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Testwiseness and Academic Performance in Mathematics Among Junior Secondary School Three Students in Cross River State, Nigeria.

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Abstract

The purpose of the study is to determined testwiseness and academic performance in mathematics among junior secondary school three students in Cross River State, Nigeria. To achieve the purpose of this study, two null hypotheses were generated to direct the study. The literature review was done according to the variables under study. Survey research design was adopted for the study. A sample of five hundred and ninety-five (595) respondents was randomly selected for the study. The selection was done through the stratified random sampling technique. The questionnaire was the instrument used for data collection. The instrument was subjected to face and content validity by experts in measurement and evaluation in the Faculty of Education, University of Calabar. The reliability estimate of the instrument was established through the Cronbach Alpha reliability method. Regression analysis was the statistical analysis techniques adopted to test the hypotheses under study. All hypotheses were subjected to testing at .05 level of significance. The findings from the analysis revealed that Testwiseness in guessing and cheating significantly predicts academic performance in mathematics among Junior Secondary School three (JSS3) Students. based on the findings of the study it was recommended among others that Teachers should incorporate test-taking strategies instruction into mathematics curricula. By teaching students how to approach multiple-choice questions strategically, to reduce uneducated guessing. Ministry of education should leverage on technology such as CBT to help reduce cheating during examination.

INTRODUCTION

Experience has shown that the result of students' performance in Mathematics at the Senior Secondary Certificate Examination shows a persistent problem of poor performance (Adegboye, 2018). While teachers and parents are concerned about this, many students see Mathematics as one of the highest hurdles to cross in their academic lives. Mathematics is regarded as a basic tool in the development of any science-based knowledge for sound analytical reasoning in daily living in a modern society such as ours (Babalola, 2014).

Mathematics provides a framework on finding solutions to our everyday lives. A mathematics concept in everyday activities enhances cognitive, social emotional and physical development for the overall growth of an individual. Mathematics skills students learn while in school will be useful as they gain experience and knowledge over time. A good mathematics education at early stage of a student's life will facilitate problem solving, understanding other aspects of knowledge using the knowledge to reform their lives and promote national development. Mathematics is a powerful tool for global understanding and communication. It helps teachers and parents to predict what courses their students and wards will take to in future. The knowledge of mathematics enables the world to be interconnected. In view of this, mathematics is made compulsory in primary and secondary schools in Nigeria.

The Federal Republic of Nigeria (2008) placed Mathematics in a core position at all levels. By the provision of the curriculum, students are not only expected to acquire Mathematical skills but also be able to apply them in their daily undertakings. All these have been said about government's intention to promote performance in Mathematics. The questions to be asked are: Has it worked? Has there been any significant success recorded in terms of improving students‟ performance in the subject in external examinations such as Junior School Certificate Examination (JSCE), Unified Tertiary Matriculation Examination (UTME) and Senior Secondary Certificate Examination (SSCE)? Are candidates scoring well in these examinations (perhaps better as the years go by)? There is one common answer to these questions and that answer is "NO". Alonge (2016) in a survey of WASCE results between 2016 and 2022 found that less than 39% of the candidates obtained grades that qualified them for courses in science and technology-based disciplines in tertiary institutions.

This trend is disturbing considering the fact that the result of secondary education is a pre-requisite for students' entry into tertiary institutions. In essence, the nation's potential for development in Science and Technology is directly tied to secondary education output. A closer look at National Examination Council (NECO) report between 2014 and 2022 presented in Table1, showed that on the average, only a small proportion of students in Nigeria passed Mathematics at credit level and above in Junior Secondary School Examinations although between 2019 and 2022 there was a slight improvement in the percent pass. However, there is still the need for improvement.

The situation is not just the low scores recorded but also the fact that scores obtained are not most often true representative of students' abilities. This can be linked to a number of factors such as nature of mathematics test items, testwiseness and anxiety. The nature of mathematics test items is a serious problem which needs to be investigated. Fakorede (2012) reported that mathematics tests are always problem-laden in the sense that a particular item could call for additive ability, multiplicative ability and other complex mathematical manipulations. Based on these, there are normally no step-by-step answers needed in Mathematics objective tests. The failure of an examinee to arrive at the right answer always carries penalty of scoring zero and hence poor performance.

