

Short Research Article

Students' Grades in Basic Education Certificate Examination as Predictor of Grades in West African Certificate Examination

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Abstract

This study investigated how students' grades in Basic Education Certificate Examination (BECE) predict grades in West African Certificate Examination (WACE) in English Language, mathematics and Igbo Language subjects. The study adopted correlation research design and was guided by three null hypotheses. The scores of 1,200 students' were randomly selected from the population of 10,041 students' from sixty (60) government owned secondary schools in Awka Education Zone, Anambra, Nigeria who sat for the BECE in 2011, 2012 and 2013 and then WACE in 2014, 2015 and 2016. The data were collected through the principals of the respective schools sampled and from the Director Examinations Development Centre (EDC) Awka, Nigeria. Linear regression analysis with aid of SPSS were used to ascertain the extent to which students' grades in BECE predict grades in WACE in English Language, mathematics and Igbo Language. The hypotheses were tested at 0.05 alpha level of significant and found that 84.1% of students' grades in WAEC English language was predicted by their grades in BECE English language, 49.2% of students' grades in WAEE mathematics was predicted by their grades in BECE mathematics while 88.7% of students' grades in WAEC Igbo language was predicted by their grades in BECE Igbo language. The study recommends that the government of Nigeria should strengthen Basic Education to improve achievement in senior secondary school since students' grades in BECE predict their grades in WACE.

1. Introduction

Over time, the Nigerian education system has undergone a lot of changes from the era of the missionaries to the present age. These changes in Nigerian educational system were aimed principally at improving educational delivery (Fasok, 2007). One of such changes in Nigerian educational system

in the past two decades was the introduction of the 6-3-3-4 system of education (Federal Republic of Nigeria, 2014). The system came as a result of criticisms made by some educators on the traditional 6-5-4 education system in Nigeria. According to Chukwuma (2010), the 6-3-3-4 education system is the greatest mile stone in the history of organized education in Nigeria.

Later, Universal Basic Education (UBE) was introduced with an enhanced curriculum that is expected to meet the millennium development goals (MDG's) by 2020 (MDG, 2012). With the introduction of UBE, the 6 3 3 4 system of education became implemented as 9 3 4. According to this new arrangement, the first 9 years are spent in primary school and Junior Secondary School (Primary 1 to JSS 3); the next 3 years are spent in the Senior Secondary School (SSS) and the last 4 years are spent in the university. According to Obioma (2011) this new policies initiated under UBE for the attainment of Millennium Development Goals (MDGs) provided for integration of primary and Junior Secondary Schools into a continuous system of schooling (Obioma, 2011). Although, the curriculum of the Junior Secondary differs a little from that of Senior Secondary in areas of subjects and the numbers of subjects offered, they have in common some basic core subjects like, English Language, Mathematics and one Nigerian language like Igbo, Hausa or Yoruba (NERDC, 2008). These little differences in the Junior Secondary and the Senior Secondary usually affect the student's transitional improvement in terms of entrance examinations and their subsequent adaptation to the senior secondary level (Obioma, 2011).

Based on the new practice, all forms of examination for entrance or certification prior to the Junior School Certificate Examination (JSCE) were abolished (FGN, 2014). Thus, in April, 2011, the Junior School Certificate Examination (JSCE) was renamed Basic Education Certificate Examination (BECE) (FGN, 2014). The Anambra State BECE is conducted by the State Examination Development Centre (EDC) of the Ministry of Education while Senior School Certificate Examination (SSCE) is conducted by West Africa Examination Council (WAEC). The West African Examination Council (WAEC) is an evaluation agency created in 1952. The board was indeed charged with the responsibility of conducting examinations in the public interest and awarding certificate equivalent to those awarded by similar examination bodies in Britain (Ojerinde, 2013).

