Previous cognitive performance in predicting Senior School Certificate Examination performance in English language

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Abstract. The paper examined previous cognitive performance as predictors of academic performance in Senior School Certificate Examination (SSCE) in English Language in some selected schools in Nigeria. The paper also determined the relationship and contributions of Common Entrance Examination (CEE) and Junior Secondary School Certificate Examination (JSCE) to Students performance in Senior School Certificate Examinations (SSCE) in English language. The researchers employed ex-post facto design since the data collected were already available without any manipulations to test four hypotheses. The students CEE scores as well as their academic performance in Junior Secondary School (JSS) III were collected. Their SSCE results in 2010/2011 were also used. Regression and pairwise correction analyses were used to analyze the data collected for the study. Four hypotheses were tested at alpha level of 0.05. The findings revealed that there was significant multiple relationship between CEE, JSCE and SSCE performance in English Language; but neither CEE nor JSCE had any significant influence on SSCE. There was positive but no significant correlation between CEE and JSCE; positive but no significant correlation between CEE and SSCE and negative and no significant correlation between JSCE and SSCE. It was also found that there were low contributions of CEE to JSCE English Language; also JSCE had low but negative contributions to performance in SSCE. There was low positive contribution of CEE on SSCE English Language. Thus, CEE appears as the better predictor of all the cognitive experiences. Recommendation was therefore made that CEE should continue to be used as the best cognitive experience in predicting performance at SSCE. The format of JSCE should be looked into to make it more result oriented.

Keywords: Cognitive, performance, certificate examination, English language.

INTRODUCTION

Education is the bedrock of the development of any nation. Nigeria took a giant stride in ensuring that all its citizens are well educated. The National Policy on Education (2006) stated that the Nigeria's philosophy of education should be geared towards the integration of the individual into a sound and effective citizenship, geared towards self-realization, individual and national efficiency, effective citizenship, national consciousness etc. The Junior Secondary School was conceptualized as both academic and pre-vocational to enhance all the basic knowledge. The secondary education is the stop-gap between primary and tertiary education aimed at preparing

the individual for useful and productive living within the society. Many Nigerian pupils are eager to gain admission into good secondary schools after primary education. To enhance this, a pupil must earn a high score in the Common Entrance Examinations (CEE). The CEE is a standardized test conducted by West African Examination Council (WAEC) covering Mathematics, English Language, Verbal Aptitude and Quantitative Aptitude. The JSCE is conducted by State Ministry of Education and WAEC. Pupils who obtain high scores and meet the cut-off mark in Common Entrance Examination (CEE) are considered successful and therefore offered admission into secondary schools. The brilliant performance of the students in the highly competitive CEE is a matter of high interest to researchers to dig into the psychometric properties of the Examination. Kolawole (2005) asserted that there are 3 types of measurement, viz Continuous Assessment (CA), Examinations and National Assessment. Examination, according to Olatunji (2013) refers to test or set of test at the end of a cycle or period of learning to make decision regarding certification, selection, promotion and classification. CA is the assessment strategy for the educational evaluations of students achievement in teaching-learning situation in the Nigerian School system. Okonkwo (2003) was of the opinion that such an assessment should yield the measures of the student's achievement. National Assessment, according to National Center for Education Statistics (2001) is the national representative assessment of what students know and can do in core subjects by developing the framework and test specifications. Ojerinde and Okonkwo (2003) identified some of the purposes of Educational Assessment to include selection, placement, the control of learning, the evaluation of learning, diagnosis etc. The rationale for using the CEE in this study as a variable is to determine whether it can predict performance in SSCE. Consideration for admission, according to Hayashi (2005), should take into accounts the students classroom achievement. CEE scores and JSCE results were combined as a variable to determine the extent to which their combinations would predict performances in SSCE. Omotoso (1989) conducted a study to seek the relationship between School Certificate/General Certificate of Education, Ordinary Level (SC/GCE O/level), the Joint Matriculation Examination (JME) scores and the scores in the sessional examinations and found that JME and SC/GCE O/level subjects consistently produced a better variance than when used separately as independent variables. Similarly, Kolawoale and Ala (2013) found that combination of Continuous Assessment (CA) and Examination Scores significantly predicted students performance at SSCE. Also, Kolawole and Ilugbusi (2007) found a linear relationship between entry qualification and students achievement in the University. The study is therefore intended to see the combined effects of the CEE and JSCE as a predictor of SSCE performances.

Purpose of the study

The purpose of this study was to determine if:

1. To find out whether there exist multiple relationships between CEE, JSCE and SSCE in English Language.
2. To determine the amount of variance of CEE or JSCE in predicting SSCE English Language Scores.
3. To find out pairwise relationship between CEE, JSCE and SSCE English Language Scores.
4. To find out if there is any contribution(s) of CEE and/or JSCE to SSCE English Language Scores.

Research questions

The following research questions were generated for this study:

1. Is there any relationship between CEE, JSCE and SSCE in English Language?
2. Is there any contribution of each of CEE, JSCE to SSCE performance in English Language?
3. Is there any pairwise relationship between CEE, JSCEand SSCE English Language?
4. Is there any significant contribution of CEE and JSCE to SSCE English Language?

