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Predictive Validity of Basic Education Certificate Examination on Senior Secondary Certificate Examination in Mathematics in Public Secondary Schools in Rivers State

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Abstract: *The study assessed the predictive validity of BECE on SSCE in Mathematics in public secondary schools in Rivers State. Specifically, the study sought to determine whether students' performance in BECE Mathematics could predict their performance in SSCE Mathematics in Rivers State (2015-2020). The study employed a correlational design. The study population was 1,225 students from three public secondary schools across the three Senatorial Districts in Rivers State who registered and sat for the Basic Education Certificate Examination (BECE) in 2015, 2016, and 2017, and Senior School Certificate Examination (SSCE) in 2018, 2019 and 2020. A sample of 562 Basic Nine students was used for the study. Purposive sampling technique was used to compose the sample of those who sat the BECE and SSCE. Three research questions were answered and three null hypotheses were tested at a 0.05 significance level. Data was collected directly from school principals and the examining body (Rivers State Ministry of Education). The data was analysed using simple regression. The study's findings showed that students' performance in 2015 BECE Mathematics could not significantly predict their performance in 2018 SSCE Mathematics while 2016/2017 BECE Mathematics performance significantly predicted their performance in 2019/2020 SSCE Mathematics. It was recommended that the Ministry of Education in Rivers State should employ qualified and competent Mathematics teachers in both junior and senior secondary schools to enhance performance.*

Key Words: *BECE, Examination, Mathematics, Predictive, SSCE, Validity.*

INTRODUCTION

Examination is considered as an instrument for students' assessment, and evaluation, and one of the necessities for school accreditation. It is used for selection, placement, certification and promotion. Achor, Aligba and Omananyi (2010) explained that the problem of confidence of the populace in all the examinations conducted by national and international examination bodies in the country is still in doubt. Thus, public confidence in the examination operations and subsequent certification is therefore very important. Daniel (2005) observed that public confidence is directly proportional to the measure of acceptability of such examination.

In Nigeria, the Basic Education Certificate Examination (BECE) is regarded as one of the external or public examinations which is taken at the end of the basic school education programme. It is conducted by each State of the Federal Republic of Nigeria through their respective Ministry of Education (MOE), for final-year students of the Universal Basic Education (UBE) programme at the end of junior secondary school education. While each State develops, administers, marks and awards grades and certificates to all public schools under its jurisdiction, the National Examinations Council (NECO) is responsible for conducting the BECE for all Basic Nine students of Federal Government Colleges and other private secondary schools that filed in to take the NECO - conducted examination.

The Federal Republic of Nigeria as constituted in the National Policy on Education (2013), Section 3 titled "BASIC EDUCATION", Sub-sections 15 and 16, states as follows: 15: Basic education shall be of nine-year duration comprising six years of primary education and three years of junior secondary education. It shall be free and compulsory. It shall also include adult and non-formal education programmes at primary and junior secondary education levels for adults and out-of-school youths. 16: The specific goals of basic education shall be the same as the goals of the levels of education to which it applies (i.e. primary education, junior secondary education and adult non-formal education). Knowledge is power.

In a bid to fashion out an educational policy that would boost the economy by producing high and middle-level manpower for industrialisation, the policymakers introduced the 6-3-3-4 system which was designed to give six years in elementary (primary) school, three years of junior secondary studies, three years of senior secondary studies, and four years of university education to every child. This was to enable every child to be exposed to academic and non-academic skills. The 6-3-3-4 system has not succeeded and has given way to a 9-3-4 system. Commentary generally made by stakeholders in the educational sector has made some educationists refer to the new 9-3-4 system of education as an old wine in a new bottle, arguing that there is not much difference between the two systems of education as each period covers sixteen years of study (Egugbo & Salami, 2021).

However, the only difference was that a pupil would spend nine years (Basic 1-9) in the basic school; the three last years of the Universal Basic Education (UBE) absorbed the three years of the junior secondary section. This means that the First School Leaving Certificate Examination (FSLCE) shall cease, as there shall be a 100% transition from primary to Junior Secondary School. In its place, we will have Universal Basic Certificate Examination (UBCE) at the end of the UBE Programme in JSS III. Universal Basic Education Commission (UBEC, 2012) stressed that determining the actual grades of students in BECE is 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. Daniels and Schouten (2012) emphasized that 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.

