Predictive influence of students' gender on their academic performance in Biology in senior secondary schools in Ado local government area, Ekiti State, Nigeria

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ABSTRACT   *The study investigated the Predictive influence of students' gender on their academic performance in Biology in senior secondary schools in Ado local government area, Ekiti state, Nigeria. The study adopted a survey research design of the ex-post facto type. The target population for the study were schools that registered students for 2014 & 2015 final year Biology WAEC examinations in Ado Local Government of Ekiti State, Nigeria. Three hundred (150) Biology students, which were randomly selected from five (5) secondary school from the Local Government Area of Ekiti state, formed the sample. The sample comprised 150 senior secondary school II (i.e. 30 students each) drawn from the secondary schools in Ado local government area of Ekiti state. Three research hypotheses were formulated for the study. Data collected were analysed using t-test statistic. The results showed that there is no significant difference in the academic performance of male and female students in Biology in MOCK examination results in secondary schools in Ado local government area of Ekiti State ; there exists significant difference in the academic performance of male and female students in Biology in WAEC examination results in favour of female Biology students ; and that there exists significant difference in the academic performance of students in Biology in MOCK and WAEC examination results. The implications of the results on students' academic performance in Biology were discussed. Based on the findings of the study, conclusion and recommendations were made.*

Key Words: *WAEC examination, continuous assessment, MOCK results, gender, academic performance.*

Introduction

Biology being a science of life occupies such an important position in the secondary school curriculum. It is designed, ultimately to educate individual who may or may not pursue biology related career, but at least acquire the knowledge of how and the basic essentials for the proper functioning of the body system. The importance of biology in the growth and development of any nation cannot be overemphasized. It is a discipline that seems to be synergic with other disciplines such as physics, chemistry, medicine, pharmacy, geography, geology.

Despite the utilitarian value of Biology in the scientific and technological development of nations, Nigerian students' performances in the subject have not been encouraging (Adekunle and Femi-Adeoye, 2016). Some of the factors inhibiting the learning of Physics and leading to students' poor academic performances in Physics have been identified. These factors include; poor teaching methodology, students' negative attitude towards biology, gender inequality among others. This study therefore intends to ascertain whether the students' gender is a predictor of their academic performance in biology in senior secondary schools.

Gender difference is one of the factors interacting with learning and many researchers have focused on studies relating to its effect on students' performance. Gender issues in science have gained more increasing emphasis on ways of increasing manpower for

technological development as well as increasing the population of female in science education.

Owuamanam and Babatunde (2007) in their study titled, "gender-role stereotypes and career choice of secondary school students in Ekiti State" observed that girls tend to go for courses that do not require more energy and brain tasking such as home making while boys look for jobs in management, engineering, banking and other brain-tasking professions. Similarly, Graham (2001) in Awodun (2015) reported that female students in the school tend to opt for subjects like, Home Economics and at most Biology while Chemistry, Physics, Mathematics and Further Mathematics are male-dominated zones.

Okeke (2008) in the study on clarification and analysis of gender concepts described the males as being bold, aggressive, tactful and economical in the use of words while females are fearful, timid, gentle, dull, submissive and talkative. May be that is the reason Umoh (2003) in the study on a theoretical analysis of the effects of gender and family education on human resources development affirmed that more difficult works are usually reserved for males while the females are considered feminine in a natural setting.

Ogunleye and Babajide (2011) opined that male supremacy and gender stereotyping are factors among others that were identified to influence occupational choice. Hence, Longe and Adedeji (2003) opined that science and technology are male- dominated subjects and that female tends to shy away from scientific and technological fields. Boys, therefore appear to have a natural positive attitude to technical and science subjects while girls show negative attitude. This negative attitude appears to be due to the acceptance of the myth that boys are better in science subjects than girls. Peradventure this is why Ogunleye and Babajide (2011) submitted that science

subjects such as Physics and Chemistry are given masculine outlook by education practitioners.