Over the years, there has been an increase rate of failure in junior secondary certificate examination in Nigeria. This increased rate of failure has caused serious concern to stakeholders in the education sector. Inasmuch as mathematics is important, Nigeria students have had a persistence low performance in mathematics Examination both in internal and external examinations. Sakiyo and Badau (2015) conducted a research on mathematics performance of students in JSCE that had credit pass and obtained the following result, 18.25%, 32.81%, 38.66%, 36.55%, 34.52%, 34.06%, 36.91%, 41.12% and 46.15% for 2014, 2015, 2016, 2017, 2018, 2019, 2020, 2021 and 2022 respectively. From the above result, it is clear that, there is a marginal decline in student's academic performance in mathematics. Many stakeholders have proffered different solutions to the problem of failure but to no avail. In 2014, the Federal Ministry Education reviewed the syllabus just to help students prepare adequately for the examination but the challenge of mass failure still persists (FME, 2020).

Mathematics which equip an individual with knowledge and scientific skills to handle daily life challenges rationally, solve wide range of scientific tasks and organize problems into logical and simple

form. The relevance of mathematics in all human endeavour has helped to incorporate it into different science curricula and disciplines such as medicine, pharmacy, nutrition, engineering, teaching, etc, despite the importance of mathematics to the daily activities of man, students still record poor academic performance in mathematics.

The multifaceted use of mathematics in technology, industries, medicine, schools and everyday life at home and other different dimensions make it an important core subject for students to learn and acquire the needed skills not just for examination purposes, but also for daily living. It is therefore, very unfortunate to see students fail this important subject. What has continue to worry the hearts of all those interested in the education of the child is the question of what has been the cause of these failure? However, the researcher is presuming testwiseness could be responsible for this problem, most examination items are not always multiple choice format, that would enable individual examinee to apply testwiseness strategies. This problem has engaged the attention of many scholars in education and psychology (Donath, 2011; Mustapha, 2014).

Quality test items are essential in developing and conducting a successful examination. A good test is as good as the quality of the test items. When individual test items are not appropriate and students do not perform well, test scores from these items cannot be meaningful. In other words, the validity and reliability of such items are questionable (Donath, 2011). Investigating testwiseness is also important to test experts. Testwiseness (TW) emanates from testees regular taking of examinations and can confer a significant advantage to the experienced testees over those that are not experienced (Mustapha, 2014). However, it is that quality possessed by a student at a particular period which enhances his/her performance in a test. Similarly, testwiseness is the ability of a test taker to answer correctly a particular test item or question without having adequate knowledge of the subject matter being tested. TW has been seen as the various sources of test variance. It was suggested as one of the sources of variance in educational test scores other than item content and random error (Thorndike, in Ooesemowo, Afolabi, Awopeju & Oluwatimilehim 2018; Millman, Bishop & Ebel, in Ooesemowo, 2018: Otu, Ojini, Uchegbue & Abang (2023).

Specifically, due to testwiseness, the response set is known to influence the performance of students in objective tests (Ajeigbe & Afolabi, 2013). It is important to distinguish testwiseness and informed guessing. Testwiseness is based on little or no content knowledge and is merely an attempt to select the answer correctly based on errors in the test construction. In contrast, making informed guessing requires the student to have some measure of content knowledge, enough at least to rule out some plausible distracters and reducing the number of possible answers from which a guess may be made (Mahamed, Gregory & Austin, 2016; Otu, Ojini, Uchegbue & Abang (2023).

Testwiseness is the testee's ability to utilize the characteristics and format of a test to receive a high score. One thing is for a testee to have a good knowledge of the subject matter, another thing is to have test-taking strategies that could assist the testee to perform well in the examination. Testwisness is the capacity to utilize the characteristics and format of a test or the test-taking situation to receive a high score. Skills that fall under testwiseness include; the careful reading of instructions and directions, the wise use of time and the ability to select among alternative options in a given test among others.

Recent thinking in educational measurement and in language testing recognizes the need to include in the investigation of construct validity, information about how test-takers go about processing test tasks and relating this information to test content and test performance. The phenomenon (testwiseness) is sometimes known as test-taking strategies/skills. Test wise students improve their results by developing and applying test-taking strategies, picking up clues in tests and managing time well. They plan their studies in accordance with the way in which information is to be tested, focus on all circumstances affecting test performance and use problem techniques. It is therefore safe to say that the general overriding assumption is that students who have more appropriate test-taking strategies are less anxious in test and they perform better in test. Anderson (2011) reported that instruction in test-taking skills leads to reduced anxiety and increased confidence in the test situation. In view of this, instruction in testwiseness would serve the purpose of increasing testees' confidence during test-taking.