Additionally, those who were academically inclined would move to the senior secondary section and subsequently sit for the Senior School Certificate Examination (SSCE) at the end of their three years of senior secondary school education, while those who feel that they have learnt enough skills would graduate to set up businesses.

The Senior Secondary Certificate Examination (SSCE), on the other hand, is a national examination for all Senior Secondary School lll students in all secondary schools in the country. It is being conducted and administered by both the West African Examinations Council (WAEC) and the National Examination Council (NECO). The two examining agencies conduct parallel or equivalent SSCEs in the country. The WAEC version of the Senior School Certificate Examination is used for this study since it follows the rules and regulations guiding the development and administration of public examination and the validity test has been ascertained by many researchers (Ojerinde, 2004). Indeed, the test development and administration processes by WAEC clearly show that the SSCE is patterned after the best tradition of development and administration of public examinations. The senior School Certificate Examination (SSCE) result is one of the requisite qualifications for entry into any tertiary institution in Nigeria. A candidate must possess the minimum entry requirements at credit level in Mathematics and English Language concerning SSCE before he is given admission into any Nigeria A 'level educational programme. The pattern of grading candidates' scores in the

examination was such that the distinction grade was represented by A1 to B3. The credit grade was represented by C4 to C6. The ordinary pass grade was represented by D7 and E8 while the failure grade was represented by F9. (WAEC, 2002). The distinction and credit grades are the only requisite grades for admission into higher Education in Nigeria and the candidate must have at least credit (C6) in five subjects including Mathematics and English language to qualify for admission into tertiary institutions in Nigeria, (JAMB, 2002).

The West African Senior Secondary Certificate Examination (WASSCE) is a type of standardized test conducted in West African countries. Students who pass the examination receive a certificate confirming their graduation from secondary education. It is administered by the West African Examination Council (WAEC) and only offered to candidates residing in Anglophone West African countries. The academic school-learning qualification awarded upon successful completion of the examinations is the West African Senior School Certificate. Under the current WAEC marking and grading scheme, the letters A to F are used to indicate how good a result is. The WAEC grading system is shown thus:
Excellent (75%-100%) – A1; Very Good (70%-74%) – B2; Good (65%-69%) – B3; Credit (60%-64%) – C4; Credit (55%-59%) – C5; Credit (50%-54%) – C6; Pass (45%-49%) – D7; Pass (40%-44%) – E8; and Fail (0%-39%) - F9.

In Nigeria, attention has been given to the teaching and learning of Mathematics, as a way of improving students' academic achievement in subjects at levels of the Nigerian educational system, Kolawale (2007). As a direct consequence of this, the federal government of Nigeria paid particular attention to Mathematics and made it a compulsory subject at both primary and secondary education in Nigeria, as specified in the National Policy on Education [NPE], (2004). The 1887 Education ordinance made provision for public examinations in schools that have attained the requisite percentage of proficiency (Adeyemi, 2010). As such, all secondary schools in the country have geared their programme to meet the requirement of examination being conducted by the West African Examination Council (WAEC)

Mathematics is a core subject and one of the major science subjects taught at the senior secondary school level. The students need to pass the subject at the end of their primary and secondary education at the credit level to fulfil the requirements for admission into senior secondary and also into higher institutions of learning in Nigeria. Mathematics according to Maliki, Ngban, and Ibu (2009) is described as a subject that "affects all aspects of human life at different degrees". According to The National Mathematics Advisory Panel (2008), mathematics is used throughout our daily lives. The importance of mathematics in day-to-day activities is no longer news. However, what remains news is the fact that students' performance in mathematics has not improved significantly despite its importance, not even with the introduction and use of technology in mathematics. Nowadays, students make use of computer-assisted problem-solving systems to better learn and understand mathematics. Even though the government has confirmed the importance of mathematics by making it a core and compulsory subject at both junior and senior secondary levels (Federal Republic of Nigeria [FRN], 2004), the invested billions of Naira in the teaching and learning of mathematics has not yielded any significant improvement due to wasteful and inappropriate spending of the required resources provided by the government.

