MOCK SCORES AS PREDICTOR OF STUDENTS PERFORMANCES IN NECO MATHEMATICS IN FEDERAL CAPITAL TERRITORY ABUJA, NIGERIA

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ABSTRACT

This study investigated mock scores as predictor of students' performances in NECO mathematics in federal capital territory Abuja, Nigeria. Two research questions and its corresponding hypotheses were utilized and descriptive survey of the ex-post facto research design type was adopted, in which there was no treatment and manipulation of independent variable. The population of the study consisted of all comprises of all the 24, 643

INTRODUCTION

National Examinations Council (NECO) is a Large Scale Assessment Body (LSAB) aimed at measuring students' cognitive performance in Nigeria using standardizes measuring scale. It is an examination body in Nigeria that conducts the Senior Secondary Certificate Examination and the General Certificate in Education. Education at secondary school level is bedrock and the foundation towards higher knowledge in tertiary institutions. It is an investment, as well as an instrument that can be used to achieve a more rapid economic, social, political, technological, scientific and cultural development in a country (Henry, 2018). Mathematics is one of the most important subjects taught in all levels of secondary education in Nigeria. Mathematics is a subject of numbers, shapes, data, measurements and also logical activities. It has a huge scope in every field of our life, such as medicine, engineering, finance, natural science, economics, and it is an area of knowledge that includes such topics as numbers, formulas and related structures, shapes and the spaces, in which they are contained, and quantities and their changes (Galle, Ezeofor, & Ofomata, 2022).

mathematics students in senior secondary schools who sat for FCT Education Resource Centre Mock Examination and National Examination Council (NECO) from 2019 to 2021 academic session years and 1,188 mathematics where used as a sample of the study. A Profoma was used as instrument for Collection, and it was validated which yielded 0.77 validity index and 0.79 reliability index. The data collected was analyses using regression analysis to answered research questions and ANOVA was used be test the hypotheses at the 0.05 level of Significance. Findings revealed that students. The results revealed that students' mock scores in Mathematics significantly predict their performance at NECO and male and female students' mock scores in Mathematics to some extend significantly predict their performance at NECO. Based on the findings, it was recommended that mathematics teachers should consider students mock scores performance before writing their senior school certificate examination and proper attention by the teachers should be given to both male and female students during the mock examination and encourage them to read well toward their senior school certificate examination such NECO in FCT Abuja, Nigeria.

Keywords: Mock scores, predictor, Students performances, NECO Mathematics,

Globally, including Nigeria, there is a growing concern among educators and an unflinching debate on the factors that predict students' performance, especially in external examinations (Ramatlala & Nenty, 2014). According to Asuru (2018) pointed out that the basic role of examination is to generate data for promotion, certification, selection, prediction, monitoring of standards, instructional/ motivational aids and research. It is also seen as a yardstick for academic status up-liftmen, while some see it as an organized assessment technique which presents the individual with a series of questions or tasks geared toward ascertaining the individual's acquired skills and knowledge content, and ability to utilize these knowledge and acquired skills effectively. On these roles, Oguche (2018) included that Nigeria among many other countries of the world that strongly believed in the use of examination as the most reliable instrument for measuring learning achievement at all levels of her education.

Generally, mock examinations are the examination set to prepare students in year two (SS2) of Senior Secondary School in content and cognitive domain before their Senior School Certificate Examination (SSCE) (Madu & Ebere, 2016). It is an examination design to mimic, as closely as possible the examination day experience. In doing this, it is structured with approximately the same topic areas in terms of weight as well as the

level of difficulty as would the main examination (Adesoji, & Kemmi, 2011). Therefore, the mock examination is simulated as closely as possible to the targeted examination in terms of curriculum and syllabus. It is, therefore, an attempt to permit students planning to write a major examination to have similar experiences prior to the final examination. As opined by Awodun, Olusola and Oyeniyi (2013), the mock examination was introduced as a penultimate examination at the secondary school level of education under the old education programme of the 6-3-2-3 system.

Awodun et'al (2013) that it was named "Mock Examination" because it is usually used to access the likely performance of the student in the Senior Secondary Certificate Examination. Mock is one of the internally groomed examinations, conducted by various state Ministries of Education at the instance of various secondary schools within their jurisdiction (Madu & Ebere, 2016). Ramatlala and Nenty (2012) asserted that the performance of students in Mock examinations is an important indicator or factor that may relate to the performance of a student in an external senior school certificate examination. Omirim and Ale (2018) notion that mock examination as trial examination is selective, predictive and diagnostic in nature; revealing how teachers' instructions have been mastered by student, prepares student for future examination; and determines those students that will succeed or fail in the senior secondary certificate examination, and finally developing strategies to correct any misconceptions or difficulties of students before the final examination.

