

Relationship Between Senior Secondary School Certificate Examination (SSCE) Mathematics Grades And Final Nigeria Certificate Of Education (NCE) Mathematics Students Results Of Niger State College Of Education Minna

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ABSTRACT: *The main focus of the study was to find out the relationship between West Africa Senior School Certificate Examination (WASSCE) entry grade in Mathematics and academic achievement of Nigeria certificate of education (NCE) Mathematics students in Niger state college of education, Minna. Ex-post facto research design was adopted for the study. The study sample consisted of sixty seven (67) students, forty (45) male and twenty two (22) females who graduated within the period under study (2008-2011). The instrument used for data collection was the records of students' results that made up the sample. Their SSCE entry and final NCE grades were used for data analysis. Pearson product moment correlation coefficient was used in testing the null hypothesis at 0.05 level of significant. The result showed a significant relationship between WASSCE entry grade in mathematics and the final NCE mathematics results. When the results of male and female students were independently correlated, the male students maintained a high positive correlation, while the female students showed low positive correlation. It was recommended among others that State Ministry of Education should intensify more effort in conducting regular inspection of schools to ensure that effective teaching of mathematics is carried out in order to achieve the objectives of National Policy on Education which include the preparation of students for higher education(FRN, 2004).*

Keyword: Certificate, college, examination grade, final student result, relationship.

I. INTRODUCTION

In Nigeria, attention has been focus on the teaching and learning of mathematics, as a way of improving students' academic achievement in subjects at levels of Nigeria Education system, Kolawale (2007). As a direct consequence of this, the federal Government of Nigeria paid a 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 (Adesina in Adeyemi 2010). As such, all Secondary schools in the country have geared their programe to meet the requirement of examination being conducted by West Africa Senior School Certificate Examination (WASSCE). WASSCE result is one of the requisite qualifications for entry into any tertiary institution in Nigeria. It is conducted by West Africa Examination Council (WAEC). A candidate most posses the minimum entry requirements at credit level in Mathematics with respect to WASSCE/NECO before he is given admission into any Nigeria A 'level.

The pattern of grading candidates' score 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 grade refer to in this study are the only requisite qualification for admission into Colleges of Education in Nigeria and candidate must have at least credit (C₆) in five subjects including mathematics and English language in order to qualify for admission into tertiary institution in Nigeria, Colleges of Education inclusive (JAMB, 2002). In Colleges of education setting, the performance is being asses through the Cumulative Grade Point Average (CGPA) obtained by students in all the courses registered for by the students. As such students are considered to have performed well if the cumulative grade point average is high. To this end, the grade point average is on cumulative basis from 100 levels to final year level (300 Level). Hence the cumulative grade point average would determine the performance level of the student from one semester to another. The nomenclature of cumulative grade point average is such that 4.50 and above is distinction, 3.50-4.49 is merit 2.40-3.49 is lower credit 2.39-1.50 pass, 1.00-1.49 is lower pass while below 1.00 fail (COE, 2010).

The ultimate goal of any human being is to achieve the objective set out for himself/herself in life (Alonge in Obioma 2007). Hence, Achievement is central to our existence. Adeyemi (2010) defines academic

achievement as the scholastic standing of a student at a given moment. According to him, it refer to how individual is able to demonstrate his or her intellectual abilities. This scholastic standing could be explain as grades obtained in a course or group of courses; and the way in which a student has attained the grades including the time he or she passed the examination two after passing examination one (Owoyemi, 2000). Daniel in Adeyemi (2010) therefore argued that a prediction of a future examination result could be made with reasonable success on the basis of the result of an earlier examination and that grades may serve as prediction measures and as criterion measures. As a measure of prediction, Adeyemi (2010) investigated the effects of intelligence quotient on academic achievement and found that achievement scores increase as the intelligence quotient increased. Eysenck (1995) agreed with this finding and remarked that intelligence quotient testing has been extremely successful on the practical level predicting academic success from early child-hood to university degree. Findings by Peer and Johnson (1994) confirmed the validity of the number and grades of passes in the Scottish certificate of education in predicting first year and final year university performance. Also, finding made by Gay (1996) in USA also confirmed the fact that high school grade could be used to predict college grades.

In the same vein, Ubokobong(1993), Itsuokor (1994) have also found that the GCE and Secondary Certificate Examination result have provided the best predictor of university performance. In a study on “predicting educational performance at tertiary level on the basis of secondary level performance in Nigeria”, he found that the good and solid background of the student boasted their performance at the tertiary level of education. In other developing countries, the index of academic performance varied from one country to another. In Kenya, Othuon and Kisho (1994) found that the Certificate of Primary Education (CPE) scores had a moderate positive linear relationship with Certificate of Secondary Education (CSE) grades with a correlation of 0.56 between them. In a study carry out by Akindehum (1993) he found out those students entry qualifications are good predictors of their academic performance at the degree level. Ajogbeje (1998, 2002 and 2005 in Ajogbeje, 2011) reported positive correlation between scores of WASC, semester scores CGPA and GPA. However, Researchers have made divergent findings on the predictive validity of some examination. Majasan and Bakare in Kolawale (2007) found in their study that entry qualification has low predictive strength on the final academic performance of students at the University of Baden.