Awodun (2015) cited the report of Omotayo and Yusuf (2002) in their study on the acquisition for qualitative skills among girls at the junior secondary school level that male students perform better tasks at some specified scientific processes than their female counterparts and that girls possess lower confidence in their ability to learn science than did boys.

Conversely, Igboke (2004) in a study of comparative analysis of SSCE and NECO results in Ohaukwu local government area of Ebonyin State reported that there is no significant effect of gender of students' academic achievement. Similarly, Ma (2007) in a study of gender differences in learning outcomes also reported that there is no significant effect of gender on the achievement of students. Also, Coley (2010) in a study of differences in gender gap comparisons across racial/ethnic groups in education and work reported that there is no significant effect of gender on the achievement of students in Biology. In the same way, Kolawole and Popoola (2011) in their study maintained that academic achievement is free of gender influence. Also, the findings of Ogunkola and Fayombo (2009) in their study of "investigating the combined and relative effects of some student-related variables on science achievement among secondary school students in Barbados" confirmed that there was no significant statistical difference in Barbadian secondary students' science achievement based on their gender.

Similarly, Abiam and Odok (2006) in their study of "factors in Students' Achievement in different branches of Secondary School Mathematics" found no significant relationship between gender and achievement in number and numeration, algebraic processes and statistics. Udousoro (2003), in the study on

gender differences in computing participation, stated that there is no significance difference in the academic achievement of male and female students. But, Jegede (2007) found that students showed higher anxiety towards the learning of Chemistry in secondary schools than male students.

Research Hypotheses

The following null hypotheses were formulated and tested at 0.05 level of significance:

3. There is no significant difference in the academic performance of male and female students in Biology in MOCK examination results.
4. There is no significant difference in the academic performance of male and female students in Biology in WAEC examination results.
5. There is no significant difference in the academic performance of students in Biology in MOCK and WAEC examination results.

Methodology

The design was a descriptive survey of the expo-facto research type in which there was no treatment and manipulation of independent variable. It involves the collection of data from records. The target population for the study were schools that registered students for 2014 & 2015 final year Biology WAEC examinations in Ado Local Government of Ekiti State, Nigeria. Three hundred (150) Biology students, which were randomly selected from five (5) senior secondary schools (i.e. 30 students each) from Ado Local Government Area of Ekiti state, formed the sample. The researchers made personal contact with all the selected schools and collected the following:

(i) the copy of cumulative continuous assessment for two consecutive years (2014 & 2015) in Biology;

(ii) the 2014 & 2015 Biology MOCK examination results and

(iii) the 2014 & 2015 May/June SSCE computerized result sheets sent to each school by WAEC.

Results and Discussion

The section presents the results obtained in the study in line with the three research hypotheses formulated.

Research Hypothesis 1

There is no significant difference in the academic performance of male and female students in Biology in MOCK examination results.

Table 1: t-test analysis of data on the academic performance of male and female students in Biology in MOCK examination results.

GROUP	N	$\overline{X}$	SD	df	t_{cal}	t_{tab}	Result
Male	75	4.44	2.93	148	0.37	1.65	NS
Female	75	4.61	2.83				

P > 0.05 (Result Not significant at 0.05 level),   NS = Not Significant.

As shown in table 1, when the mean score of male and female students (Biology Mock examination results) were statistically compared, a *t-value* (t_{cal} = 0.37) with p> 0.05 alpha level was obtained, which was not significant at 0.05 level. This implies that there is no significant difference in the academic performance of male and female students in Biology in MOCK examination results in secondary schools in Ado local government area of Ekiti State. Consequently, the null hypothesis which states that there is no significant difference in the academic performance of male and female

students in Biology in MOCK examination results was accepted. This result agrees with the findings of Igboke (2004) in a study of comparative analysis of SSCE and NECO results in Ohaukwu local government area of Ebonyin State there is no significant effect of gender of students' academic achievement. It also agrees with the findings of Kolawole and Popoola (2011) that that academic achievement is free of gender influence.

