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Comprehensive Journal of Educational Research Vol. 3(2), pp. 119- 124, Feb. 2016.

ISSN : 2312-9421

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Research Article

CORRELATIONAL ANALYSIS BETWEEN STUDENTS' PERFORMANCE IN MATHEMATICS IN JSCE-MOCK AND JSCE EXAMINATION IN JOS NORTH LOCAL GOVERNMENT AREA, PLATEAU STATE-NIGERIA

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Accepted 4 February, 2016.

The study examined the relationship between students' achievement in mathematics in JSCE-MOCK and JSCE. The study comprised of 104 JSS III students drawn from four Secondary Schools in Jos North Local Government Area of Plateau State, Nigeria. The results of the selected students in mathematics in JSCE-MOCK and JSCE were selected for the study using Students Mathematics Achievement Test Booklet (SMATB), which was developed by the researcher. Thus, the design of the study is an ex post facto. The data collected were analyzed using Karl Pearson correlation coefficient (r). The significance of the correlation was tested using t-test at 0.05 level of significance. The result of the study reveals that a significant relationship exists between students' achievement in mathematics and that a significant relationship exists between male and female students in mathematics in JSCE-MOCK and JSCE as revealed by the independent analyses in the study. Some of the recommendations made are that school authorities should ensure that their students are well prepared for the JSCE-MOCK. They should also ensure that students accord the JSCE-MOCK all the seriousness it deserves.

INTRODUCTION

Mathematics is undoubtedly considered an important subject not only in its own right as a field of study and research, but also because of its importance to almost every field of intellectual endeavor (Yusuf, 2009). It also helps in preparing and sharpening the intellectual capacity of individuals and members of the society for meaningful, active, and purposeful participation in the society. In his words, Abdullahi (1982) in Ajao and Awogbemi (2012) pointed out that mathematics like an octopus has its numerous tentacles in all branches of knowledge.

Despite the relevance of mathematics, the poor performance of students in the subject is a great thing of concern to stakeholders in the education project. Many factors have been advanced to be partially responsible for the abysmal performance which among others include students' negative attitude towards the subject, perceived difficulty of the subject by the society, lack of teaching aids, poor knowledge of

teaching methods by teachers, general lack of attention to the education sector by the chief financiers-the government, among others (Matawal, 2013).

It is because of these and many more important of mathematics that external examination at all levels was introduced in Nigeria with a view to improving the performance of students in mathematics at these level. This concept was ushered in by the National Policy of Education (1998) and the National Curriculum Conference held in Lagos in 1969 (Poopola, 2009). In Junior Secondary Schools for example, the state ministries of Education conduct examinations generally referred to as Junior School Certificate Examination (JSCE). The purpose for this examination is to provide a feedback on students' performance to schools, thus, helping to fast-track improvement in teaching and learning in schools (Ajao & Awogbemi, 2012). This examination is usually conducted at the end of the third year of students' entrance to secondary school i.e. at the end of Junior Secondary School Three (JSS III). JSCE questions are drawn from their previous works in JSS I, JSS II and JSS III respectively.

Generally, JSCE is a form of evaluation aimed at determining or ascertaining the success or failure of an educational enterprise by assessments of change in behavior of the learner at the end of Junior Secondary School (JSS) programme as it is common with other forms of evaluation (Ekele, 2013). Thus, students entry to Senior Secondary School One (SSS I) is tied down to their ability to pass certain number of subjects at credit and above in the JSCE. In some schools, JSCE result is used to place students to the various prospective fields of their choice. Ekele (2013) posited that results of programme evaluation are applied to programme improvement.

However, examinations usually referred to as JSCE-MOCK are usually conducted by schools in JSS III prior to the JSCE examination. The purpose of this examination is to prepare students for the main examination. This is because the JSCE-MOCK questions are mostly drawn from past JSCE questions. It helps the students to understand the way and manner questions are asked in JSCE and how best to answer them. Thus, this research investigated whether a correlation exists between the achievement of students in mathematics in JSCE-MOCK and JSCE.

RESEARCH QUESTIONS

This study aimed to determine the relationship between students' achievements in mathematics in JSCE-MOCK and JSCE examination.