Experts in psychometrics have used teacher made and standardized tests to measure students' abilities and academic achievement in specific and general subject areas. The practice is so common that there tend to be an agreement that test scores are absolute indicators of students' attainment of cognitive gains and hence their academic achievement. There thus tend to be a forgetting of the implications of other factors that may contribute positively or negatively to the score of an examinee in

a test or examination. Some of such influencing factors are guessing, reading of instruction, cheating and time management.

Purpose of the study

The purpose of this study was to assess testwiseness and academic performance in mathematics among junior secondary school three students in Cross River State, Nigeria. Specifically, the study seeks to:

1. Determine whether testwiseness in guessing predicts academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State.
2. Examine whether testwiseness in examination cheating predicts academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State.

1.4 Research questions

The following research questions are formulated to guide the study:

1. To what extent does testwiseness in guessing predicts academic performance in mathematics among Junior Secondary School Three (JSS3) Students in Cross River State?
2. To what extent does testwiseness in examination cheating predicts academic performance in mathematics among Junior Secondary School Three (JSS3) Students in Cross River State?

Statement of hypotheses

To guide the study, the following null hypotheses were formulated

1. Testwiseness in guessing does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State.
2. Testwiseness in examination cheating does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State.

LITERATURE REVIEW

Testwiness in guessing and students' performance in mathematics test

Guessing is the process of trying to give an answer to a question or make a judgment about something without being sure of the facts (Hornby, 2011). For example, when the pupils are required to choose their answers from among the answer choices supplied by the examiner, there is the tendency that they can get some of the answers correctly or wrongly by guessing. This is an indication that guessing, according to Thorndike & Hagen in William, Clifford, Maxwell, Solomon and Dan-Anthony, (2012), is a serious problem on objective tests when there are only two answer choices, when the test is very short, when the items on the test are too difficult for the examinees, when the test Is highly speeded and when the test items are poorly constructed.

The influence of guessing on test scores is fundamental that some presents study seeks to determine the effect of guessing on test scores. For instance, Waters (2019) studied the effect of different scoring formulas on the number of items omitted on a test. The scoring formulas used were rights only, rights - ¼ wrong, rights-wrongs, rights – 2X wrongs and rights – 4X wrongs. He then discovered that the number of omits did increase as the penalty for wrong answers increased, but that the examinees with the more severe scoring penalties did not omit as many items as they should have if they were to achieve the highest score. Waters also discovered that the average number of items right was about the same for all scoring patterns.

Basically, every test must contain instructions on how the testees will respond to the test items. For the Water's study, it seems that neither the instructions not to guess, which attracts penalty for wrong answers nor the instructions to answer every question whether examinees are sure of the answers or not make them respond the same way on an objective test. Hence, the probability of the examinees taking a risk appears to be dependent on their personality as on the instructions on the test. Guessing on tests has been recognized as the most serious problem in test items that have only two answer choices or tests that are highly speedy. Despite that a number of suggestions have been made for more complex scoring patterns of objective tests, particularly that of the multiple choice items, it is ideas that most of them increase scoring time and to some extent, the methods appear to produce little result in precision of measurement for each test item.

In testing, guessing is considered a problem. This is because it allows testees to score points on chance rather than sure knowledge of the subject. Some test specialists consider this unfair to students who actually know the content area being tested. Guessing reduces objectivity of tests and it makes it difficult to distinguish between a testee who has guessed correctly and the one who actually knows the

answer. Investigating testwiseness is also important to test experts. Scruggs and Mastropieri (2012) opined that a testee who is testwise can outperform a testee of equal ability but who lacks test-wiseness. It is vital that testees master the content of the tests they take but it is also important that testees are knowledgeable and experienced in various test formats and the characteristics of the testing environment. There is a difference between teaching test-taking strategies and "teaching to the test". According to Scruggs and Mastropieri (2012), the latter involves teaching specific item that will appear on the test. Teaching test-taking strategies helps testees to understand the format and convention of a specific type of test and makes them feel comfortable in a testing environment. Learning test-taking strategies actually improves the validity of a test by making scores reflect more accurately what a testee knows.