Research Hypothesis 2

There is no significant difference in the academic performance of male and female students in Biology in WAEC examination results.

Table 2 : t-test analysis of data on the academic performance of male and female students in Biology in WAEC examination results.

GROUP	N	X̄	SD	df	t_{cal}	t_{tab}	Result
Male	75	14.9151	2.34	148	13.89	1.65	*
Female	75	17.53	3.37				

P < 0.05 (Result Significant at 0.05 level).   * = Significant.

As shown in table 2, when the mean score of students in the in the academic performance of male and female students in Biology in WAEC examination results were statistically compared, a *t-value* (t_{cal} = 13.89) with P < 0.05 alpha level was obtained, which was significant at 0.05 level. This implies that there exists significant difference in the academic performance of male and female students in Biology in WAEC examination results in favour of female Biology student. Consequently, the null hypothesis which states that there is no significant difference in the academic performance of male and female students in Biology in WAEC examination results was rejected. As such, the female Biology students perform better than the male Biology students in WAEC examination in senior secondary schools in Ado local government area of Ekiti State. This result agrees with the findings of Graham (2001) as reported in Awodun (2015) that female students in the school tend to opt for subjects like, Home Economics and at most Biology while Chemistry, Physics, Mathematics and Further Mathematics are male-dominated zones.

Research Hypothesis 3

There is no significant difference in the academic performance of students in Biology in MOCK and WAEC examination results.

Table 3: t-test analysis of data on the academic performance of students in Biology in MOCK and WAEC examination results.

GROUP	N	X̄	SD	df	t_{cal}	t_{tab}	Result
MOCK	150	14.5751	1.87	298	15.20	1.65	*
WAEC	150	21.033	3.16				

P < 0.05 (Result Significant at 0.05 level).   * = Significant.

As shown in table 3, when the mean score of students in the in the academic performance of students in Biology in MOCK and WAEC examination results were statistically compared, a *t-value* (t_{cal} = 15.20) with P < 0.05 alpha level was obtained, which was significant at 0.05 level. This

implies that there exists significant difference in the academic performance of students in Biology in MOCK and WAEC examination results. Consequently, the null hypothesis which states that there is no significant difference in the academic performance of students in Biology in MOCK and WAEC examination results was rejected. As such, the students perform better in WAEC examinations than in the MOCK examinations in senior secondary schools in Ado local government area of Ekiti State, Nigeria.

Conclusion

The study revealed that there is no significant difference in the academic performance of male and female students in Biology in MOCK examination results in secondary schools; there exists significant difference in the academic performance of male and female students in Biology in WAEC examination results in favour of female Biology students ; and that there exists significant difference in the academic performance of students in Biology in MOCK and WAEC examination results.

Recommendations

Based on the findings of the study, the following recommendations were made:

1. As a result of relevance of continuous assessment and MOCK examination as predictors of the results of students in the senior certificate examination particularly in biology, it would be better for present state of assessment to be statistically controlled, teachers should be trained on basic principles of developing and standardizing instruments for assessing cognitive, psychomotor and affective dimensions of learning. As these will go a long way in improving the quality of their questions;

2. Government should provides enough founds for research institute and public examination bodies (NECO, WASCE and NABTEB) to carry out National Assessment of Educational;

3. There should be periodic supervision and monitoring of the conducts of continuous assessment and MOCK examinations in secondary institutions so as to ensure validity and reliability of the results;

4. Also, students whose performance in MOCK examination and continuous assessment are not encouraging should be hindered from registering for public examinations as WASCE and NECO;

5. The school authority and external examination supervisor should ensure the strict compliance with examination ethics by candidates and invigilators and;

6. In view of the above findings, on gender, our education, in its contents, planning and application should be gender sensitive to correct current anomalies in our culture and education. Some gender issues that must be addressed includes low status of women, son preference, female circumcision, polygamy, widowhood rites, sexual harassment girl- child abuse, rape and prostitution, increasing divorce rate, lack of proper parenting and limited access to resources education, economic and political power.

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