Also, it is an essential thing to carry out a research work on gender difference and achievement in mathematics. Gender difference and achievement in Mathematics have attracted the interest of a number of researchers in the recent past researches. Some studies showed that Female performs lower in mathematics and mathematics is a masculine subject which belongs to selected few (Umoven and Ogbene 2006; Kurumeh and Iji 2009). Some studies reported significant difference in favour of male students by indicating that male students have higher mathematical reasoning ability or perform better than female students (Balogun, 1993; Araoye,1991). Other studies reported no significant difference in mathematics achievement of male and female students (Shehu and Mari, 1997; Tapia and Marsh, 2004 and Popola, 2008). Therefore, this study examined the predictive validity of entry grade in mathematics on academic achievement of NCE mathematics students of Niger state college of education Minna.

1.1 STATEMENT OF THE PROBLEM

The demand for tertiary education in Nigeria has increased geometrically. The West Africa Senior School Certificate Examination (WASSCE) has become a serious and important examination for admission placement into any tertiary institution in Nigeria. The consistency of WASSCE should be ascertained as a result of the need to make education more functional, leading to the production of self reliant and skillful graduates especially in teacher Education. The evaluation of students’ performance in WASSCE comparative to NCE is vita in order to determine the relationship in their results for the purpose of improvement in the process of any of the examination where it was found to be unsatisfactory. This study therefore, set to assess the relationship between WASSCE entry grades and academic achievement of Mathematics students who were admitted into mathematics department of Niger State College of Education Minna through the WASSCE examination result. It also tried to find the Correlation of male and female academic achievement on the basis of the relationship between WASSCE and final NCE results.

1.2 OBJECTIVE OF THE STUDY

The following were the research objectives of the study

1. To find out the relationship between WASSCE entry grades in mathematics and academic achievement of final NCE mathematics students’ result.
2. To find out the relationship between WASSCE entry grades and academic achievement of Male and female final NCE mathematics students’ results.

1.3 Research Questions

The study provided answers to the following research questions:

1. Would there be relationship between WASSCE entry grades in Mathematics and academic achievement of final NCE Mathematics students' results?
2. Would be there any relationship between WASSCE entry grades and academic achievement of Male and female final NCE mathematics students' results?

1.4 RESEARCH HYPOTHESIS

H₀₁: There is no significant relationship between WASSCE entry grades in mathematics and academic achievement of final NCE mathematics students' result

H₀₂ There is no significant relationship between WASSCE entry grades and academic achievement of Male and female final NCE mathematics students' result

II. METHODOLOGY

2.1 Research Design

The study employed an ex-post facto research design. Gay (1996) described an ex-post facto research as an after fact study which does not involve the manipulation of variables. Therefore, in this study WASSCE and NCE final year examination records of students provided the data for the study. So, classroom teaching was not required before the data was generated.

2.2 Sample and sampling Technique

The targeted population for this study consists of all the mathematics students who passed out of Niger State College of Education Minna in the year 2011.

It is from this population that Sixty seven (67) mathematics students whose NCE final cumulative grade point averages (CGPA) were available at the first presentation were purposively selected for this study. Forty five (45) of them are male while twenty two (22) were females.

2.3 Instrumentation

The instruments for data collection were final year NCE results records of the sampled students. These records were obtained from the examination office of school of science of Niger state college of education, Minna and WASSCE record of results from West Africa senior school certificate examination. To correlate scores of students in WASSCE and NCE, the scores were transformed into ordinal scale as follows; A=5, B=4, C=3, D=2, E=2 and F=0. The entry grade and the final CGPA of mathematics students were correlated. The entry point and final CGPA of male and female mathematics students were also compared. The Pearson product moment correlation coefficient statistics was used to determine the extent of relationship between the two results.

III. RESULTS

H₀₁ There is no significant relationship between WASSCE entry grades in mathematics and academic achievement of final NCE mathematics students' result

Table 1.0: Pearson Product Moment Correlation Coefficient showing the correlation of WASSCE Grade and Final NCE Result of all the sampled students

| Variable level | N | df | Mean (X) | S.D | r | p-value |
|----------------|----|----|----------|--------|------|---------|
| WASSCE | 67 | 66 | 3.0746 | 0.2648 | 0.45 | 0.05 |
| NCE | 67 | | 3.4776 | 0.7854 | | |

From the result in Table 1 WASSCE has mean score of 3.07 with standard deviation of 0.26 while the NCE mean score is 3.48 with standard deviation of 0.79 respectively. Also $r = 0.45$ with $df=66$ at $p < 0.05$. Hence, the null hypothesis is rejected. This shows that WASSCE entry grade is significantly related to final NCE Mathematics result.

H₀₂ There is no significant relationship between WASSCE entry grades and academic achievement of Male and female final NCE mathematics students' result.