A test-wise testee will answer a question incorrectly only if he or she does not know the content, not because the test format is confusing or intimidating (Scruggs and Mastropieri, 2012). Recent thinking in educational measurement and in language testing recognizes the need to include in the investigation of construct validity, information about how test-takers go about processing test tasks and relating this information to test content and test performance. Also as indicated by Messick (2015), guessing propensities can be the source of construct-irrelevant variance, which provides a major threat of construct validity. In addition, the use of guessing strategies introduces error and attenuates the relationships among items. Therefore, it is reasonable and important to consider guessing in the assessment of dimensionality, especially with regard to multiple choice tests. Although, the guessing parameter is included in the three parameter models in Items Response Theory (IRT), most of the methods for factor analysis do not include guessing in their models. In addition, most multi dimensional item response Theory (MIRT) approaches only allow fixed values of guessing in models.

Stone and Yeh (2016) conducted another study about the assessment of dimensionality using real data, the Multistate Bar Examination (MBE), provided more understanding of the relationship between items and the internal structure of a test when guessing was modeled. The MultiState Bar Examination was a four-option multiple – choice exam with 200 questions. For the 2001 February administration, the examination of the average proportion correct for low-ability examinees showed that more than 50 percent of items showed that guessing was operating. The results of the two studies mentioned above demonstrated the effect of guessing in determining the dimensionality or examining the internal test structures although the studies did not fully examine the interaction between guessing and other factors, such as difficulty and discrimination item parameters.

Ogidi (2022) carried out a study in which one of the research hypotheses was whether there is a relationship between guessing skills of undergraduates on their academic performance in Ignatius Ajuru University of Education, Port Harcourt. The study adopted quasi-experiential research method. The population of the study was 5446 year 2 students in the 2019/2020 academic session in the University. The sample of the study was 269 students drawn from various faculties in the university through multi-stage sampling method. The instruments for data collection were a computer-based performance test titled: "Guessing Skills Scale (GSS)". Other instruments used in the study. The computer based Use of English Test was given to experts in the department of English and Communication Studies while all the instruments were given to experts in Measurement and Evaluation. The reliability of the computer-based Use of English Test was determined through Kuder-Richardson21 while the reliability of the other instruments was determined through ordinal alpha. The instruments yielded the following coefficients: .82 for the Computer-Based Use of English Test, .81 for Interest Inventory, .75 for Attitude Scale and .83 for Test Anxiety Scale. Analysis of covariance was used in testing the hypotheses at .05 level of significance. The result of the study showed that Guessing skills boost students' academic performance in the computer-based use of English test, enhanced their interest, make them have positive attitude towards the Use of English Test and decreased the test anxiety. This particular study worked on relationship between guessing skills of undergraduates on their academic performance in Ignatius Ajuru University of Education, Port Harcourt while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

Similarly in a study by Muhammad (2021) carried out a study in which one of the research hypotheses, was whether students' guessing influence the performance of undergraduate education students of Sule Lamido University Kafin Hausa, Jigawa State, Nigeria. Survey research design was employed, with a population of one hundred and eight students (108). Students Guessing Scale (SGS)

adopted from Rufa'i (2010) were used as the instrument of data collection with a reliability of 0.81indicating strong significant internal consistency of all the four components of TTSS. Data collected was statistically analyzed by using descriptive statistic, multiple regression analysis, and Analysis of Variance (ANOVA) in Statistical Package of Social Sciences (SPSS) at 0.05 level of significance. The findings of the study revealed that there was significant influence of guessing on the performance of education students. This particular study worked on students' guessing influence the performance of undergraduate education students of Sule Lamido University Kafin Hausa, Jigawa State while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

In the same vein, Okolo and Kolawola (2021) carried out a study in which one of the research hypotheses, was whether test guessing influence junior secondary school students' mathematic test anxiety and performance in Bukuru, Nigeria. The study adopted a quasi–experimental design, specifically the non–randomized, pre-test, post-test control group design. The population of the study was 2,812 and the sample consisted of 60 JS one student's in one government secondary school in Bukuru. Two intact classes were used for the experimental and control groups. The experimental group was given training and counseling using test guessing while no treatment was given to the control group. Mathematics Test Anxiety Scale (MTAS) and Mathematics Achievement Test were used to collect data. Their reliability coefficients were 0.89 and 0.92 respectively. The techniques employed in answering the research questions and hypotheses were percentages, means, standard deviation and t – test for independent samples. The study revealed that in the experimental group training and counseling on test guessing reduced student's anxiety level, and improved their performance. This particular study worked on test guessing influence junior secondary school students' mathematic test anxiety and performance in Bukuru while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