The Basic Education Certificate Examination is a stepping stone for admission into the Senior Secondary School. Students who transition from Junior Secondary School to Senior Secondary School are expected to have the ability, enablement and necessary skills needed to cope with all the academic challenges of Senior Secondary Schools (Moses & Justina, 2019). Over the years, the Nigerian educational system has undergone a lot of changes from the era of the missionaries to the

present age. These changes in the Nigerian educational system were aimed principally at improving educational delivery (Fasok, 2007). One such change in the 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 educational system in Nigeria. Chukwuma (2010) stated that the 6-3-3-4 system is the greatest milestone 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 (MDGs) 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 nine (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), these new policies initiated under UBE for the attainment of Millennium Development Goals (MDGs) provided for the 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 offered (number and type), 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 Junior Secondary and 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).

To improve the standard of education at all levels in Nigeria and to lay a sound foundation for senior secondary school, the Junior Secondary Certificate Examination was introduced in 1992 which is prepared by each state of the federation. The Junior School Certificate Examination (JSCE) was the examination written after the completion of nine years of primary education (from primary 1 to JSS 3). Possession of a minimum of credits/passes in five subjects including English Language and Mathematics qualifies a graduate of 9-year UBE who sat for the JSCE for admission into the 3-year Senior Secondary School programme. The junior and senior arms of an already existing secondary school may or may not co-exist in the same geographical location or school compound. The UBE programme recommends that these arms must have different principals and staff, with different school uniforms for the students. Based on the new practice, all forms of examination for entrance or certification before 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).

Since the BECE is meant to serve as the yardstick for admission into the Senior Secondary School, a student who is admitted is assumed to possess these abilities and skills necessary to cope with the academic challenges of the senior secondary school (SSS). However, it is common knowledge that performance in the SSCE has been low for quite a long time (Falaye & Afolabi, 2005) despite the fact that these same students obtained acceptable grades in the Basic Education Certificate Examination (BECE), and were subsequently admitted to SSS I. This touches on the validity of the Basic Education Certificate Examination (BECE) as an adequate benchmark to judge students' capacity to cope effectively with senior secondary school work (Popham, 2002).

Validity as defined by Obilor (2018) is the degree of exactness with which an instrument measures what it purports to measure. Reliability on the other hand is the degree of consistency with which a test measures what it does measure (Chakrabartty, 2013). Validity of test scores is one major way by which prediction of performance in academics can be achieved.

One type of prediction that has gained much prominence in the educational circle is the use of scores derived from standardized tests to predict success or achievement in a particular course of study (Camara & Echtemacht, 2000). Evidence shows that the best tests that are good predictors are applied to practical problems such as the selection of candidates for college admission or provision of scientific basis for counselling students on how to plan their academic future (Geisjer & Studley, 2001). Validity is categorized into content, face, construct and criterion-related validity.

Criterion-related validity is the extent to which a measure is related to an outcome. It exists in two forms which are concurrent validity and predictive validity. Predictive validity as described by Kpolovie (2002) is one of the two ways or forms of estimating criterion-related validity. Predictive validity is a situation in which a stated interval occurs between the predictor and criterion tests. For instance, as presented by (Kpolovie, 2002, p.173), "predictive validity of an intelligence test can be determined by administering the test to applicants for admission into a professional school and correlating their performance on this test with their grades at the end of the professional training". If a satisfactorily high coefficient is obtained then the intelligence test is a valid predictor of people's performance in the profession, if low, then the test is not a valid predictor.

Obilor (2018) stated that predictive validity measures the relationship between examinees' performance on the test with their performance on another test. It refers to how well the scores obtained from a test now predict future criterion behaviour. Similarly, Afolabi (2012) described predictive validity as the degree of correlation between the scores on a test and some other measures that the test is designed to predict. In the classroom, teachers are saddled with the task of ensuring adequate curriculum delivery through instruction as well as the use of appropriate assessment techniques to determine the extent to which learning objectives as outlined in the curriculum are achieved. However, the teacher-made achievement tests used most adequately include all the content covered during instruction to ensure adequate content validity which is the most important validity evidence required of classroom achievement tests.