According to *UBEC (2012)*, 46.7% of students who registered in the examination performed poorly in English language and Mathematics subjects while about 22.1% passed the Igbo language subject. In 2013, 55% of students failed to score high in English language and Mathematics while 30% of students passed Igbo language subject (NERDC, 2013). Based on these poor performances of students' in the examinations, determining the actual grades of students becomes imperative as it will help to predict their outcomes in senior school examinations (Bolaji, 2015). Grade is the scholastic standing of a student at any given moment. According to Daniels and Schouten (2012), scholastic standing could be explained as the grades obtained in a course or groups of courses taken. Thus, in predicting academic achievement, Daniel and Schouten emphasize the use of grades in examinations and reported that grades could serve as both predictive and criterion measures. Findings made by Gay (2007) reported that high school grades could be used to predict college grades. However, these findings were contrary

to O'Rourke, Martin and Hurley's (2012), findings which showed that the Scholastic Aptitude Test (SAT) were unable to predict examination achievement as effectively as the First School Leaving Certificate Examination point scores.

The purpose of the study is therefore to ascertain how students' grades in Basic Education Certificate Examination in 2011, 2012 and 2013 predict their grades in West African Certificate Examinations (WACE) in 2014, 2015 and 2016 in English Language, mathematics and Igbo Language.

1.1 Research Questions

1. How do Students' grades in BECE 2011 predict their grades in English language conducted by WAEC in 2014?
2. How do Students' grades in BECE 2012 predict their grades in Mathematics conducted by WAEC in 2015?
3. How do Students' grades in BECE 2013 predict their grades in Igbo language conducted by WAEC in 2016?

1.2 Hypothesis

1. Students' grades in BECE 2011 do not significantly predict their grades in English language conducted by WAEC in 2014.
2. Students' grades in BECE 2012 do not significantly predict their grades in Mathematics conducted by WAEC in 2015.
3. Students' grades in BECE 2013 do not significantly predict their grades in Igbo language conducted by WAEC in 2016.

2. Method

Correlation research design was used for the study. The area of study was Awka education zone in Anambra State, Nigeria. The scores of 1,200 students were randomly selected from the population of 10,041 students of the sixty (60) government owned secondary schools in Awka Education Zone who sat for the BECE examinations conducted by the Anambra State Examination Development Centre (EDC) in the years 2011, 2012 and 2013 and West African Certificate Examination (WACE) in the years 2014, 2015 and 2016.

No instrument was developed for data collection; the existing academic records of the students in BECE and WACE on English language, Mathematics and Igbo language subjects were used. The researcher collected the BECE grades in the Examination Development Center (EDC) of the ministry of education, Amawbia Anambra State, while the students' WACE grades were collected from the respective Principals of the secondary schools sampled.

The quantitative data collected were analyzed with linear regression using Statistical Package for Social Sciences (SPSS) while the hypotheses were tested at 0.05 alpha level of significant.

3. Results

Research Question one: How do students' grades in BECE 2011 predict their grades in English language conducted by WAEC in 2014?

Table 1. Regression Summary Showing How Students' Grades in BECE 2011 Predict Their Grades in English Language Conducted by WAEC in 2014

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.917 ^a	.841	.840	1.84522

a. Predictors: Grade in BECE English 2011.

b. Dependent variable: Grade in WAEC English 2014.

In Table 1, the predicted values of the students' grades in 2014 WACE English language is 0.917. The coefficient of determination R-Square is 0.841. This shows that 84.1% of students' grades in WACE English language can be predicted by their grades in BECE English language.

Research Question two: How do students' grades in BECE 2012 predict their grades in Mathematics conducted by WAEC in 2015?

Table 2. Regression Summary Showing How Students' Grades in BECE 2012 Predict Their Grades in Mathematics Conducted by WAEC in 2015

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.702 ^a	.492	.491	4.35652

a. Predictors: Grade in BECE Maths2012.

b. Dependent variable: Grade in WAEC Maths2015.