Based on the above Research questions, the following hypotheses were postulated and tested at $\alpha = 0.05$ level.

Hypotheses

1. There is no significant multiple relationship between CEE, JSCE and SSCE in English Language.
2. There is no significant contribution of each of CEE, JSCE to SSCE performance in English Language.
3. There is no significant pairwise relationship between CEE, JSCE and SSCE English Language.
4. There is no significant contribution of CEE and JSCE to SSCE English Language.

METHODOLOGY

The researchers employed ex-post facto design and the data were CEE results of the 1000 out of the 15,809 students admitted into selected schools in Ekiti State in 2005/2006 who transited to JSS III in 2007/2008. Their SSCE results taken in 2010/2011 were also considered. The population consisted of all the 15,809 JSS I students that were admitted through the 2005 Common Entrance Examination into the Public Secondary Schools in Ekiti

Table 1. Linear regression of CEE, JSCE and SSCE in English Language.

Model	S.S	df	MS	F	Sig. F	R	Adjusted R^2	R^2
Regression	25.135	2	12.568					
Residual	3347.144	997	3.357	3.747	0.024	0.086*	0.005	0.007
Total	3372.279	999						

*P < 0.05

State. A sample of 1000 students was randomly selected for the study. The null hypotheses were tested using correlation and Simple Regression Analysis.

RESULTS

The data were analyzed with their SSCE performance in English Language.

Hypothesis 1

There is no significant Multiple relationship between CEE, JSCE and SSCE in English Language.

A simple linear regression analysis of CEE, JSCE on SSCE in English language was carried out.

Table 1 shows that the relationship between CEE, JSE and SSCE English Language is low, positive and significant at 0.05 level (R = 0.086*, P < 0.05). The result revealed that CEE and JSCE accounted for a significant but very low amount of variation in the SSCE English Language (R^2 = 0.07, $F_{2,997}$ = 3.747, p < 0.05).The two variables taken together significantly predicted the SSCE performance. This implies that there is significant multiple relationship between CEE, JSS and SSCE English Language. Also, the degree of alienation (strange) of combined CEE, JSCE and SSCE is 99.69%. Thus, neither CEE nor JSCE has any significant influence on SSCE result. The null hypothesis is accepted.

Hypothesis 2

There is no significant contribution of each of CEE or JSS to SSCE performance in English Language.

A multiple regression analysis of CEE, JSCE on SSCE in English language was carried out to find their relationship.
The resulting regression equation is:

SSCE = 2.621 + 0.076(CEE) – 0.177 (JSCE)

Putting JSS English aside, for every extra 1 mark in CEE English, there is a corresponding 0.076 increase in SSCE English grade. Also putting CEE English aside, for every

extra mark in JSS III, there is a corresponding 0.117 decrease in SSCE English grade. Putting both CEE and JSCE English aside, for every other variable (other than CEE and JSCE English), there is corresponding 2.621 increase in SSCE English Language. By implication, CEE is a better predictor of academic performance in SSCE English CEE had low but not significant contribution to the academic performance in English. Also JSCE English had low negative but significant contribution on SSCE grade. Other factors other than CEE and JSCE had high but significant positive contribution to the academic performance of the students. By implication, other than researchers should look for other variables other than CEE as predictors of SSCE English.

Hypothesis 3

There is no significant pairwise relationship between CEE, JSCE and SSCE English Language.

A simple correlation analysis of CEE, JSCE on SSCE in English language was carried out to determine the pairwise relationship between the variables.

Table 3 shows that the correlation coefficient of CEE and JSCE was positive but not significant (R = 0.055, p > 0.05). Similarly, the correlation between CEE and SSCE was also positive and not statistically significant (R = 0.042, p > 0.05). However, the correlation between JSCE and SSCE English language was negative but significant (R = -0.079*, p < 0.05). JSCE had positive and no significant relationship with CEE (0.055), but significant negative relationship with SSCE (-0.079*).

Hypothesis 4

There is no significant contribution of:

a) CEE on JSCE English Language
b) JSCE on SSCE English Language.
c) CEE on SSCE English Language.

The null hypothesis accepted (B = 027, t = 1.273, p > 0.05). It implies that there is no significant contribution of CEE on JSCE English Languages. The regression equation is given as JSCE = 2.311 +.027 (CEE). CEE had low positive contribution to JSCE English Language.

Table 2. Summary of multiple regression analysis of CEE, JSCE with SSCE English language.

Model	B	Std. error	Beta	t	Sig. t	R	R²	F	Sig. F
Constant	2.621	0.241		10.860	0.000				
CEE English	0.076	0.052	0.046	1.450	0.147	0.086	0.007	3.747	0.024
JSCE English	-0.177*	0.074	-0.076	-2.397*	0.017				

*P < 0.05

Table 3. Correlation among CEE, JSCE and SSCE English Language.

	CEE	JSCE	SSCE
CEE	1.000	0.055	0.042
JSCE	0.055	1.000	-0.079*
SSCE	0.042	-0.079*	1.000

*P < 0.05

Table 4a. Linear regression showing the contribution of CEE on JSCE English language.

