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Previous Examination Scores As A Predictor Of Secondary School Students Tendency To Cheat In Chemistry Examination In Lagos State, Nigeria

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Abstract

This study investigated previous examination scores as a predictor of secondary school students' tendency to cheat in Chemistry examinations in Lagos State, Nigeria. A correlational survey research design was employed. The study was carried out in secondary schools in Badagry, Lagos State Nigeria. A questionnaire developed by the researchers and validated by experts was used to collect data on students' demographic information, and cheating behaviour. Previous examination scores of the students were collected from the schools' exams and records unit through the subject teachers. The population of the study was 50,005 Senior Secondary two (SS2) students for 2023/2024 academic session in the eighteen (18) government approved senior secondary schools in Badagry, Lagos State Nigeria. 300 students were selected through stratified random sampling technique. ANOVA and regression analysis were used to analyze the data. The null hypotheses were tested at .05 level of significance. The results showed that previous examination scores have significant predictive power on secondary school students' tendency to cheat in chemistry and that there is a significant negative correlation between previous examination scores and cheating tendency; students with lower scores were more likely to cheat in chemistry examination. It was recommended among others that educational institutions should provide support for students with low academic achievement, emphasize the importance of academic integrity, and implement effective preventive measures for cheating in exams.

Keywords: *Examination, Previous Examination Scores, Tendency to Cheat in Examination*

INTRODUCTION

Many nations in the world today adopted education with the goal of utilizing it as a very strong and efficient tool for building human capacity, social and economic development as well as technological innovations. The only way to measure effectively the goals of education is through the evaluation of learning outcomes using examinations. These examinations are focused on measuring students' intellectual abilities, and other cognitive and non-cognitive traits acquired during learning. Hence, examination has become the standard against which students' progress and the entire educational system progress is measured. However, the expected result may not be completely achieved if the examination

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is poorly conducted and the responses to the examinations may be obtained through unacceptable behaviours or dishonest means. Poor conduct of examination is one thing and unacceptable examination behaviours of students is another. Some of the unacceptable examination behaviours in Nigeria include the use of unauthorized electronic or non-electronic materials, reminders, impersonation, leakage of examination question papers, collusion among students, giraffe copying, and exchange of answer scripts in the examination hall, and the use of any unauthorized material inside the examination hall (Onyibe, 2017). The unfortunate thing is that the success of any nation that wants to gear her educational system towards realizing such a noble objective of utilizing education as the catalyst to national development may be greatly marred by these unacceptable examination behaviours listed, which can in one phrase be referred to as cheating in examination.

Academic dishonesty, particularly cheating in examinations, has become a pervasive issue globally, undermining the integrity of educational assessments and compromising learning outcomes (Bowers, 2018). In Nigeria, cheating in secondary school examinations is a significant concern, with far-reaching consequences for individuals, institutions, and society (West, 2017). Cheating during testing introduces random errors to the test score which can reduce the reliability of the test scores and render them inaccurate and less meaningful (Ugodulunwa, 2020). Undoubtedly, cheating in examinations mars the validity and credibility of the result of the evaluation of the educational process. The Nigerian citizens, of recent, may no longer be regarding examination as a standard for the true measurement of students' academic achievement or knowledge because cheating in examination is becoming a pandemic in the Nigerian education system. This may lead to students having wrong perception about examination in Nigerian schools where examination may be seen as war against poor academic performance and war against failure in examinations.

Cheating in examination might become a reliable weapon for winning the war against poor academic performance and failure in examinations but this may result to a delay or pause in students future career pursuit. Students' attitude towards examinations in Nigeria seems to have turned into a pandemic that is massively destroying the education system. This may be because students tend to be more ready to cheat in examinations than to be independently confident to write the examination on their own. Woche, (2021) referred to tendency to cheat in examination as the likelihood of an examinee indulging in inappropriate behaviours in an examination with the aim of earning underserved grades. In similar vein, Bichene and Ogba (2021) defined tendency to cheat in examination as the propensity of an examinee to use any illegal means before, during or after any examinations with the aim of obtaining good results. This cheating tendency is seen in various subjects including Chemistry.