Consequently, Galle and Kukwi (2020) argued that, the stronger the correlation between the mock examination and the senior secondary school certificate examination, the higher the degree of predictive validity and vice versa. Predictive validity is the extent to which a person's present scores can be used to estimate the future performance. Predictive validity is intended to predict how a person will perform at a later date on a different of assessment of his/her abilities using the performance measures of the present (Garson, 2018). Emaikwu (2011) stated that predictive validity refers to how accurately a person's current test score can be used to estimate what the criterion score would be at the later time. Mock and Transition examinations are the predictor variables that will be used to predict the performance of students in SSCE (criterion measure). Gall, Gall, and Borg (2017) were of the view that predictive validity is the degree to which the predictions made by tests are confirmed by the later benaviour of the subjects. They maintained that much educational research is concerned with the prediction of success in various activities.

According to Anikweze, (2015) predictive validity is the extent to which a score on a scale or test predicts scores on some criterion measure. For example, the validity of a cognitive test for student's performance is the correlation between test scores and, for

example, teacher's performance ratings. Such a cognitive test would have predictive validity if the observed correlation were statistically significant. This idea brought about the establishment of different examination bodies among which are West African Examinations council (WAEC) and National Examination Council (NECO). However, the methods of examinations have been changing from one age to the other, probably as a conscious move to make the system of examination serve the needs of the age and society more effectively. This led the Federal Government of Nigeria to embrace the conduct of external examination for students in the last tier of their studies- JSS 3 and SSS 3 and certified them. Thus, West African senior secondary certificate examination (WASSCE/SSCE) in the senior school and certificate examination (JSCE) in the junior school was brought to existence in line with the new policy of education (6-3-3-4) system. According to Galle, Atiku and Gado, (2019) stated that gender is a socially constructed term depicting the system of relations between males and females, and designates behaviours, attitudes, roles, status and other processes that govern the relationship among sexes in a given educational, socio-economic and political context. The previous common mock examination in Abuja in public senior secondary students had 54% passed scores in Mathematics common mock and 46% failed. Despite the effort Mathematics teachers are making toward summative evaluation of individual students scores are justified yet, most of the students' performance scores in Mathematics mock examination or certificate examination is very low. Mock examinations serve as a fallback in case of a needs predict students' success in the main external examinations. Teachers in the secondary schools assessed students through teacher-made tests, continuous assessment and end-of-term examinations. Mock Examinations are mostly administered to students in preparation the certificate examination, those who are about to write the external examinations such as National Examination Council (NECO). The great misconception about Mathematics is the notion that Mathematics is about formulae and computations that need to be memorized. This is worrisome as most of the students create unusual attitudes (anxiety, phobia, lack of self-confidence and hatred) toward learning the subject, which consequently leads to failure in pubic examinations. For instance, the analysis of students' level of achievement and failure in NECO-SSCE (June/July) Mathematics and English Language 2015-2021 shows the percentage (%) failure rate in Mathematics under review as shown in Table1.

Table 1: Analysis of Students' Level of Achievement and Failure in NECO SSCE (June/ July) Mathematics from 2015 -2021

YEAR	TOTAL REG	TOTAL SAT	DISTINCTION (A_1-B_3)	CREDIT (C_4-C_6)	PASS (D_7-E_8)	FAILED	ABSENT	CANCELLED
2015	975,991	961,258	52,685 (5.48%)	723,701 (75.29%)	157,180 (16.35%)	**21,810 (2.27%)**	14,733 (1.51%)	5,882 (0.61%)

