Elimination of Distractions as Predictor of Senior Secondary Students' Achievement in Physics in Taraba State Nigeria

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DOI: https://doi.org/10.47772/IJRISS.2026.1026EDU0109

Received: 16 February 2026; Accepted: 21 February 2026; Published: 03 March 2026

ABSTRACT

This study investigated elimination of distractions as predictor of senior secondary students' achievement in physics in Taraba State, Nigeria. The study was necessary due to concerns from researchers and other education stakeholders on poor achievement in Physics. Elimination of distractions has been identified as one of the factors responsible for students' poor achievement. Two research questions were raised and one hypothesis was formulated to guide the study. The study adopted the predictive correlational research design. The population of the study was 8691 SS3 students in Taraba state. The sample was 390 drawn using simple random sampling. The Elimination of Distraction Questionnaire (EDQ) and Physics Proforma (PP) were used for data collection. Cronbach Alpha statistic was used to obtain a reliability coefficient of 0.76 through pilot testing. The data collected were analyzed using mean and standard deviation to answer research questions one and two while linear regression was used to test the hypothesis at 0.05 level of significance. The results of the study indicated that the extent of elimination of distraction was moderate with grand mean 3.20 while the mean score (achievement) of the students was 54. Also, it was found that elimination of distraction significantly predicted academic achievement with adjusted R-square value of 0.65 with p=0.000. Based on the finding, it was concluded that elimination of distraction significantly predicts achievement of senior secondary III students in secondary schools. The study recommended among others that the state government and other education stakeholders should organize workshops, say once in a year for secondary school students in order to explain the tenets of elimination of study distractions so that students' academic achievement and other goals of education can be affected positively.

Keywords: Distractions, Predictor, Achievement, Physics

INTRODUCTION

Physics education involves the sharing of educational content as it relates the interaction between matter and energy. Physics education is important for the development of any nation because it occupies integral parts of science and technology (Aina 2013). In Nigeria, Physics education hovers around impartation of physics concepts, physics teaching methods, addressing learners learning challenges and physics practical works such as construction of electronic equipments. Fabby and Koenig (2013) stated that physics studies the essence of natural phenomena and helps people understand the changing society in terms of technological advancement. This implies that a good number of professions and industries require some basic knowledge and skill from physics education for problem solving. As laudable as the benefits of physics are to national development, Okoronka and Wada (2013) indicated that achieving them seem difficult due to low academic achievement of students in schools and national examination.

Academic achievement can be seen as the determinant factor in terms of class promotion or summative evaluation for next level education. Ajai, Shaki and Bulus (2020) stated that students with high scores in physics at secondary level are few in Taraba state. Similarly, Kyado, Achor and Gbadamosi (2021) revealed that poor academic achievement in physics is not peculiar to just Taraba state but also, in other states of the federation.

This implies that academic achievement of physics students at secondary level is appalling and this state calls for concern. This appalling status is capable of hindering the harnessing of the dividends accrued to the physics subject. Some factors have been identified as reasons for poor academic achievement in physics which includes teaching methods, school climate and student related factors such as elimination of distractions during studies (Aina, 2013; Egbujuo & Ajagun, 2019).

Distraction can be defined as the diversion of attention by an individual or group of individuals from a desired focus (Agingu, Owaa & Raburu, 2022). The desired focus of learners is to attain their academic goals and hence the need to eliminate all distractions that can hamper the goals. Elimination of distractions therefore refers to total avoidance or barest minimization of distractions such as music playing, internet surfing of social media, attention seeking for house chores other than studying. Ophir, Nass and Wagner (2009) and Kim and Lee (2020) stated that academic distractions refer to any stimuli or activities that interrupt a student's flow of attention which hinders his/her ability to engage in deep learning, critical thinking and problem solving. These stimuli or activities compete for learners' attention which includes social media, emails, text and environmental interactions. When learners find it difficult to concentrate on their learning tasks, they express decreased attention span which results in lower academic performance.

Bocar and Allen (2019) and Agingu, Owaa, and Raburu (2022) determined the foremost factors that distract students which include peer pressure, health, study environment and other family responsibilities. They revealed that these factors distract the achievement of academic goals and interferes with academic achievement. Similarly, Pierce and Vaca (2009), Patil, Brown, Ibrahim, Myers, Brown and Khan (2019) examined digital distraction outside the classroom and reported that digital distractions significantly and negatively correlated with assignment score and thus, digital distraction corresponded with lower scores for assignments. Investigating the relationship between multitasking, distractions and academic performance by Alzahrani, Alshaye and Baabdullah (2019) revealed that students who multitasked and were frequently distracted had lower academic performance than those who did not. On the contrary, Alkhalaf, Tekian and Park (2018), Balalle (2019) found that distraction from social media could assist to uplift learners' knowledge since some time spent as distractions have some education purposes unintentionally.