In the same vein, Aborisade, and Adeniji (2022) carried out a study in which one of the research hypotheses, was whether students' guessing affects the academic performance of senior secondary school students in Economics in Oyo State, Nigeria. The study employed a pretest, posttest and control group quasi-experimental design. The population of the study comprised all the public senior secondary school II (SSS2) students offering Economics in Oyo State, Nigeria. A sample of 240 SSS II students was used for the study using a multistage sampling procedure. The instruments used in the study were Economics Achievement Test (EAT) and Students' Guessing Questionnaire (SGQ). The face and content validity of the instruments was ascertained by expert judgment. The reliability coefficient of EAT was estimated using the test re-test reliability method while the reliability coefficient of TMQ was estimated using the Cronbach Alpha reliability method. The reliability coefficients of EAT and SGQ were 0.79 and 0.82 respectively. Data collected were analyzed using descriptive and inferential statistics. The research questions raised were answered using mean, standard deviation and bar chart while the hypotheses formulated were tested using t-test and Analysis of Covariance (ANCOVA) at a 0.05 level of significance. Result of the study show that there was a significant difference in the performance of students exposed to guessing strategies and those in the control group. This particular study worked on students' guessing affects the academic performance of senior secondary school students in Economics in Oyo State while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

Similarly in a study by Hamzeh (2014) carried out a study in which one of the research hypotheses, was whether there is a relationship between students' guessing skill and mathematics performance among senior secondary school students in Lagos. The study was conducted on a random sample of 626 (372 males and 254 females) secondary school students. The following instruments were used in the data collection: the Guessing Scale (GS); Mathematics Achievement Test (MAT). A positive and significant relationship was reported between students' guessing skill and mathematics performance among senior secondary school students in Lagos. Students' guessing account for more than 30% of the variation in mathematics performance. This particular study worked on students' guessing and mathematics performance among senior secondary school students in Lagos while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

2.3.2 Testwiness in cheating and students' performance in mathematics test

Cheating in examinations is a topic that has garnered significant attention and debate within academic circles. As educational institutions strive to maintain the integrity of assessments, defining what constitutes cheating becomes crucial. According to McCabe, Treviño, and Butterfield (2011), cheating in examinations is characterized by "the act of using unauthorized materials, assistance, or methods during an examination". This definition encompasses actions such as using cheat sheets, accessing digital devices, or seeking assistance from others during the examination. Davis, Grover, Becker, and McGregor (2012) extend the definition of cheating to include plagiarism, which involves presenting someone else's work as one's own. Plagiarism in examinations can occur when students copy and paste answers from external sources without proper citation or acknowledgment.

With the advent of technology, the definition of cheating has expanded to include new forms of academic dishonesty. Online cheating, as defined by Arnold and Pistilli (2012), refers to "any behaviour that allows a student to gain an unfair advantage in an online learning environment." This may include sharing answers through messaging platforms, using online calculators, or browsing examination-related resources during a timed assessment. In recent years, discussions have emerged regarding the role of collaboration and group work during examinations. Some educators argue that collaborative examinations, where students work together to solve problems, promote critical thinking and teamwork. However, collaboration can cross the boundary into cheating when students share answers or engage in excessive cooperation that compromises individual learning.

Educational institutions play a crucial role in shaping the definition and consequences of cheating. Honor codes, academic policies, and guidelines establish norms and expectations, helping students understand what actions are considered cheating. These institutional frameworks guide students' behaviour and ensure fairness and integrity in assessments. Examining the definitions of cheating in examinations reveals a multifaceted and evolving landscape. Traditional definitions encompass actions such as using unauthorized materials or plagiarizing, while contemporary perspectives include online cheating and discussions on collaboration. Cultural and contextual factors further influence how cheating is perceived and addressed. Ultimately, educational institutions bear the responsibility of establishing clear definitions and guidelines that promote academic integrity, ensuring a level playing field for all students.