2016	1,027,016	1,013,977	99,049 (9.77%)	713,797 (70.40%)	179,081 (17.66%)	**16,367 (1.61%)**	5,683 (0.56%)	13,039 (1.27%)
2017	1,055,985	1,044,673	91,532 (8.76%)	757,803 (73.54%)	160,590 (15.37%)	**27,476 (2.63%)**	11,312 (1.07%)	7,272 (0.69%)
2018	1,041,536	1,032,729	79,628 (7.70%)	770,703 (74.61%)	149,222 (14.44%)	**29,907 (2.89%)**	8,807 (0.84%)	3,269 (0.31)
2019	1,163,046	1,149,482	64,058 (5.57%)	890,341 (77.46%)	153,712 (13.37%)	**33,448 (2.91%)**	13,564 (1.17%)	7,923 (0.69%)
2020	1,221,448	1,176,790	129,335 (10.99%)	930,765 (79.09%)	83,260 (7.08%)	**28,973 (2.46%)**	44,658 (3.65%)	4,457 (0.37%)
2021	1,221,448	1,177,171	75,804 (6.44%)	897,527 (76.24%)	187,206 (15.90%)	**11,358 (0.96%)**	44,277 (3.62%)	5,276 (0.44%)

Source: *NECO Annual Report- 2015 - 2021*

However, several studies by scholars 'were discussed includes Galle and Kukwi (2020) finding shows that continuous assessment and common-mock scores are good predictor of Economics students' academic performances in WASSCE to a tolerant to some extent. Further result indicated that there is a significant relationship between common mock scores and academics performance of male and female students in Economics WASSCE may/June 2011-2019 years in Nasarawa State secondary schools among others. Adebayo and Kaseem (2020) findings of the revealed that mock English and Mathematics helped significantly in predicting the success in academic performance of students in WASCE. However, English mock result was a better predictor of success in WASCE than Maths mock.

Amadioha and Uko (2019) findings revealed that mock examination result significantly predicted Agricultural academic performance of male and female candidates in the West African Senior School Certificate Examination (WASSCE) in Ikot Ekpene Senatorial District. Based on the findings, Ahamed and Monday (2018) results of the study showed that 51.3% of the Economics students' performance well in WAEC results is accounted for by mock results, CA and gender (mean= 3.51). mock results (mean 3.54). Mock result made the greatest contributions to Economics students academics performance in WAEC. Gender has significant influence on Economics students' academic performance in WASSCE. Madu and Ebere (2016) findings revealed that there was a moderate positive correlation which was significant between the students Mock Senior School Examination scores and their Scores in Senior School Certificate Examinations in Agricultural Science conducted by National Examination Council (NECO) with respective r values of 0.687. On these

alarming results, the present study focused on mock scores as predictor of students' performances in NECO mathematics in federal capital territory Abuja, Nigeria.

Research Questions
The following research questions were formulated to guide this Study:
1. To what extents do students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years?
2. To what extents do male and female students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years?

Statements of Hypotheses
The following hypotheses are formulated and would be tested at the 0.05 level of significance:

Ho1: Students' mock scores in Mathematics do not significantly predict their performance at NECO June/July 2019-2021years

Ho2: Male and female students' mock scores in Mathematics do not significantly predict their performance at NECO June/July 2019-2021years

Material and Methods
Design
The study adopted a descriptive survey of the ex-post facto research design type in which there was no treatment and manipulation of independent variable.

Population, Sampling and Sampling Techniques
The target population of this study comprise of all the 24,643 mathematics students who sat for 201=2021 academic session years National Examination Council (NECO) 2015-2021 and 1188 mathematics were used as a sample size of the study through multi stage sampling techniques. In the first stage, all the students who sat for mathematics were selected using purposive sampling. At the second stage, two area councils, Municipal and Kuje were selected using purposive sampling technique. Abuja Municipal Area Council has the highest number of senior secondary schools offering the subjects. It is the centre of the FCT and the familiarity of the area council to the researcher for easy collection of data for the study will also be considered. Kuje area council was representing the schools in the other area councils located in the suburb.
At the third stage, simple random sampling was used to select three out of the fifteen senior secondary schools offering the subjects in AMAC and two out of the five schools in

Kuje area council. At the fourth stage, proportionate sampling technique was used to sample 1188 Mathematics students from AMAC and Kuje respectively.

Instrument for Data Collection

Profoma was used as an instrument for data collection on Mock scores and NECO scores for the period of 2015-2021.

Validity and Reliability of Instrument

Profoma was subjected to expert's judgment for faced and content validation. An expert from Measurement and Evaluation unit, Nasarawa State University, Keffi validated the instrument (profoma) by checking for the appropriateness and relevance of the item with respect to mock scores and NECO scores, they are standardized items generated by the large scale assessment bodies yielded 0.88 validity index and 0.86 reliability index. The reliability result of MAT was compared with the guidelines for interpreting alpha coefficients suggested that "α ≥ 0.9 excellent, ≥ 0.8 good, ≥ 0.7 acceptable, ≥ 0.6 questionable, ≥ 0.5 poor, ≤ 0.5unacceptable". Therefore, the results of the reliability enabled the researchers to use the instrument for both pretest and posttest, since the correlation was considered high and significant. Data collected was analyzed using regression analysis to answer the research questions and ANOVA was used to test the hypotheses at the 0.05 level of significance and the results are presented in tables below.

