boys and Girls in Public Examination (Biology) NECO /WAEC 2006

Variables	ΣX	ΣY	ΣXY	N=30
Performance of boys (Y)		424		
			5841	r=0.13
Performance of girls (X)	410			

Degree of freedom= 30-2=28, the correlation coefficient r= 0.13 at d.f. 28 p<0.05

The calculated value of 0.13 is less than the tabulated value of 0.361 at p< 0.05 level of significance, the null hypothesis that the level of boys and girls has no significant relationship in public examinations (Biology) is accepted.
To ascertain the significance of the r-value, the calculated t-value is 0.5 with d.f. of 28 and significance level of 0.05, the critical value is 1.701, the calculated value is low enough to accept the null hypothesis.
Research on gender difference in educational achievements has been of considerable interest to education for many years [Becker, 1987].

Findings on the parents' socio-economic status and students' performance in public examinations, NECO/WAEC from 2004-2006 all indicate that the null hypothesis which states that there is no significant difference between socio-economic status of parents and students performance was rejected and the alternative hypothesis accepted. This shows that there is significant difference between socio-economic status of parents and parents and students performance in public examinations (Biology). Omole [2001] alluded to the facts that economic position of parents largely determined their ability to provide adequate education for their children based on their economic capabilities or status. Wealthy and elite parents send their children to private schools.

These people believe that private schools prepare their students better for achievement on any instructional programme which result in the general assumption of the larger society that private schools have better schools academic performance and standards than public or government owned schools. The lack of exposure to letters of the alphabet by school entry among low socioeconomic status (SES) children delays their ability to acquire foundation-level literacy [Duncan and Seymour, 2000].

Results from Tables 1, 2, and 3 indicate that students whose parents are literate and government employed had the highest score while students whose parents are illiterate and government employed had the lowest score. This agrees with the study of Arnold [1994] that children with the most educated parents (who had degree-level or above qualifications) were on average about 12-13 months ahead of those with the least educated parents (who had no qualifications).

Findings from table 4, 5 and 6 on the level of performance between boys and girls in public examinations (Biology) 2004, 2005 and 2006 respectively indicate that the level of performance of boys and girls has no significant difference in public examinations. Similarly, UNESCO [1999] agrees that the performance of male may not significantly differ from female but the roles assigned as those of women has been keeping them away from science and mathematics and not due to brain deficiency.

These findings disagree with Agbe [2001] who reported that the sex differentials exist in education in the favor of males.

The results of parents socio-economic status and students performance NECO/WAEC 2004-2006 can be summarized as follows: In 2004 table 1, out of 60 students examined, students whose parents are literate and government employed where 28 and obtained the highest score of 442; 9 of them were students of literate and self-employed parents with second core of 140; 5 students from literate parents and government employed with the lowest score of 66. This finding disagrees with the works of Aleile-Williams [1992] who assert that when economic constrains is an intervening variable, educating children of the same parents are in most cases in favour of boys and Okogie, [1995] in his study on gender gap in having access to education in Nigeria indicated that when there is financial stress in a family, boys are usually given preference over girls in all matters of schooling.

Table 2 presents analysis of parents socio-economic status and students performance, NECO/WAEC 2005, out of 60 students examined, 26 students of literate and government employed parent obtained the highest score of 270; 7 students of illiterate and self-employed obtained the score of 30; and 1 student of illiterate and government employed parents obtained the least score of 14.

Table 3 presents analysis of parent's socio-economic status and students performance, NECO/WAEC 2006, out of 60 students examined, 28 of literate and government employed parents obtained the highest score of 182; 4 students of literate and self-employed parents obtained the score of 88; and 3 students of literate and government employed parents obtained the lowest score of 43.

The results show that the calculated value is greater than the tabulated value, the null hypothesis is rejected and the alternative hypothesis is accepted. So there is significant difference between parents' socio-economic status and students' performance.

Table 4 shows the correlated coefficient between the level of performance of boys and girls in public examinations (Biology) NECO/WAEC 2004. The critical value for the correlation for two tailed test at 0.05 level of significant against 28 degree of freedom is 0.361. Therefore, since the calculated value of 0.304 is less than the critical value of 0.361, the null hypothesis is accepted and the alternative hypothesis rejected.

Table 5 shows the correlated coefficient between the level of performance of boys and girls in public examinations (Biology) NECO/WAEC 2005. The critical value for the correlation for two tailed test at 0.05 level of significant against 28 degree of freedom is 0.361. Therefore, since the calculated value of 0.30 is less than the critical value of 0.361, the null hypothesis is accepted and the alternative hypothesis rejected.

Table 6 shows the correlated coefficient between the level of performance of boys and girls in public examinations (Biology) NECO/WAEC 2006. The critical value for the correlation for two tailed test at 0.05 level of significant against 28 degree of freedom is 0.361. Therefore, since the calculated value of 0.13 is less than the critical value of 0.361, the null hypothesis is accepted and the alternative hypothesis rejected.

These results show that there is no significant difference between the performance of boys and girls in public examinations (Biology) and a positive step towards global focus of eliminating gender disparities in primary and secondary education by 2005 and achieving genders equality in education by 2015, with a focus on ensuring girls full and equal access to and achievement in basic education of god quality development (UNESCO, 2002)

4. CONCLUSION

Parents' socio-economic status plays a significant role in the performance of secondary school students in public examinations (NECO/WAEC) Biology. Students from parents of higher socio-economic status performed better than those from low socio-economic level. Sex or gender difference between boys and girls has no impact on the performance of students in public examinations (Biology) at secondary school level.

It is imperative that government should employed well qualified personnel and equip public secondary schools where students of parents with low socio-economic status could attend, thus, bridging the wide gap better the privileged and less privileged students vis-à-vis performance in public examinations (Biology).

Acknowledgement

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