Elimination of distractions is adopted as the reason for poor academic achievement in physics in the study because this era seemed to be laced with additional learning distractions such as music players, mobile phones and social media spaces aside the accustomed human distractions such as running errands for parents, doing house chores and siblings demand for attention. Also, elimination of distractions during studies has received little attention in literature. Particularly, there is little causal evidence on how study distractions affect students' academic achievement.

Objective

The objective of this study is to investigate elimination of distractions as predictor of academic achievement of secondary III students' academic achievement in physics in Taraba state.

Research Questions

Two research questions were raised thus:

What is the extent of elimination of distraction among secondary III students in physics in Taraba state?

What is the mean score (mean academic achievement) of secondary III students in physics in Taraba state?

Hypothesis

The following null hypothesis was formulated and tested at 0.05 level of significance:

HO_1: Elimination of distractions does not significantly predict achievement of the students in physics in Taraba state

METHODOLOGY

The study adopted the predictive correlational research design. The population of the study is 8691 secondary III students that offer physics in government owned secondary schools within the 16 local government areas of Taraba state, Nigeria. The sample size was 390 obtained from Taro Yamane's sample size calculation formula. Simple random sampling technique was used. The instruments for data collection were the Elimination of Distraction Questionnaire (EDQ) and Physics Proforma (PP). The EDQ was adapted from Sabbah (2016) and Olutola, Olatoye and Olatoye (2016). The EDQ had 9 positively worded statements which were measured using a five point Likert-type Scale wherein one was the lowest and five was the highest. The five Likert-type scale response options were Very High Extent (VHE) = 5 points, High Extent (HE) = 4 points, Moderate Extent (ME) = 3 points, Low Extent (LE) = 2 points and Very Low Extent (VLE) = 1 point. The PP was prepared by the researcher and given to the physics teachers to fill on behalf of the physics students. It was used to collect already existing scores from the students via their physics teachers' record books for the immediate past academic session i.e. SS 2. Each PP gave average score of first term, second term and third term school based physics result of the previous year. The conversion of these raw scores to Z- scores made the scores standardized and used as physics achievement for this study. Average scores were used rather than just single term scores in order to minimize bias since the examination questions were set by different teachers and it covered different topics with different levels of difficulty at a time. Conversion of the average scores to standard scores (Z scores) enabled the researcher tell how many standard deviations from the mean each value lies and to compare the different data sets. The EDQ and PP were validated by two experts in Modibbo Adama University Yola and one expert from Taraba State University, Jalingo. The EDQ was pilot tested on 92 secondary III students that were not part of the sample. Cronbach alpha statistic at 0.05% level of confidence was used to obtain the reliability coefficient of 0.78. Mean and standard deviation were used to answer the research questions while linear regression was used to test the hypothesis.

RESULTS

Research Question 1: What is the extent of elimination of distraction among secondary III students in physics in Taraba state?

Table 1: Mean and Standard Deviation of Elimination of Distraction Extent Scores of the Students in Physics in Taraba State

S/N	Items n=390	Mean	S. D	Remark
1	I avoid being distracted by noise from radio when it is time to study	3.38	1.21	ME
2	I avoid studying in a place where there is visual distraction as television	3.43	1.21	ME
3	During personal studies, I prefer to stick to one physics topic rather than to change about and do two or three other topics.	3.24	1.14	ME
4	During personal studies, I avoid being distracted by chats on Facebook	3.22	1.27	ME
5	During personal studies, I avoid being distracted by chats on WhatsApp	3.28	1.31	ME
6	During personal studies, I avoid being distracted by text messages/SMS on my phone	3.17	1.32	ME
7	I avoid being distracted by visitors during my study periods	3.06	1.24	ME
8	I avoid being distracted by siblings/family members during my study periods	2.91	1.24	ME

9	I avoid being carried away by thoughts about house chores while studying	3.09	1.24	ME
	Grand Mean	3.20	1.24	ME

Key: n= Number of participants, ME =Moderate Extent

The result of analysis presented in table 1 shows that all items have a mean score that is within the true limit 2.50-3.49 (Moderate Extent). The grand mean of 3.20 and standard deviation of 1.24 implies that the extent of elimination of distraction among physics-offering students in secondary schools in Taraba state is moderate.