Predictive validity evidence has been found to have existed between some achievement tests, especially, public examinations and candidates' performance in future tests. For instance, Faleye and Afolabi (2005) discovered that the Junior Secondary Certificate Examination (JSCE) conducted by Osun State Ministry of Education was a poor predictor of students' performance in Senior School Certificate Examination (SSCE) subjects with the JSCE English and Mathematics having a greater capability to predict performance in SSCE English and Mathematics than all other subjects. Similarly, Orubu (2015) in a comparative study involving Delta and Edo States of Nigeria, established that scores in Mathematics at the JSCE do predict candidates' academic performance in Mathematics at the SSCE level.

Academic performance occupies a very important place in education as well as in learning process; this is not only a pointer to the effectiveness or otherwise of schools but a major determinant of the future of students and the nation. It is considered as a key criterion to judging one's total potentialities and capacities which are frequently measured by the examination results (Nuthana & Yenagi, 2009): This has become a phenomenon of interest to all stakeholders. It accounts for the reason scholars have been working hard to tackle factors that militate against good academic performance (Aremu & Sokan, 2003). The academic performance of learners has attracted the attention of scholars, parents, policy-makers, and planners. Adeyemo (2001) opined that the major goal of the school is to work towards the attainment of academic excellence by students.

Orlu (2013) defined academic performance as the process of developing the capacities and potentialities of the individual student so as to prepare that individual to be successful in a specific society or culture. It is commonly measured through examinations or continuous assessments.

According to Arief (2019), scholars agree that students' academic achievement or performance is a net result of their cognitive and non-cognitive attributes as well as the sociocultural context in which the learning process takes place. The academic performance of students is a key feature in education (Anthony, 2018). It is considered to be the centre around which the whole education system revolves. The academic performance of students determines the success or failure of any academic institution.

Completion of educational benchmarks such as BECE and SSCE represent academic achievement. In Nigeria, students' performance is judged in core subjects which include English Language, Mathematics, Basic Science, Civic Education, Agricultural Science, and Computer at the BECE, while at the SSCE, the core subjects are English Language, Mathematics, Civic Education, Marketing and Data Processing (Opara, Onyekuru & Njoku, 2015).

This study focuses on Mathematics. The Federal Republic of Nigeria (2004) asserts that each student must pass English Language and Mathematics compulsorily at BECE before being admitted into the Senior Secondary School. The problem is, does a pass in Mathematics at the Basic Education Certificate Examination guarantee a pass in Mathematics at the Senior School Certificate Examination? This study seeks to answer this puzzle.

Statement of the Problem

The BECE serves as the yardstick for admission into the Senior Secondary School. Thus, it is expected that a student who is admitted possesses the abilities and skills necessary to cope with the academic challenges of the Senior Secondary School (SSS). However, it is common knowledge that performance in the various SSCE subjects has been low for quite a long time (WAEC, 2010-2015 Chief Examiners Reports), For instance, in the 2014 and 2015 WAEC, the percentage of candidates that obtained credit pass in five subjects and above, including English Language and Mathematics was 31.28 percent and 38.68 percent respectively (Adenipekun, 2016), despite the fact that these same students obtained acceptable grades in the BECE, and were consequently admitted to SSS I.

The poor performance of students at the SSCE touches on the validity of the BECE as an adequate benchmark to judge students' capacity to cope effectively with SSS work which has a direct impact on their performance in the SSCE. It is pertinent, therefore, to investigate the reasons for this poor performance in the SSCE by surveying the predictive validity of the BECE, which is the prerequisite for admission into senior secondary schools. Despite the numerous literature reviewed so far on predictive validity of performance of students, no work has been carried out on the predictive validity of Basic Education Certificate Examination (BECE) on Senior School Certificate Examination (SSCE) in Public Secondary Schools in Rivers State between 2015 and 2020 that focused on Mathematics. Therefore, it has become a gap in research which this study is set out to fill. Could the performance at the BECE predict the performance at the SSCE? It is against this background that the Predictive Validity of Basic Education Certificate Examination (BECE) on Senior School Certificate Examination (SSCE) in Mathematics in Public Secondary Schools in Rivers State constitutes the problem of this study.