Otu, Ojini, Uchegbue and Abang (2023), carried out a study in which one of the research hypotheses, was whether socio-economic factors as attributes to examination malpractice among secondary school students in Cross River State-Nigeria. The survey research design was adopted for the study. The multistage sampling technique was used in selecting total of 1038 students for the study. The instrument employed for data collection was a four point scale developed, validated and administered by the researchers. Data collected was analyzed with the use of percentages and regression analysis. Among others it was found that, students' attribute examination malpractice more to societal factors, followed by school factor, and finally by personal factors. It was found that, there was a significant relationship between societal factors and attribution to examination malpractice. This particular study worked on socio-economic factors as attributes to examination malpractice among secondary school students in Cross River State-Nigeria while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

In the same vein, Oko and Adie (2016) carried out a study in which one of the research hypotheses were to identify the remote causes, the various types and forms of examination malpractice especially at the university level, its effects and possible ways of curbing the menace. The research findings revealed an array of factors responsible for examination malpractice in Nigeria to includes what most respondents called "wrong value system which leads to serious quest for certification instead of knowledge and skills", Laziness, lack of preparation or in-adequate preparation for examination, lack of self confidence, poor school facilities, (Lack of or in-adequate examination hall) poor sitting arrangement, socio-economic factors, political- undertone, privatization and commercialization of education, poor invigilation, weak parental function etc. This particular study worked on identify the remote causes, the various types and forms of examination malpractice especially at the university level, its effects and possible ways of curbing the menace while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

Similarly in a study by Bassey and John (2016) carried out a study in which one of the research hypotheses was to investigate test anxiety, attitude to schooling, parental influence, and peer pressure as predictors of cheating tendencies in examination among secondary school students in Edo State,

Nigeria. Ex-post facto research design was adopted for the study. Using stratified random sampling technique, 1200 senior secondary two (SS 2) students were selected for the study. A 60-item, four-point Likert type questionnaire developed by the researchers was used for data collection. The data collected were analyzed using multiple regression analysis. The results revealed that test anxiety, attitude to schooling, parental influence and peer pressure jointly significantly predict students' cheating tendencies in examination. The result also showed that about 34.2% of the total variation in cheating tendencies is accounted for by test anxiety, attitude to schooling, parental influence and peer pressure. This particular study worked on test anxiety, attitude to schooling, parental influence, and peer pressure as predictors of cheating tendencies in examination among secondary school students in Edo State while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

In the same vein, Ekeh and Oladayo (2016) carried out a study in which one of the research hypotheses was to determine psychosocial correlates of examination malpractices among secondary school students in Ughelli North Local Government Area of Delta State. The population of the study consisted of 6,252 senior secondary school (II & III) students in all the 25 Public Secondary schools in Ughelli North Local Government Area. However, a sample of 400 students in SS II and III were drawn from 8 secondary schools. The sample was obtained through purposive and proportionate random sampling techniques. Two research questions and two null hypotheses guided the conduct of the study. The instrument used for data collection Psychosocial Correlates of Examination Malpractice Questionnaire (PCEMQ) was developed by the researchers. The Cronbach Alpha technique was used to determine internal consistency of the items. However, the overall co-efficient obtained by the mean scores of the subscale is 0.78. Data collected were analyzed using multiple regression for research questions while the null hypotheses were tested using t-value associated with multiple regression at 0.05 alpha level. Results got after data analysis indicated that all psychosocial factors combined (test anxiety, low self concept, stress, study habit, parental influence, gender and peer pressure) correlated positively with examination malpractice among secondary school students; peer pressure had the strongest correlation while stress had the weakest positive correlation respectively. This particular study worked on psychosocial correlates of examination malpractices among secondary school students in Ughelli North Local Government Area of Delta State while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

Similarly in a study by Modesta, Odiato, Adenugba and Edun (2019) carried out a study in which one of the research hypotheses was to find out relationship between self-efficacy, test of anxiety and examination malpractices among secondary school students in Ogun State, Nigeria. Three instruments on Examination Malpractice Questionnaire (EMQ), General Self-efficacy (GSE) scale and Test Anxiety Inventory (TAI) were used in the study. The instruments were administered to 210 randomly selected students from a stratified sample of three schools in Odeda Local Government Area of Ogun State, whereby 70 students were randomly selected from the population of SS 1 students of each school. Pearson Product Moment Correlation Coefficient was used to answer research questions one and two, while Independent Sample t-test was used to answer research questions three and four and regression estimation technique was used to analyze research question five. The result showed that there was a significant negative relationship between self-efficacy ($r=-0.824$, $p<0.05$) and examination malpractice. It was also evident that, there was no significant relationship between test of anxiety ($r=0.074$, $p>0.05$) and examination malpractice. Also, the level of examination malpractice among secondary school students differs significantly across gender ($Df=198$, $N=200$, $t=2.477$, $P<.05$). The result also showed that, the level of examination malpractice among secondary school students differs significantly across age group ($Df=197$, $N=200$, $t=-11.445$, $P<.05$). Finally, a joint effect of self-efficacy, test anxiety gender and age ($r=0.834$, R-square=0.690) on examination malpractice was found among secondary school students. This particular study worked on relationship between self-efficacy, test of anxiety and examination malpractices among secondary school students in Ogun State while the present study is about testwiseness strategies among junior secondary school three students (JSS3) in Cross River State.