Table 2: Pearson Product Moment Correlation Coefficient showing the Performance of male students

| Variable Level | p-value | N | Mean (X) | SD | r | □- |
|----------------|---------|----|----------|------|------|------|
| WASSCE result | 0.00 | 45 | 3.08 | 0.29 | 0.67 | 0.05 |
| NCE result | | 45 | 3.58 | 0.81 | | |

From the result in table 2 WASSCE has mean score of 3.08 with standard deviation of 0.29 while the NCE mean score is 3.58 with standard deviation of 0.81 respectively. Also $r = 0.67$ at $p < 0.05$. Hence, the null hypothesis is rejected. This implied that the achievement of male students in WASSCE appears to be significantly related to their performance in NCE Mathematics final results.

Table 3: Pearson Product Moment Correlation Coefficient showing the Performance of female students

| Variable Level | p-value | N | Mean (X) | SD | r | □- |
|----------------|---------|----|-----------|------|------|------|
| WASSCE | 0.25 | 22 | 3.14 | 0.35 | 0.05 | 0.16 |
| NCE | | 22 | 3.32 | 0.57 | | |

From the result in table 3 WASSCE has mean score of 3.14 with standard deviation of 0.35 while the NCE mean score is 3.32 with standard deviation of 0.57 respectively. Also $r = 0.25$ at $p > 0.05$. Hence, the null hypothesis is upheld. This implied that the achievement of female students in WASSCE appears not to be significantly related to their performance in NCE Mathematics final results.

3.1 DICUSSION OF RESULTS

The study examines the relationship between WASSCE entry grades and academic achievement of final NCE Mathematics student of Niger State College of Education, Minna. The result of the study obtained in table 1 showed a significant relationship between the entries grade in WASSCE and their academic achievement in final NCE Mathematics result ($r = 0.45$). These finding is in line with the earlier finding of Ubokobong(1993), Itsuokor (1994) who found that the GCE and secondary certificate examination result have provided the best predictor of university performance. Also in a study on “predicting educational performance at tertiary level on the basis of secondary level performance in Nigeria”, he found that the good and solid background of the student boasted their performance at the tertiary level of education. The finding also agrees with the finding of Peer and Johnson (1994) on validity of the number and grades of passes in the Scottish certificate of education in predicting first year and final year university performance. Finding made by Gay (1996) in USA also confirmed the study, according to his finding; the high school grade could be used to predict college grades. The study carry out by Othuon and Kisho (1994) in Kenya on the score of Certificate of Primary Education (CPE) scores, confirm the present study, according to the study CPE scores had a moderate positive linear relationship with certificate of secondary education (CSE) grades with a correlation of 0.56 between them. Similarly, the finding is also in consonance with the finding of Ajogbeje (1998, 2002 and 2005 in Ajegbeje, 2011) who reported positive correlation between scores of WASC, semester scores CGPA and GPA. However, Researchers have made divergent findings on the predictive validity of some examination. Majasan and Bakare in Kolawale (2007) found in their study that entry qualification has low predictive strength on the final academic performance of students at the University of Baden.

Hypothesis two states that there is no significant relationship between WASSCE entry grades of male and female and academic achievement at NCE mathematics final result. However, table 2 showed that significant relationship is in favour of male students ($r = 0.67$ for males against $r = 0.25$ for female students). This finding is in consonance with (Umoven and Ogbene, 2006); (Kurumeh and Iji 2009) in their research on Gender difference and achievement in Mathematics, according to their finding, female students perform lower in Mathematics and that Mathematics is a masculine subject which belong to selected few. The work of Balogun (1993) on gender difference in Mathematics also confirms this result. His work showed a significant difference

in favour of male, by indicating that male students have higher mathematical reasoning ability. In a Similar study by Araoye, (1991), agrees with this study, he reported superior performance by male students over female students. However, the finding is in contrast with the finding of Shaibu and Mari 1997; Tapia and Marsh 2004 and Popola 2008 who reported in their separate studies that no significant difference was observed between mathematics achievement of male and female students.

IV. CONCLUSION

Based on the findings of this study, it was concluded that the entry grades obtained by students in mathematics in WASSCE was significantly related to final NCE Mathematics result. However, this research also found out that there was no significant relationship between WASSCE entry grade and final NCE Mathematics result based on gender.

V. RECOMMENDATION

Based on the findings of the study, it is recommended that:

1. More emphasis should be given to the teaching of mathematics by recruiting qualitative Mathematics teachers into schools.
2. States ministry of education should intensify more efforts in conducting regular inspection of schools to ensure that effective teaching of mathematics and other subjects in schools' curriculum, in a bid to achieve the objectives of the National Policy on Education (FGN, 2004) which include the preparation of students for higher education.
3. Faculties and institutes of education in our universities as well as the colleges of education in Nigeria should include in their curriculum courses on the primary and secondary school mathematics curricula.
4. Necessary incentives such as special allowances and sponsorships to conferences, seminars and workshops and regular promotions should be provided to mathematics teachers to improve their job commitment.
5. The National Mathematical Centre (NMC) at Abuja should be well funded to enable it tackle adequately the problems besetting the teaching and learning of mathematics in Nigeria.
6. The various governments, Federal, State and Local should collaborate with MAN and NMS in order to uplift the standard of mathematics in Nigeria.

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