Purpose of the Study

The purpose of the study is to assess the predictive validity of Basic Education Certificate Examination (BECE) on Senior School Certificate Examination (SSCE) in Mathematics in Public Secondary Schools in Rivers State. The specific objectives of the study are to:

1. find out whether students' performance in 2015 BECE Mathematics could predict their performance in 2018 SSCE Mathematics in Rivers State;
2. find out whether students' performance in 2016 BECE Mathematics could predict their performance in 2019 SSCE Mathematics in Rivers State; and
3. find out whether students' performance in 2017 BECE Mathematics could predict their performance in 2020 SSCE Mathematics in Rivers State.

Research Questions

The following questions served as guide to the entire investigation:

1. To what extent does students' performance in 2015 BECE Mathematics predict their performance in 2018 SSCE Mathematics in Rivers State?
2. To what extent does students' performance in 2016 BECE Mathematics predict their performance in 2019 SSCE Mathematics in Rivers State?
3. To what extent does students' performance in 2017 BECE Mathematics predict their performance in 2020 SSCE Mathematics in Rivers State?

Hypotheses

The following null hypotheses were tested at the 0.05 level of significance.

1. Students' performance in 2015 BECE Mathematics does not significantly predict their performance in 2018 SSCE Mathematics in Rivers State.
2. Students' performance in 2016 BECE Mathematics does not significantly predict their performance in 2019 SSCE Mathematics in Rivers State.
3. Students' performance in 2017 BECE Mathematics does not significantly predict their performance in 2020 SSCE Mathematics in Rivers State

METHODOLOGY

A correlational research design was used for this study. Correlational studies seek to ascertain relationships between two or more variables (Tan, 2014). Findings from correlational studies enable researchers to predict dependent variables (criterion variables) from the independent variables (predictor variables). This design is most appropriate because the researcher sought to find out if success in Mathematics in BECE could predict success in Mathematics in SSCE.

The population for the study was 1,225 which comprised of students from three public secondary schools across the three Senatorial Districts in Rivers State who registered and sat for the Basic Education Certificate Examination (BECE) in 2015, 2016, 2017 in Mathematics (Source: Rivers State, Ministry of Education Records, 2022).

The sample size for this study was 562 Basic Nine students. The purposive sampling technique was used to select the sample made up of only students who sat for the Basic Education Certificate Examination (BECE) in 2015, 2016, and 2017 and also the Senior School Certificate Examination (SSCE) in 2018, 2019, and 2020 in the same public secondary schools in Rivers State. This is shown in the table below.

Table 3.1: Sample Size of the Distribution

Year	Sample Size
2015/2018	172
2016/2019	182
2017/2020	208
Total	562

Data for this study was documented students' BECE and SSCE results from Rivers State Ministry of Education and West African Examination Council respectively. The BECE students' scores are for years 2015, 2016, and 2017 while the SSCE scores are for years 2018, 2019, and 2020. To obtain the data, letters were written to the Rivers State Ministry of Education and West African Examinations Council Headquarters to grant the researcher access to the Mathematics results in BECE and SSCE for the given period (2015-2020) and the needed access was granted.

Methods of data analysis include frequency count, percentage, and simple linear regression model. The basic regression equation employed in the study is:

$Y_i = \beta_0 + \beta_1 X_i + \mu_i$

Where,

y_i = results of the students that sat for SSCE Mathematics and English Language in public senior secondary schools in Rivers State.

x_i = results of the students that sat for BECE Mathematics and English Language in public junior secondary schools in Rivers State.

β_0 and β_1 = parameters to be estimated.

μ = error or the residual term generated from the linear regression.

The dependent variables are the SSCE scores in Mathematics conducted by the West African Examination Council for 2018, 2019 and 2020, while the independent variables are the BECE scores in Mathematics conducted by the Rivers State Ministry of Education for 2015, 2016 and 2017.

RESULTS

Research Question 1: To what extent does students' performance in 2015 BECE Mathematics predict their performance in 2018 SSCE Mathematics in Rivers State?

Table 1: Extent of Prediction of Students' Performance in the 2015 BECE Mathematics and 2018 SSCE Mathematics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.070	.005	.003	.60321

Predictors: (Constant), BECE 2015 Mathematics
Dependent Variable: SSCE 2018 Mathematics

The results in Table 1 showed the extent of prediction of students' performance in the 2015 BECE Mathematics on their 2018 SSCE Mathematics. The results show an R of 0.070 and R^2 of 0.005. The R^2 value of 0.005 means that 0.5% of the variance in 2018 SSCE Mathematics performance was predicted by students' 2015 BECE Mathematics performance in Rivers State.