In Table 2, the predicted values of the students' grades in 2015 WAEC mathematics is 0.702. The coefficient of determination R-Square is 0.492. This shows that 49.2% of students' grades in WAEC mathematics can be predicted by their grades in BECE mathematics.

Research Question three: How do student's grades in BECE 2013 predict their grades in Igbo language conducted by WAEC in 2016?

Table 3. Regression Summary Showing How Students' Grades in BECE 2013 Predict Their Grades in Igbo Language Conducted by WAEC in 2016

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.942 ^a	.887	.886	1.50020

a. Predictors: Grade in BECE Igbo2013.

b. Dependent variable: Grade in WAEC Igbo 2016.

In Table 3, the predicted value of the students' grades in 2016 WAEC in Igbo language is 0.942. The coefficient of determination R-Square is 0.887. This shows that 88.7% of students' grades in WAEC Igbo language can be predicted by their grades in BECE Igbo language.

Hypothesis one: Students' grades in BECE 2011 do not significantly predict their grades in SSCE in English language conducted by WAEC in 2014.

Table 4. Summary of Analysis of Variance Showing How Students' Grades in BECE English 2011 Predict Their Grades in WAEC English in 2014

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	7165.471	1	7165.471	2104.499	.000 ^c
Residual	1358.529	399	3.405		
Total	8524.000 ^d	400			

a. Predictors: Grade in BECE English 2011.

b. Dependent variable: Grade in WAEC English 2014.

Table 5. Parameter Estimate Showing Coefficients of the Regression Line

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	BECEENG2011	1.374	.030	.917	45.875	.000

a. Dependent Variable: Grade in WAEC English 2014.

Table 5 revealed that the p-value is 0.000. At 5% alpha level of significant, the p-value is less than the tolerance level. Therefore, hypothesis one which states that students' grades in BECE 2011 do not significantly predict their grades in English language conducted by WAEC in 2014 is hereby rejected. Therefore, students' grades in English language conducted by WAEC in 2014 were predicted by their grades in BECE 2011.

Hypothesis two: Students' grades in BECE 2011 do not significantly predict their grades in SSCE in English language conducted by NECO in 2014.

Table 6. Summary of Analysis of Variance Showing How Students' Grades in BECE 2012 Predict Their Grades in Mathematics Conducted by WAEC in 2015

Model	Sum of Squares	Df	Mean Square	F	Sig.
1 Regression	7348.264	1	7348.264	387.173	.000 ^c
Residual	7572.736	399	18.979		
Total	14921.000 ^d	400			

a. Predictors: Grade in BECE Maths2012.

b. Dependent Variable: Grade in WAEC Maths2015.

Table 7. Parameter Estimate Showing Coefficients of the Regression Line

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 BECEMATHS2012	1.273	.065	.702	19.677	.000

a. Dependent Variable: Grade in WAEC Mathematics 2015.

Table 7 revealed that the p-value is 0.000. At 5% alpha level of significant, the p-value is less than the tolerance level. Therefore, the hypothesis two which states that Students' grades in BECE 2012 do not significantly predict grades in Mathematics conducted by WAEC in 2015 is here by rejected. Therefore, students' grades in Mathematics conducted by WAEC in 2015 were predicted by their grades in BECE 2012.

Hypothesis three: Students' grades in BECE 2012 do not significantly predict their grades in SSCE in Mathematics conducted by WAEC in 2015.

Table 8. Summary of Analysis of variance showing how students' grades in BECE 2013 predict their grades in Igbo language conducted by WAEC in 2016

Model	Sum of Squares	df	Mean Square	F	Sig.
Regression	7020.015	1	7020.015	3119.190	.000 ^c
1 Residual	897.985	399	2.251		
Total	7918.000 ^d	400			

a. Predictors: Grade in BECE Igbo 2013.

b. Dependent Variable: Grade in WAEC Igbo 2016.