Model	B	Std error	t	Sig. T	F	R	Adjusted R²	R²
Constant	2.311	0.070	32.865	0.000				
CEE	0.027	0.021	1.273	0.203	1.620	0.039	0.002	0.001

P > 0.05

The F-Value is not significant at 2,997 degree of freedom. The degree of alienation (strange) between CEE and JSCE is 99.94%, thus, CEE has no significant contribution to JSCE result (Table 4a).

Table 4b shows that performance in JSCE, had significant, low but negative contribution to students' performance in SSCE English language (B = -.201*, F = 7.834, t = -2.799, p < 0.05). The null hypothesis is rejected. The resulting regression equation is given as: SSCE = 2.882-201 (JSCE). Hence, JSCE contributed negatively to SSCE English Language.

Table 4c shows that there was significant positive contribution of CEE on SSCE English Language. (B = 0.109*, t = 2.225*, p < 0.05). Therefore the null hypothesis is rejected. The regression equation is given by SSCE = 2.060 + 0.109 CEE. So, CEE had positive contribution to SSCE and other factors, aside CEE, contributed positively to students' performances in English Language. CEE has adjusted 0.004 and 99.74% degree of alienation (strange) with SSCE. By implication, CEE has very low positive influence on SSCE and 99.74% of variability in SSCE is strange to the predictive strength of SSCE.

DISCUSSION

The researchers found that:

i) There is low positive but significant relationship between CEE, JSCE and SSCE results.

ii) Neither CEE nor JSCE has any significant influence/contribution on SSCE but the two variables together significantly predicted SSCE results.

iii) SSCE has positive non-significant relationship with CEE but significant negative relationship with JSCE.

iv) CEE has low but not significant contribution to SSCE English Language.

v) JSCE contributed negatively to SSCE.

vi) CEE has very low positive contribution to SSCE.

vii) CEE has no significant relationship with JSCE.

viii) CEE has negative but significant relationship with SSCE.

ix) CEE has low contribution to JSCE.

The values of the multiple R in Tables 2 and 4 respectively showed that there were very poor relationship between CEE, JSCE and SCCE English language. Also, the finding showed that there was low and negative relationship between JSCE and SSCE (English Language) but positive and low relationship between CEE and SCE English Language). Hence, CEE appears as the better predictor of performance at SSCE. The study observed that there was low relationship between CEE, JSCE and SSCE results. Combination of the variables (CEE and JSCE) was able to significantly predict SSCE performance but individually neither of the variables had the ability to predict the performance. This is in agreement with Kolawole and Ala (2013) that the combination of CA and Examination Scores significantly

Table 4b. Linear regression showing the contribution of JSCE on SSCE English language.

Model	B	Std error	t	Sig. T	R	R^2	Adjusted R^2	F
Constant	2.882	.181	15.919	.000				
JSCE	-.201*	.072	-2.799*	.005	0.086	0.007	0.007	7.834*

*P < 0.05

Table 4c. Regression analysis of CEE contribution in SSCE English language.

Model	B	Std error	t	Sig. T	R	R^2	Adjusted R^2	F
Constant	2.060	0.163	12.607	000				
CEE	0.109*	0.049	2.225*	0.026	0.069	0.005	0.004	4.950*

*P < 0.05

predicted performances at SSCE Mathematics. Also, SSCE was found to have positive relationship with CEE but negative relationship with JSCE. JSCE contributed negatively to SSCE performance. This does not augur well. JSCE by design is the stop-gap between Primary and Senior School Certificate Examination. It is expected that the content and structure of the JSS curriculum should positively incline to SSCE. While Alonge (2003) found that Mock Mathematics Examination helped in predicting academic performance of students in WASC Examination and as supported by Ndem (1991) who found there was a significant relationship between UTME composite scores and University academic performance of the students; Kolawole et al. (2011) observed that there was a significant contribution from the UTME Scores of the selected University Chemistry students to their part II CGPA in chemistry at degree level. CEE has low positive relationship with JSCE and negative relationship with SSCE. However, it had low but positive contribution to SSCE. Expectedly, CEE should be a good predictor of students' performance in SSCE more so that the CEE is the mode of entry.

Conclusion

The study revealed that all the cognitive entry performance (CEE, JSCE) are poorly related and are poor predictors of SSCE performance since other factors accounted for about 99.74% variation. While CEE contributed positively, JSCE had negative contributions. The study revealed that while JSCE is the worst predictors, CEE is the, better predictor of academic performance in SSCE (English language). This study is in line with Kolawole and Ilugbusi (2007) that there is a significant positive linear relationship between students' entry qualifications and their academic achievement in the Universities. This is in consonance with JAMB (2009) which agreed that there was a relationship between UME Scores and performance at the undergraduate level

RECOMMENDATIONS

Based on the above findings, the following recommendations were made:

1. CEE should continue to be used as moderator of cognitive entry predictors while the JSCE should be restructured to make it more results oriented.
2. Other researchers should look for other variables other than CEE as predictors of SSCE English.
3. It is recommended that a replication of this study be carried out in other subjects areas using samples from other states.

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