Results

Research Questions/ Hypotheses

RQ1: To what extents do students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years?

Table 2: Regression for Students' Mock Scores in Mathematics Predict Their Performance at NECO

R	R-Square	Adjusted R-Square	Std. Error Estimate
0.601[a]	0.411	0.413	0.79083

a. Predictors: (mock scores),
b. Dependent Variable :(NECO)

Table 2 shows regression for students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years (R=0.601). This implies that the variables are quite relevant in explaining students' performance in mathematics to an appreciable extent. The table also shows adjusted R value of 0.413 which indicate that 41.3 % of total

variance in Mathematics students' performance in NECO examination accounted for by the mock result when combined. The remaining 58.7% could be due to other variable not investigated in this study as well as residuals. The significance or otherwise of the R- value (0.601) is tested in Table 3

Ho1: Students' mock scores in Mathematics do not significantly predict their performance at NECO June/July 2015-2021years

Table 3a: ANOVA for the Regression of Students' Mock Scores in Mathematics Do Not Significantly Predict Their Performance in NECO

Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	2.689	1	2.689	4.299	.038
Residual	741.742	1186	625		
Total	744.431	1187			

a. Dependent Variable: (NECO)
b. Predictors: (mock score),

Table 3a shows that the R-values of 0.601 is significant (F=4.299, P<0.5). Hence, the R-value obtained is not due to variation in the variables. Therefore, students' mock scores in Mathematics significantly predict their performance in NECO. Similarly, Table 3b shows coefficients of the independent on dependent variable.

Table 3b Shows Coefficients of the Independent on Dependent Variable

| Model	Unstandardized Coefficients		Standardized Coefficients	t	Sig .
	B	Std. Error	Beta		
Mock Score	2.319	.080		29.019	.000
	065	.032	.048	2.073	.038

Dependent Variable   **Significant*
at p<.0.5

Regression Equation Y= 1.02E – 16X + 1.000. Where, Y= Students Mathematics performance in NECO; X = Student Mathematics scores in mock running along regression standardized residual line. This imply that, mock result significantly contributed greatly (Beta = 0.048; t=2.073, P<.0.5) on students mathematics performance in NECO. Hence students' mock scores in Mathematics significantly predict their performance at NECO.

It's clearly indicated that, Residual Regression Standard (RRS) with mean of 1.02E-16 and standard deviation of 1.000 in histogram in figure 1.

Fig:1
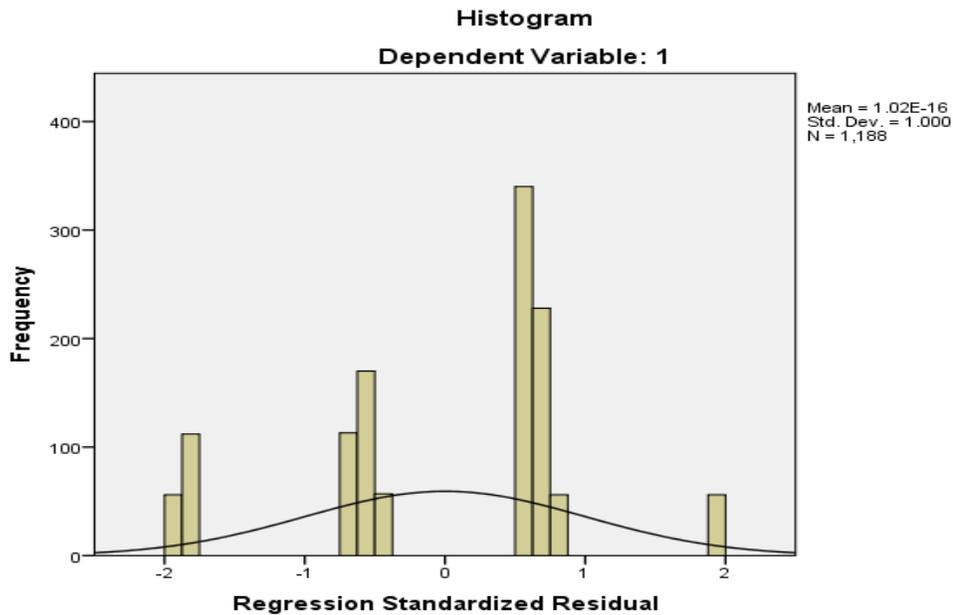
RQ2: To what extents do male and female students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years?