Specifically, the study sought answers to the following questions:

1. What is the extent of relationship between the achievement of students in mathematics in JSCE-MOCK and JSCE examination?
2. What is the extent of relationship between male students' achievement in mathematics in JSCE-MOCK and JSCE examination?
3. What is the extent of relationship between female students' achievement in mathematics in JSCE-MOCK and JSCE examination?

Hypothesis

The following hypotheses were formulated for testing;

1. There is no significant relationship between students' achievement in mathematics in JSCE-MOCK and JSCE examination.
2. There is no significant relationship between male students' achievement in mathematics in JSCE-MOCK and JSCE examination.
3. There is no significant relationship between female students' achievement in mathematics in JSCE-MOCK and JSCE examination.

RESEARCH DESIGN

This research is an Ex Post Facto. The scores of 130 students in mathematics in both JSCE-MOCK and JSCE examinations for 2013 were randomly selected from five schools that have classes up to JSS III in Jos North Local Government Area of Plateau State-Nigeria. Both results as obtained by the researcher were graded from A to F depending on students' performance. These results were validated by the

examination officers of the selected schools. The researcher developed a Students' Mathematics Achievement Test Booklet (SMATB) to collect the results of the selected students in mathematics in JSCE-MOCK and JSCE examination for the year 2013. The results obtained were validated by the Heads of Mathematics and the Examination Officers of the selected schools. The selected schools are St. John's College, Jos, Government Secondary School West of Mines, United Baptist Model School, Jos and Government Secondary School Rot-Norong.

The data collected were analysed using Karl Pearson correlation coefficient (r). The significance of the correlation was tested using t-test at 0.05 level of significance.

RESULTS

The results of the data collected were analyzed and presented accordingly as below.

Research question one

What is the extent of relationship between the achievement in mathematics in JSCE-MOCK and JSCE examination?

TABLE 1: Relationship between Students' Achievement in Mathematics in JSCE-MOCK and JSCE Examination

Examination Type	Number of Students	Correlation Coefficient (r)
JSCE-MOCK	104	0.3345
JSCE		

Table 1 above shows a positive but moderately weak relationship between students' achievement in mathematics in JSCE-MOCK and JSCE.

Research question two

What is the extent of relationship between the male students' achievement in mathematics in JSCE-MOCK and JSCE?

TABLE 2: Relationship between Male Students' Achievement in JSCE-MOCK and JSCE

Examination Type	Number of Students	Correlation Coefficient (r)
JSCE-MOCK	52	0.5390
JSCE		

Table 2 above shows a positive and moderately strong relationship between male students' achievement in mathematics in JSCE-MOCK and JSCE.

Research question three

What is the extent of relationship between female students' achievement in mathematics in JSCE-MOCK and JSCE?

TABLE 3: Relationship between Female Students' Achievement in JSCE-MOCK and JSCE

Examination Type	Number of Students	Correlation Coefficient (r)
JSCE-MOCK	53	0.1688
JSCE		

Table 3 above shows a positive but weak relationship between female students' achievement in JSCE-MOCK and JSCE.

Hypothesis one

There is no significant relationship between the achievement of students in mathematics in JSCE-MOCK and JSCE.

Table 4: t-test Analysis on the Relationship between the Achievement of Students in Mathematics in JSCE-MOCK and JSCE

Examination Type	Number of Students	r – cal.	Df	t – cal.	r–critical	t–critical	Decision
JSCE-MOCK	104	0.3345	102	10.7168	0.195	1.960	Sig.
JSCE							

Table 4 above shows a moderate positively weak relationship between the achievement of students in mathematics in both JSCE-MOCK and JSCE. Also, since the calculated value of t (10.7168) is greater than the critical value of t (1.960), it implies that there is a significant relationship between the achievements of students in mathematics in JSCE-MOCK and JSCE. Thus, the null hypothesis which states that “there is no significant relationship between the achievement of students in mathematics in JSCE-MOCK and JSCE” was rejected.

Hypothesis two

There is no significant relationship between male students' achievement in mathematics in JSCE-MOCK and JSCE examination?