Chemistry, a critical subject for science-related careers, is particularly vulnerable to cheating due to its complex concepts and high-stakes examinations. In the academic domain, Chemistry as a subject is one of the most important subjects in the sciences whose examination scores can make or mar the future of a science student. On the one hand,

receiving a low score in the subject chemistry might signal to the students that they need to study more and be more devoted if the low score was as a result of lack of commitment to the subject, sickness, or total absenteeism in one of the last examination. On the other hand, it is also possible that having a low score in chemistry may discourage the students, and cause them to disengage from the subject or even drop science entirely or feel there is nothing they can do on their own to pass that subject especially when the students, to the best of their knowledge have shown commitment to the subject but still could not pass it. The result from the analysis of the previous examination scores in Chemistry from the students' last academic session before this research will be taken and be used to find out if having low score or high scores will predict students' confidence level on writing the next examination on their own without cheating.

Students with the tendency to cheat in examination employ various methods to compromise the examination process either in the examination hall, before, during and even after the examination. The intention of an examinee with the tendency to cheat is to gain an unfair and underserved advantage over their co-examinees. Thus, tendency to cheat in an examination could be a function of secondary school students' previous examination scores. Examination scores (either high or low) are unavoidable part of the education system. This is because; examination scores are often referred to as the output value of the teaching and learning process. However, they may also be referred to as inputs. For instance, receiving a low score in chemistry in the middle of a session (second term) may positively or negatively affect a student's subsequent learning effort in the remainder of the school term. Previous examination scores connote a piece of numerical information that conveys the performance of the students on their previous examinations. It provides a valid academic report about the knowledge, ability, and effort of the student towards academic achievement in previous terminal examinations (Anderman& Murdock, 2017; Iqbal &Anjum, 2018).

The pressure to succeed, coupled with the ease of accessing information through technology, has led to an increase in cheating behaviours among students (Rodríguez et al., 2021). Research has identified various factors contributing to cheating behaviours, including demographic characteristics, personality traits, and situational factors (Whitely, 2015). However, the relationship between previous examination scores and cheating tendency remains understudied.

This study aims to investigate the predictive power of previous examination scores on secondary school students' tendency to cheat in Chemistry examinations in Badagry, Lagos State, Nigeria. Understanding this relationship can inform evidence-based strategies to promote academic integrity and reduce cheating. The lack of comprehensive understanding of the factors contributing to cheating behaviour hinders the development of targeted interventions.

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Statement of Problem:

Despite efforts to promote academic integrity, cheating persists in some Nigerian secondary schools, threatening the validity of examination results and the quality of education. The pressure to succeed, coupled with inadequate support for struggling students, may have been contributing to this problem. Several factors exacerbate the issue; such as inadequate teaching methods and resources, insufficient assessment support, high-stakes examinations, and lack of clear consequences for cheating. These factors create an environment where cheating becomes an attractive option for students struggling to achieve academic success. Research by Camacho et al., (2021) and Egheosase&Ugwu, (2017); identified various factors contributing to cheating behaviours such as test anxiety, lack of Social Support, poor study habits, low self-esteem to mention but a few, however, the relationship between previous examination scores and cheating tendency is still understudied. This knowledge gap hinders the development of targeted interventions to address cheating in examinations.

Purpose of the Study:

The purpose of this study is to investigate the predictive power of previous examination scores on secondary school students' tendency to cheat in Chemistry examinations in Lagos State, Nigeria. Specifically, this study aims to determine the:

1. nature of the regression equation for predicting secondary school students' tendency to cheat in chemistry examination using previous examination scores as predictors .

2. predictive power of previous examination scores on secondary school students' tendency to cheat in Chemistry examination.

Research Questions:

1. What is the nature of the regression equation for predicting secondary school students' tendency to cheat in chemistry examination using previous examination scores as predictors?

2. What is the predictive power of previous examination scores on secondary school students' tendency to cheat in Chemistry examination?

Research Hypotheses:

The following Null Hypotheses were tested at alpha level of significance.

$H0_1$: There is no significant correlation between previous examination scores and secondary school students' tendency to cheat in Chemistry examinations.

H0$_2$: The predictive power of previous examination scores on secondary school students' tendency to cheat in chemistry is not significant.