RESEARCH METHODOLOGY

The research design adopted for this study was survey research design. The study was carried out in the three zones of Cross River State of Nigeria (Ogoja, Ikom and Calabar zone. It is one of the rain forests zone of West Africa that lies between latitudes 20°18, and 30°25 North of the equator and

longitudes 40°30 and 50°16 East of the Greenwich Meridian and covering a land mass of 20,156km$^{2.}$ The study's population is made up of all male and female students in 266 public junior secondary school three (JSS3) in Cross River State is 16,658 for 2022/2023 academic session (State Secondary Education Board, 2026). The sampling techniques adopted for this study was stratified and simple random, proportionate sampling techniques. The sample for this study consists of 595 respondents which is 10% of Junior Secondary three (JSIII) students selected from 30 secondary schools in the three Education Zone of Cross River State. The instrument for the study was self constructed Assessment of Testwiseness Questionnaire (ATWQ) and adapted Mathematics achievement Test (MAT) prepared by National Examination Council (NECO) for JSS III. The choice of this particular test rested on the fact that it was a standardized and was constructed by reputable organization.

The achievement test instrument was prepared by NECO and as such validation had been taken care of. This was as a result of the fact that NECO is a reputable examination body in Nigeria. Its examinations had been in existence for decades. The validity of the testwiseness questionnaire was established by three experts in Measurement and Evaluation. To determine the reliability of the instruments, split-half method was used. Fifty (50) copies of questionnaire were administered to fifty respondents who are not part of the study, nor in the selected schools. The instruments were administered once; after administration, the questionnaires were split into two and correlated using Pearson Product Moment correlation. A correlation coefficient of the half test was obtained and the Spearman Brown Prophecy formula was used to obtain the reliability of the full test. The coefficient rages from .79 to .83. The researchers seeks permission from the school administrators. Two research assistants were involved in data collection. The testwiseness questionnaire was administered first to the students upon completion was retrieved.

Presentation of results

Hypothesis one

Testwiseness in guessing does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State. The independent variable in this hypothesis is testwiseness in guessing and dependent variable is academic performance in mathematics. To test this hypothesis, the simple linear regression analysis was used and the result is presented in Table 1

Testwiseness in guessing does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students. The explanatory variable is testwiseness in guessing while the dependent variable is academic performance in mathematics, both measured contiguously. To test this hypothesis, simple linear regression was used, and the results as presented in Table 1 showed that (R=.239) which implies that there is a positive relationship between testwiseness in guessing and academic performance in mathematics among Junior Secondary School three (JSS3) Students. That is, the higher the level of guessing among students, the high their academic performance in mathematics. More so, the result further showed that (Adj. R^2=.356) which implies that the variances in academic performance in mathematics could be explained by 35.6% contribution of the testwiseness in guessing. To test the hypothesis, a cursory look at the analysis of variance (ANOVA) table was made and the result showed that (F=36.392*, P=.000). Since P-value (.000) is less than P-value (.05), this implies that the null hypothesis that testwiseness in guessing does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students rejected and the alternate hypothesis retained.

TABLE 1: Summary of regression analysis of the prediction of testwiseness in guessing on academic performance in mathematics among Junior Secondary School three (JSS3) Students

R	R^2	Adj.R^2	Std error	Untand B	
.239	.357	.356	3.189	0.428	
Model	Sum square	Summary mean square	F-ratio	A	Sig

Regression	370.099	370.099			
Residual	6091.722	10.170	36.392*	.05	.000
Total	6461.820				

*Significant at .05, df = 593

Hypothesis two: Testwiseness in examination cheating does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State. The independent variable in this hypothesis is testwiseness in examination cheating and dependent variable is academic performance in mathematics. To test this hypothesis, the simple linear regression analysis was used and the result is presented in Table 2 .