Research Question 2: What is the mean score (mean academic achievement) of secondary III students in physics in Taraba state?

Table 2: Mean and Standard Deviation of Achievement Scores of the Students in Physics in Taraba State

Items n=390	Mean	S. D.	Remark
Average Score	54.01	14.75	Credit Pass

Table 2 reveals that the mean score of achievement of the students in physics in Taraba state is 54.01 and standard deviation is 14.75. This implies that the mean achievement of physics offering students in secondary schools in Taraba state is a credit which is within the range 50-54 (Credit C6), slightly above the range 45-49 (Pass D7).

Hypothesis (HO_1): Elimination of distractions does not significantly predict achievement of the students in physics in Taraba state

Table 3a: Summary of ANOVA of Linear Regression for Elimination of Distraction and the Students Achievement in Physics

Model		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	251.251	1	251.251	707.702	.000[b]
	Residual	137.749	388	.355		
	Total	389.000	389			

a. Dependent Variable: Zscore: Average Score

b. Predictors: (Constant), eliminationOfDistraction

The results of linear regression in Table 3a indicate that F(df 1, 388)= 707.702, $p<0.05$. Since the computed p-value (0.00) is less than 0.05 level of significance, the null hypothesis is rejected and concluded that, elimination of distraction makes significant prediction on academic achievement of physics-offering students in secondary schools in Taraba state.

Table 3b: Model summary of Linear Regression for Elimination of Distraction and the Students' Achievement in Physics

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate
1	.804[a]	.646	.645	.595

a. Predictors: (Constant), eliminationOfDistraction

Table 3b shows that there that there exist a positively high relationship between elimination of distraction and academic achievement of physics-offering students as shown by R=0.804 and the adjusted R-square value (.645) indicates that, 64.5% of academic achievement in this study was accounted by elimination of distraction among physics-offering students in secondary schools in Taraba state.

Table 3c: Beta Coefficients of Linear Regression for Elimination of Distraction and the Students' Achievement in Physics

Model		Unstandardized Coefficients		Standardized Coefficients	T	Sig.
		B	Std. Error	Beta		
1	(Constant)	-2.879	.112		-25.625	.000
	Elimination of Distraction	.900	.034	.804	26.603	.000

a. Dependent Variable: Zscore: Average Score

Table 3c shows the Beta coefficient of regression analysis which reveals a significant beta coefficient of 0.804, $p<0.05$. This indicates that elimination of distraction is positively associated to academic achievement and it significantly contributes to academic achievement.

DISCUSSION OF FINDINGS

This study found that the extent of elimination of distraction is moderate. It also found that elimination of distraction significantly predicted academic achievement of physics students in secondary schools in Taraba state. This finding agrees with that of Pierce and Vaca (2009) who found that distractions from teens' engagement with communication technologies during study moments significantly affected the learners as revealed by lower grades than those who faced their studies alone. Those who reported having lower grades were those that gave some attention to friends, chats and other activities (such as parental errands) during their study periods. Similarly, Patil et al (2019), Bocar and Allen (2019), Agingu, Owaa, and Raburu (2022) reported that elimination of distractions significantly affected the academic achievement of students. However, this finding disagrees with that of Alkhalaf, Tekian and Park (2018), Balalle (2019) and Patil et al (2019) who found that distractions (especially digital distractions) improved academic achievement of students. From the finding of this study, it is revealed that elimination of activities regarded as distractions can boost academic achievement. Hence, it is essential that students should continually avoid or reduce to the barest minimum learning distractions because it can affect their school work and attainment of other school objectives. Either distraction from accustom human beings or from gadgets such as phones and players or engagement in chores need to be controlled so that it does not become addictions that can ruin a learner's academic success.

CONCLUSION

Based on the finding of the study, elimination of distraction significantly predicts academic achievement of secondary III students in physics. The contribution to the body of knowledge is that elimination of distractions as a predictor of academic achievement in physics can enhance students' performance positively in the subject.

RECOMMENDATION

There is need for parents, teachers and guardians to get enlightened about how to assist students attain higher academic achievement scores by allocating set times for house chores, visitation, games and social media exposure; this can help to trim distractions during study periods.

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