Table 5: t-test Analysis on the Relationship between the Achievements of Male Students In Mathematics in Both JSCE-MOCK and JSCE

Examination Type	Number of Students	r – cal.	Df	t – cal.	r–critical	t–critical	Decision
JSCE-MOCK	52	0.5390	50	8.3949	0.273	2.021	Sig.

Table 5 above shows a moderately strong positive relationship between the achievements of male students in JSCE-MOCK and JSCE. Also, since the calculated value of t (8.3949) is greater than the critical value of t (2.021), it implies that there is a significant relationship between male students' achievement in mathematics in SSCE and Remedial Sciences Programme. Thus, the null hypothesis which states that “there is no significant relationship between the achievement of male students in mathematics in JSCE-MOCK and JSCE” was rejected.

Hypothesis three

There is no significant relationship between female students' achievement in mathematics in JSCE-MOCK and JSCE.

Table 6 below shows a weak positive relationship between the performance of female students in SSCE and Remedial Sciences Programme. Also, since the calculated value of t (7.1740) is greater than the critical value of t (2.021), it implies that the null hypothesis which states that there is no significant

Table 6: t-test Analysis on the Relationship between Female Students' Achievement in JSCE-MOCK and JSCE

Examination Type	Number of Students	r – cal.	Df	t – cal.	r–critical	t–critical	Decision
JSCE-MOCK	52	0.1688	50	7.1740	0.273	2.021	Sig.

relationship between female students' achievement in mathematics in JSCE-MOCK and JSCE was rejected. Thus, a significant relationship exists between students' achievement in mathematics in JSCE-MOCK and JSCE.

DISCUSSION OF FINDINGS

This study sought to examine the relationship between students' achievement in mathematics in JSCE-MOCK and JSCE. The results of the study were presented in the tables above. The results of the study as contained in Tables 1, 3 and 5 above shows a positive relationship between students' achievement in mathematics in JSCE-MOCK and JSCE even though the relationship between male students was found to be moderately strong unlike that of the female students which was weak. The result of the study as contained in tables 2, 4 and 6 revealed that significant relationship exists between the achievement of students in mathematics in JSCE-MOCK and JSCE and that a significant relationship exists between male and female students' achievement in mathematics in JSCE-MOCK and JSCE as revealed by the result of independent analyses. This finding agrees with the research works of Wushishi and Usman (2013) and Ikponmwosa (n.d) who do not found any difference in the performance of male and female students in mathematics. The result of the study also conforms with the research work of Yusuf (2009) who affirmed that role differentiation should be avoided among males and females when teaching mathematics, each gender deserves equity in exposure to educational experience.

However the result of the study contradicts the result of a study conducted by Kolawole and Oginni (2009) who found that male students performed better in mathematics than their female counterparts. Also, Matawal (2013) found in his study that male students performed better in mathematics.

RECOMMENDATION

The recommendations made here are based on the findings of this study:

Since a relationship exists between students' achievement in mathematics in JSCE-MOCK and JSCE, school authorities should ensure that their students are well prepared for the JSCE-MOCK. They should also ensure that students accord the JSCE-MOCK all the seriousness it deserves.

State Ministries of Education should ensure that JSCE-MOCK is made a compulsory examination to all schools that wish to present students for JSCE. They should also ensure that a certain percentage of the students' score in the MOCK examination is incorporated into their final JSCE score for each subject.

State Ministries of Education should ensure that a standard is set for the conduct of JSCE-MOCK and an Independent Monitoring Committee (IMC) is set in place to ensure total compliance by all schools.

Role differentiation based on gender should be discouraged among students since the achievement of students in mathematics is immaterial of gender. Moreover, both the male and female students are exposed to the same examination whether JSCE-MOCK or JSCE.

CONCLUSION

The study set out to examine the relationship between students' achievement in mathematics in JSCE-MOCK and JSCE. The result of the study reveals that a significant relationship exists between students' achievement in mathematics and that a significant relationship exists between male and female students in mathematics in JSCE-MOCK and JSCE as revealed by the independent analyses in the study.

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