Table 4: Regression for Male and Female Students' Mock Scores in Mathematics Predict Their Performance at NECO

R	R-Square	Adjusted R-Square	Std. Error Estimate
0.060	0.004	0.003	0.79083

a. Predictors: (mock scores),
b. Dependent Variable :(NECO)

Table 4 shows regression for male and female students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years, the R- value of 0.060 shows that the male and female , mock score in mathematics have a positive multiple correlation performance in NECO. This means that the mock score could explain male and female student performance in NECO. Further the R-square value of 0.004 implies that 0.4% of the total variance in male and female students' performance in NECO is due to the mock scores. The remaining 99.6% is due to other factors not included in the study as well as residual. The significance or otherwise of the R– value (0.060) is tested as shown in table 5

Ho2: Male and female students' mock scores in Mathematics do not significantly predict their performance at NECO June/July 2015-2021years

Table 5a: ANOVA for the Regression of Male and Female Students' Mock Scores in Mathematics do not significantly predict their Performance in NECO

Model	Sum of Squares	Df	Mean Square	F	Sig
Regression	2.679	1	2.611	4.276	.0333
Residual	741.642	1186	622		
Total	744.321	1187			

a. Dependent Variable: (NECO)
b. Predictors: (mock score)

Table 5a shows that the R-values of 0.060 is significant (F=4.276, P<0.5). Hence, the R-value obtained is not due to variation in the variables. Therefore, male and female students' mock scores in Mathematics significantly predict their performance in NECO. Similarly, Table 5b shows coefficients of the independent on dependent variable.

Table 5b Shows Coefficients of The Independent on Dependent Variable

| Model	Unstandardized Coefficients		Standardized Coefficients	T	sig .
	B	Std. Error	Beta		
Mock Score	2.319	.080		21.010	.000
	065	.032	.046	2.113	.034

Dependent Variable   **Significant*
at p<.0.5

Regression Equation Y= 1.02E – 16X + 1.000. Where, Y= Students Mathematics performance in NECO; X = Student Mathematics scores in mock running along regression standardized residual line in histogram. This imply that, mock result significantly contributed greatly (Beta = 0.046; t=2.113, P<.0.5) on male and female students mathematics performance in NECO. Hence male and female students' mock scores in Mathematics significantly predict their performance at NECO. It's clearly indicated that, Residual Regression Standard (RRS) with mean of 1.02E-16 and standard deviation of 1.000 in histogram in figure 2.

Fig:2

Histogram
Dependent Variable: 1

Mean = 1.02E-16
Std. Dev. = 1.000
N = 1,188
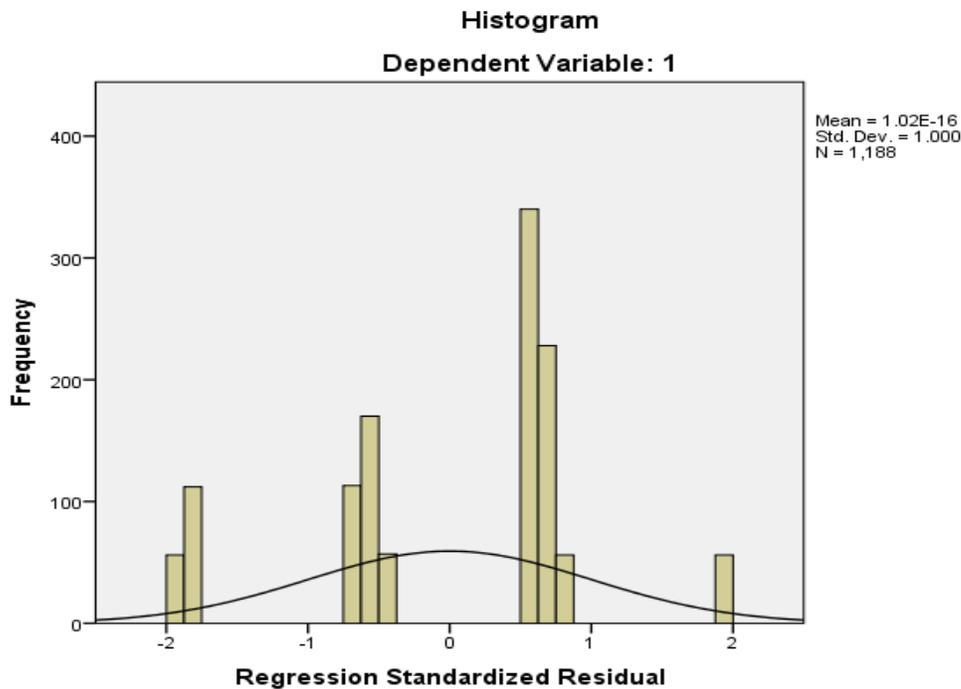
Discussion