Testwiseness in examination cheating does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students. The explanatory variable is testwiseness in examination cheating while the dependent variable is academic performance in mathematics, both measured contiguously. To test this hypothesis, simple linear regression was used, and the results as presented in Table 8 showed that (R=.202) which implies that there is a positive relationship between testwiseness in examination cheating and academic performance in mathematics among Junior Secondary School three (JSS3) Students. That is, the higher the level of examination cheating among students, the high their academic performance in mathematics. More so, the result further showed that (Adj. R^2=.239) which implies that the variances in academic performance in mathematics could be explained by 23.9% contribution of the testwiseness in examination cheating. To test the hypothesis, a cursory look at the analysis of variance (ANOVA) table was made and the result showed that (F=25.520*, P=.000). Since P-value (.000) is less than P-value (.05), this implies that the null hypothesis that testwiseness in examination cheating does not significantly predict academic performance in mathematics among Junior Secondary School three (JSS3) Students rejected and the alternate hypothesis retained.

TABLE 2: Summary of regression analysis of the prediction of testwiseness in examination cheating on academic performance in mathematics among Junior Secondary School three (JSS3) Students

R	R^2	Adj.R^2	Std error	Untand B	
.202[a]	.241	.239	3.211	0.349	
Model	Sum square	Summary mean square	F-ratio	A	Sig
Regression	263.073	263.073			
Residual	6164.445	10.308	25.520*	.05	.000
Total	6427.518				

*Significant at .05, df = 593

Discussion of findings

The result from the test of the first hypothesis showed that testwiseness in guessing significantly predicts academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State. This implies that the presence of guessing introduces a level of uncertainty into assessment outcomes. It becomes challenging to discern whether a high score is a genuine reflection of mastery of content or simply the result of lucky guesses. As a consequence, the reliability and validity of assessments may be compromised, undermining their effectiveness in providing an accurate representation of student learning. The influence of guessing extends to the fairness of assessments. In

traditional testing environments, the impact of guessing can disproportionately benefit certain individuals, particularly those who are adept at strategic guessing or possess a higher tolerance for risk.

This introduces an element of unpredictability into the assessment process, potentially disadvantaging students who approach tests with caution and a commitment to providing accurate responses. Moreover, the presence of guessing raises ethical considerations regarding the fairness of assessment outcomes. If a significant portion of scores can be attributed to guessing, it may call into question the equity of the assessment system and its ability to provide a level playing field for all students. This has implications for issues of social justice and equality in education, as assessments that are heavily influenced by guessing may contribute to disparities in educational opportunities and outcomes.

The result from the test of the second hypothesis showed that testwiseness in cheating significantly predicts academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State. This implies that cheating undermines the fairness of educational measurement and evaluation by providing an unfair advantage to those who engage in dishonest practices. When students cheat on assessments, they distort the results, creating an inaccurate representation of their true abilities. As a result, students who do not cheat may find themselves at a disadvantage, leading to an unjust evaluation of their academic performance. This unfairness can erode the credibility of educational assessments and diminish the value of the educational system as a whole. The reliability of educational measurement and evaluation is compromised when cheating occurs. Assessments are designed to provide consistent and dependable results, reflecting students' actual knowledge and skills. However, when cheating takes place, the integrity of these assessments is compromised, rendering the results unreliable. Inaccurate measurements can mislead educators, parents, and policymakers, leading to misguided decisions about student placement, instructional strategies, and resource allocation. This finding conforms to that of Ekeh and Oladayo (2016) carried out a study in which one of the research hypotheses was to determine psychosocial correlates of examination malpractices among secondary school students in Ughelli North Local Government Area of Delta State. The instrument used for data collection Psychosocial Correlates of Examination Malpractice Questionnaire (PCEMQ) was developed by the researchers. The Cronbach Alpha technique was used to determine internal consistency of the items. However, the overall co-efficient obtained by the mean scores of the subscale is 0.78. Data collected were analyzed using multiple regression for research questions while the null hypotheses were tested using t-value associated with multiple regression at 0.05 alpha level. Results got after data analysis indicated that all psychosocial factors combined (test anxiety, low self concept, stress, study habit, parental influence, gender and peer pressure) correlated positively with examination malpractice among secondary school students; peer pressure had the strongest correlation while stress had the weakest positive correlation respectively.

Conclusion/ Recommendations

Based on the findings, it was concluded that testwiseness have strong prediction of academic performance in mathematics among Junior Secondary School three (JSS3) Students in Cross River State. Based on the findings, the following recommendations were made:

i. Teachers should incorporate test-taking strategies instruction into mathematics curricula. By teaching students how to approach multiple-choice questions strategically, to reduce uneducated guessing.
ii. Ministry of education should leverage on technology such as CBT to help reduce cheating during examination.

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