METHOD

This study employed a correlational survey research design to investigate the relationship between previous examination scores and secondary school students' tendency to cheat in Chemistry examinations. According to Nworgu (2015), correlation survey design is a type of research design that seeks to establish the relationship that exists between independent and dependent variables. This study was carried out in Badagry local government area in Lagos State Nigeria. The population of the study was 50,005 Senior Secondary two (SS2) students for 2023/2024 academic session in the eighteen (18) government approved senior secondary schools in Badagry, Lagos State Nigeria. A sample size of 300 chemistry students was drawn through stratified random sampling. The stratification variables were; School type (public or private), and Academic level (SS1-SS3). Schools were randomly selected from each stratum, and students were randomly selected from each school. Two instruments were used for the data collection. The research instrument was constructed by the researchers and was used to collect data on students' demographic information, and cheating behaviour. The questionnaire was validated through expert review and pilot testing. Cronbach's alpha coefficient was used to assess reliability (α = 0.85). Informed consent was obtained from participants and school administrators. Confidentiality and anonymity for honest responses were also ensured. The instruments were administered to the respondents and collected on the spot after they have responded to it. Students' previous examination scores were obtained from their school records. ANOVA and regression analysis were used to analyze the data at 0.05 level of significance.

RESULTS AND DISCUSSION

Research Question 1: What is the nature of the regression equation for predicting secondary school students' tendency to cheat in chemistry examination using previous examination scores as predictors?

Table 1: Regression Coefficient for Predicting Secondary School Students' Tendency to Cheat Using Previous Examination Scores (n= 300).

Predictor Variables	Regression Coefficient (β)	Standard Error	t-Value	p-Value

Previous Examination Scores	-0.12	0.02	-5.56	
Constant	2.15	0.15	14.23	<0.001

The regression equation is: $Y = \beta_0 + \beta_1 X_1$

Where:

Y = Tendency to cheat in chemistry examination (Dependent variable / the predicted)

X_1 = Previous examination scores (predictor)

β_0 = constant

β_1 = Regression coefficient for predictor

From Table 1 above, the nature of the regression equation for predicting secondary school students' tendency to cheat in chemistry examination using previous examination scores as predictors is as follows:

$Y = \beta_0 + \beta_1 X_1$

Y = 2.15 + (-0.12) X_1.

TTC = 2.15 + (-0.12) PES.

This equation shows that for every one unit increase in previous examination scores, the tendency to cheat decreases by 0.12 units (P < 0.001).

Research Question 2: What is the predictive power of previous examination scores on secondary school students' tendency to cheat in Chemistry examination?

Table 2: Regression Analysis of the Predictive Power of Previous Examination Scores on Secondary School Students' Tendency to Cheat in Chemistry Examination (n= 300).

Variable	N	R	r^2
Previous Examination Scores	300		
		-0.62	0.38
Tendency to Cheat in Chemistry Examination	300		

KEY: N= Number of respondents, R= correlation coefficient, r^2 = coefficient of determination.

The result of the study as presented in Table 2 shows the predictive power of previous examination scores on students' tendency to cheat in chemistry examination. A correlation coefficient r of -0.62 associated with coefficient of determination $r^2 = 0.38$ were obtained from the correlation. This result indicates that there was a negative moderate relationship between previous exam scores and students' tendency to cheat in examination. Furthermore, the coefficient of determination of 0.38 implies that the students' tendency to cheat in examinations was contributed by 38% of their previous exam scores. Therefore other variables not covered by this study predict 62% of changes in students' tendency to cheat in chemistry examination.

Hypothesis Testing:

$H0_1$: There is no significant correlation between previous examination scores and secondary school students' tendency to cheat in Chemistry examinations.

Table 4: Model Summary of the Relationship between Previous Examination Scores and Secondary School Students' Tendency to Cheat in Chemistry Examinations.

Parameter	R	R^2	Adjusted R^2	F-Statistic	P-value
Value	-0.62	0.39	0.38	48.51	<0.001

R= correlation coefficient, R^2 =coefficient of determination.

Table 4 highlights the model summary of the relationship between previous examination scores and secondary school students' tendency to cheat in chemistry examinations; based on the observations in Table 4 above, the result suggests that there is significant negative correlation between Previous Chemistry Examination scores and cheating frequency. The model explained 38% of variability in cheating behaviour ($R^2 = 0.38$).This indicates that students with higher previous examination scores tend to have lower tendency to cheat in examination. Also, (p-value < 0.001, α: 0.05) therefore the null hypothesis $H0_1$ is rejected because there is a statistically significant negative correlation between previous examination scores and secondary school student's tendency to cheat in chemistry examinations.

H02: The predictive power of previous exam scores on tendency to cheat in chemistry is not significant.

Table 5: ANOVA Result of the Predictive Power of Previous Examination Scores on Secondary School Students' Tendency to Cheat in Chemistry Examination.