Research Question 2: To what extent does students' performance in 2016 BECE Mathematics predict their performance in 2019 SSCE Mathematics in Rivers State?

Table 2: Extent of Prediction of Students' Performance in the 2016 BECE Mathematics on 2019 SSCE Mathematics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.400	.160	.156	.63554

Predictors: (Constant), BECE 2016 Mathematics
Dependent Variable: SSCE 2019 Mathematics

The results in Table 2 display the extent of prediction of students' performance in the 2016 BECE Mathematics on their 2019 SSCE Mathematics. Results from Table 4.3 show an R of 0.400 and R^2 of 0.160. The R^2 of 0.160 means that 16% of variance in 2019 SSCE Mathematics performance was predicted by students' 2016 BECE Mathematics performance in Rivers State.

Research Question 3: To what extent does students' performance in 2017 BECE Mathematics predict their performance in 2020 SSCE Mathematics in Rivers State?

Table 3: Extent of Prediction of Students' Performance in the 2017 BECE Mathematics on 2020 SSCE Mathematics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.436	.19	.136	.03554

Predictors: (Constant), BECE 2017 Mathematics
Dependent Variable: SSCE 2020 Mathematics

The results in Table 3 show the extent of prediction of students' performance in the 2017 BECE Mathematics on their 2020 SSCE Mathematics. Results from Table 4.5 show an R of 0. 436 and R^2 of 0.19. The R^2 of 0.19 means that 19% of variance in 2020 SSCE Mathematics performance was predicted by students' 2017 BECE Mathematics performance in Rivers State.

Testing of Hypotheses

Hypothesis 1: Students' performance in 2015 BECE Mathematics does not significantly predict their performance in 2018 SSCE Mathematics in Rivers State.

Table 4: Test of Significance of Standardized Regression Coefficient (r) for Students' Performance in 2015 BECE Mathematics and 2018 SSCE Mathematics

		Unstandardized Coefficients		Standardized Coefficients		
	Model	B	Std. Error	Beta	t	Sig.
1	(Constant)	3.844	.131		29.280	.000
	BECE2015	.060	.036	.070	1.650	.099

Dependent Variable: SSCE2018

Table 4 contains the results for the Test of significance of standardized regression coefficient (R) for students' performance in 2015 BECE Mathematics and 2018 SSCE Mathematics. The results reveal that Beta (β) value of 0.060 produced a t-value of 1.650 which is not significant at $p = 0.099 > \alpha = 0.05$. Thus, the null hypothesis that "students' performance in 2015 BECE Mathematics does not significantly predict their performance in 2018 SSCE Mathematics" is not rejected. This means that students' performance in the 2015 BECE Mathematics could not significantly predict their performance in the 2018 SSCE Mathematics in Rivers State. The regression equation for predicted SSCE Mathematics scores is $Y = 0.060x + 3.844$ where 'x' is the BECE Mathematics raw score and 'Y' is the SSCE Mathematics raw score for each candidate.

Hypothesis 2: Students' performance in 2016 BECE Mathematics does not significantly predict their performance in 2019 SSCE Mathematics in Rivers State.

Table 5: Test of Significance of Standardized Regression Coefficient (r) for Students' Performance in 2016 BECE Mathematics and 2019 SSCE Mathematics

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	4.357	.171		25.495`	.000
	BECE2016	.311	.050	.030	6.277	.000

Dependent Variable: SSCE2019

The result from Table 5 reveals that Beta (β) value of 0.311 produced a t-value of 6.277 which is significant at $p = 0.00 < \alpha = 0.05$. Thus, the null hypothesis that "students' performance in 2016 BECE Mathematics does not significantly predict their performance in 2019 SSCE Mathematics" is rejected. This means that students' performance in the 2016 BECE Mathematics significantly predicted their performance in the 2019 SSCE Mathematics in Rivers State. The regression equation for predicted SSCE Mathematics scores is $Y = 0.311x + 4.357$ where 'x' is the BECE Mathematics raw score and 'Y' is the SSCE Mathematics raw score for each candidate.