The result of research question one in Table 2 shows regression for students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years (R=0.601). This implies that the variables are quite relevant in explaining students' performance in mathematics to an appreciable extent. The table also shows adjusted R value of 0.413 which indicate that 41.3 % of total variance in Mathematics students' performance in NECO examination accounted for by the mock result when combined. The remaining 58.7% could be due to other variable not investigated in this study as well as residuals. Drawing inference from Ho1 in Table 5a shows that the R-values of 0.601 is significant (F=4.299, P<0.5). Hence, the R-value obtained is not due to variation in the variables. Therefore, students' mock scores in Mathematics significantly predict their performance in NECO.

Similarly, Table 5b shows regression equation Y= 1.02E – 16X + 1.000. Where, Y= Students Mathematics performance in NECO; X = Student Mathematics scores in mock running along regression standardized residual line. This implies that, mock result significantly contributed greatly (Beta = 0.048; t=2.073, P<.0.5) on students mathematics performance in NECO. This finding corroborated that of Adebayo and Kaseem (2020) revealed that mock English and Mathematics helped significantly in predicting the success in academic performance of students in WASCE. Omirin and Ale (2018) revealed that mock English and

Mathematics helped significantly in predicting the success in academic performance of students in WASSCE. However, English was a better predictor of success than Mathematics.

Lastly, the result from question two in Table 4 shows regression for male and female students' mock scores in Mathematics predict their performance at NECO June/July 2015-2021years, the R- value of 0.060 shows that the male and female , mock score in mathematics have a positive multiple correlation performance in NECO. This means that the mock score could explain male and female student performance in NECO. Further the R-square value of 0.004 implies that 0.4% of the total variance in male and female students' performance in NECO is due to the mock scores. The remaining 99.6% is due to other factors not included in the study as well as residual. Drawing the inference from Ho2 in Table 5a shows that the R-values of 0.060 is significant (F=4.276, P<0.5). Hence, the R-value obtained is not due to variation in the variables. Therefore, male and female students' mock scores in Mathematics significantly predict their performance in NECO. Furthermore, Table 5b shows regression equation Y= 1.02E – 16X + 1.000. Where, Y= Students Mathematics performance in NECO; X = Student Mathematics scores in mock running along regression standardized residual line in histogram. This imply that, mock result significantly contributed greatly (Beta = 0.046; t=2.113, P<.0.5) on male and female students mathematics performance in NECO, hence male and female students' mock scores in Mathematics significantly predict their performance at NECO. This findings is in agreement with that of Ahamed and Monday (2018) results of the study showed that 51.3% of the Economics students' performance well in WAEC results is accounted for by mock results, CA and gender (mean= 3.51). mock results (mean 3.54). Mock result made the greatest contributions to Economics students academics performance in WAEC. Gender has significant influence on Economics students' academic performance in WASSCE. Galle and Kukwi (2020) that continuous assessment and common-mock scores are good predictor of Economics students' academic performances in WASSCE to some extent, and it also indicated that, there is a significant relationship between common mock scores and academics performance of male and female students in Economics WASSCE may/June 2011-2019 years.

Conclusion

The study concluded that, students' mock scores in Mathematics significantly predict their performance at NECO, male and female students' mock scores in Mathematics to some extend significantly predict their performance at NECO and school students' mock scores in Mathematics significantly predict their performance at NECO June/July 2019-

2021years. It means, when mock examination is properly administered, students can perform better in NECO Mathematics.

Recommendations

Based on the findings of this study, the following are recommended:

1. Mathematics teachers should consider students mock scores performance before writing their senior school certificate examination and

2. Proper attention by the teachers should be given to both male and female students during the mock examination and encourage them to read well toward their senior school certificate examination such NECO in FCT Abuja, Nigeria.

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