Table 9. Parameter Estimate Showing Coefficients of the Regression Line

Model	Unstandardized Coefficients		Standardized Coefficients	T	Sig.
	B	Std. Error	Beta		
1 BECEIGBO2013	1.310	.023	.942	55.850	.000

a. Predictors: Grade in BECE Igbo 2013.

b. Dependent Variable: Grade in WAEC Igbo 2016.

Table 9 revealed that the p-value is 0.000. At 5% alpha level of significant, the p-value is less than the tolerance level. Therefore, the hypothesis three which states that Students' grades in BECE 2013 do not significantly predict their grades in Igbo language conducted by WAEC in 2016 is here by rejected. Therefore, students' grades in Igbo language conducted by WAEC in 2016 were predicted by their grades in BECE 2013.

4. Discussion

Students' grades in BECE 2011 in English language as predictor of their grades in SSCE 2014 in English language conducted by WAEC

This study found that 84.1% of students' grades in WAEC English language were predicted by their grades in BECE English language. It further revealed that for every unit increase in the students' grades in BECE English language, a 1.4 unit increase in the students' grades in WAEC English language was predicted. Students' grades in SSCE 2014 in English language conducted by WAEC was significantly predicted by their grades in BECE2011 in English language. This finding is in agreement with the finding of Jemilehim (2008) who asserts that achievement in BECE has been found to be significantly related to achievement in WAEC examination in English language. Findings made by Gay (2007) reports that high school grades could be used to predict college grades. This finding shows that students who obtained an acceptable grade in their BECE English language will as well obtain an acceptable grade in WAEC English language. In other words, students whose BECE grade in English language is poor will as well obtain a poor grade in WAEC English language.

Students' grades in BECE 2012 in mathematics as predictor of their grades in SSCE 2015 in Mathematics conducted by WAEC

The analysis of the research question three revealed that 49.2% of students' grades in WAEC mathematics were predicted by their grades in BECE mathematics. It also indicated that for every unit increase in the students' grades in BECE mathematics, a 1.3 unit increase in the students' grades in WAEC mathematics was predicted. Students' grades in SSCE in Mathematics conducted by WAEC was significantly predicted by their grades in BECE mathematics. Osadebe (2010) investigated the predictive validity of BECE scores in Mathematics and English for scores obtained at the SSCE in Delta State Nigeria, the results obtained showed positive and significant relationship between BECE and SSCE students' scores in Mathematics and English. In a similar vein, Orubu (2013) found that students' grades in SSCE Mathematics were significantly predicted by their grades in BECE.

Students' grades in BECE 2013 in Igbo language as predictor of their grades in SSCE 2016 in Igbo language conducted by WAEC

The analysis of the research question five revealed that 88.7% of students' grades in WAEC Igbo language was predicted by their grades in BECE Igbo language. It further stated that for every unit increase in the students' grades in BECE Igbo language, a 1.3 unit increase in the students' grades in WAEC Igbo language was predicted. Also, students' grades in SSCE in Igbo language conducted by WAEC was significantly predicted by their grades in BECE Igbo language. The findings are in agreement with the findings of Chukwuma (2010) who reported that there was a significant positive relationship between students' performance in BECE and SSCE in Igbo language subject. This finding was contrary to the findings of Faleye and Afolabi (2008) who found that Osun State BECE is a poor predictor of students' performance in the SSCE, except English language and Mathematics.

5. Conclusion

The researchers found that students' grades in SSCE conducted by West African Examination Council in English language, Mathematics and Igbo language subjects were significantly predicted by their grades in BECE.

5.1 Recommendations

1. The government of Nigeria should strengthen Universal basic Education to improve achievement in senior secondary school since students' grades in BECE predict their grades in WACE.
2. The study also recommends that BECE preparation of students should be given more serious attention because of its predictive values on students' WACE grades. Furthermore, the BECE should be graded in stanine like SSCE to facilitate the relationship comparison of students' in the two examinations.

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