Hypothesis 3: Students' performance in 2017 BECE Mathematics does not significantly predict their performance in 2020 SSCE Mathematics in Rivers State.

Table 6: Test of Significance of Standardized Regression Coefficient (r) for Students' Performance in 2017 BECE Mathematics and 2020 SSCE Mathematics

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	1.257	.171		7.351`	.000
	BECE2017	.211	.010	.430	21.0232	.000

Dependent Variable: SSCE2020

The result from Table 6 reveals that Beta (β) value of 0.211 produced a t-value of 21.0232 which is significant at $p = 0.00 < \alpha = 0.05$. Thus, the null hypothesis that "students' performance in 2017 BECE Mathematics does not significantly predict their performance in 2020 SSCE Mathematics" is rejected. This means that students' performance in the 2017 BECE Mathematics was significantly predicted by their performance in the 2020 SSCE Mathematics in Rivers State. The regression equation for predicted SSCE Mathematics scores is $Y = 0.211x + 1.257$ where 'x' is the BECE Mathematics raw score and 'Y' is the SSCE Mathematics raw score for each candidate.

Discussion of Findings

The results in Tables 1, 2, and 3 contain the extent of prediction between students' performance in the 2015 BECE Mathematics and 2018 SSCE Mathematics, 2016 BECE Mathematics and 2019 SSCE Mathematics, and 2017 BECE Mathematics and 2020 SSCE Mathematics respectively. The variation in 2018, 2019, and 2020 SSCE Mathematics performance as predicted by their 2015, 2016, and 2017 BECE Mathematics performance respectively in Rivers State was very small. The result also showed that BECE contributed 0.5%, 16%, and 19% to the variability in SSCE Mathematics performance in Rivers State. This is further revealed in the test of hypotheses as shown in Tables 4**,** 5, and 6 indicating students' performance in the 2015 BECE Mathematics, is insignificant. This means that there is a negative relationship between students' 2015 BECE Mathematics performance and their 2018 SSCE Mathematics performance in Rivers State. Also, it shows that students' performance in the 2015 BECE Mathematics could not significantly predict their performance in the 2018 SSCE Mathematics in Rivers State.

In another development, it was confirmed that there is a significant relationship between students' 2016 BECE Mathematics performance and their 2019 SSCE Mathematics performance in Rivers State. This means that students' performance in the 2016 BECE Mathematics significantly predicted their performance in the 2019 SSCE Mathematics in Rivers State. Also, it was confirmed that there is a significant relationship between students' 2017 BECE Mathematics performance and their 2020 SSCE Mathematics performance in Rivers State. This means that students' performance in the 2017 BECE Mathematics was significantly predicted by their performance in the 2020 SSCE Mathematics in Rivers State. The findings of the present study agree with those of Kolawole, Oginni and Fayomi's (2011) study of Ordinary Level (O' Level) Examination as predictors of students' academic performance in Chemistry in South-West Nigerian Universities. In Kolawole, Oginni, and Fayomi (2011) study, it was found that there was a negative relationship between Ordinary Level (O' Level) and SSCE Examination. Also, the findings of this study agreed with that of Falaye and Afolabi (2005) which showed a relatively low but significant correlation between JSCE and SSCE results. The result showed that performance in JSCE English and Mathematics could be used to predict performance in English and Mathematics in SSCE.

Conclusion

The study found a significant relationship between students' performance in BECE Mathematics and SSCE Mathematics in Rivers State. Students' performance in BECE Mathematics can significantly predict their performance in SSCE Mathematics.

Recommendations

From the findings of the study, the following recommendations should be considered in educational policy in Rivers State:

1. The State Ministry of Education in Rivers State should endeavour to employ qualified Mathematics teachers to improve students' performance.
2. Teachers should ensure that students cover up the various curricula in Mathematics before they sit for BECE and SSCE.
3. The school curricula for BECE and SSCE should be related. In otherwards, senior secondary Mathematics should be a higher form of the junior secondary Mathematics, so much so that learning of senior secondary Mathematics is a function of learnt junior secondary Mathematics.

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