Model	Sum of Squares	Df	Mean Square	F	Sig.	Decision
Regression	120.15	3	40.05	38.14	<0.001	Significant
Residual	313.85	296	1.06			
Total	434.00	299				

Note: SS= Sum of Squares, df = Degree of Freedom, MS = Mean of Square. (0.001< 0.05).

Table 5 shows the predictive power of previous examination scores on secondary school students' tendency to cheat in chemistry examination; based on the observations in Table 5, the result suggests that previous examination scores have significant predictive power on secondary school students' tendency to cheat in chemistry. The F-ratio (38.14) is significant at $p < 0.001$, which is less than the chosen alpha level of significance ($\alpha = 0.05$). Therefore, we reject the null hypothesis (HO_1) and conclude that previous examination scores significantly predicts secondary school students' tendency to cheat in examination.

Discussion:

The findings of this study provide valuable insights into the relationship between previous examination scores and secondary school students' tendency to cheat in Chemistry examinations. The significant negative correlation between Chemistry scores and cheating frequency suggests that students who struggle academically are more likely to engage in cheating behavior. This study's results support previous research whose findings indicate that academic difficulties contribute to cheating such research as the works of Shu et al., (2022) which explained that students with lower academic performance are more likely to engage in cheating behaviour. This result also agrees with that of Giluk et al., (2020) maintained that poor grades and pressure to perform are significant predictors of cheating behavior. This means that students who struggle with Chemistry concepts may feel overwhelmed, leading to desperation and a willingness to cheat.

The study also revealed that an increase in the students' previous examination scores lead to a decrease in their tendency to cheat in examinations. This result supports the self-determination theory by Deci & Ryan (2020) which suggests that students' motivation and behaviour are influenced by autonomy, competence, and relatedness; students who performed very well in their previous examinations tend to have self-confidence in their abilities to perform well in future examination thereby reducing their tendency to cheat in

future examination. The result is also in line with that of Boud and Falchikov (2017) which showed that clear instructions, regular feedback, and authentic assessments also help students understand teacher's expectations and develop a sense of competence. This means that when educational institutions identify struggling students early and provide targeted support for them, they can improve in their examination scores, as seen in the works of Baria and Gomez (2022); and Steinmayr et al., (2019).

CONCLUSION

This study investigated previous examination scores as a predictor of secondary school students' tendency to cheat in Chemistry examinations in Lagos State, Nigeria. The findings revealed that previous examination scores have significant predictive power on secondary school students' tendency to cheat in chemistry. The study also showed that students who struggle academically in chemistry, as evidenced by their low previous examination scores, are more likely to engage in cheating behaviours, there by highlighting a significant negative correlation between previous examination scores of the students and their tendency to cheat in chemistry examinations.

Implications of the study:

The study's findings will have implications for educators, policy makers, school administrators, teachers and the students.

The findings of the study will have meaningful implications for educators such that by considering previous examination scores as predictors of cheating behaviour, educators can identify at-risk students and provide additional support and resources to help them succeed academically.

Educational institutions, policymakers, and stakeholders should work collaboratively to address academic struggles and promote academic integrity. By implementing targeted interventions, we can reduce cheating and foster a culture of honesty, ultimately enhancing the quality of education.

Ultimately, by understanding the negative relationship between past exam scores, and cheating tendencies, school administrators can effectively intervene to prevent academic dishonesty and promote a culture of honesty and integrity in schools and by doing so, they will be able to uphold ethical standards and prevent cheating among secondary school students.

More so, the study's findings have important implications for teaching and learning practices, in that teachers will adopt the use of a variety of continuous assessment to reduce the emphasis on high-stakes testing or one –shot examinations thereby improving the students' scores.

These findings underscore the importance of promoting academic honesty in educational settings by discovering and implementing strategies to reduce poor performance. Hence, by giving support to students struggling with academic performance, the students can create a more positive mindset and supportive testing attitude that fosters integrity and ethical behaviour among students.

Recommendations:

Based on the study's findings, the following recommendations are made:

1. Educational institutions should provide additional academic support, such as tutoring and mentoring, to students who struggle with their academics.

2. Educators should prioritize creating a supportive learning environment that encourages honesty and integrity among the students.

3. Teachers should use a variety of continuous assessment method to improve students' scores and reduce the emphasis on high-stakes testing or one –shot examinations.

Suggestions for Further Studies:

1. The present study could be re-done in another area using a larger population, other subject areas and wider scope.

2. Design an intervention study to evaluate the effectiveness of test anxiety interventions and academic support programs in reducing cheating

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