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Learners' Study Habits and Academic Performance in Mathematics: A case study of Selected Public Secondary Schools in Ogun State, Nigeria

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Abstract

Mathematics is a major requirement for entrance into higher institutions, yet learners fail the subject and are unable to further their education. This study therefore examined the influence of learners' study habits on the mathematics performance of public secondary school students in Ogun State, Nigeria. Three research hypotheses were used to generate data from 205 Senior Secondary School Students II (SS2) drawn through stratified random sampling.Secondary School Academic Performance Inventory (SSAP) and Study Habit Inventory (SHI were the two instruments used to collect information from respondents. A descriptive survey design was used to seek descriptive information from the learners. The data analysis method used was Pearson Correlation Co-efficient. Findings revealed that low, medium and high study habits levels of students have significant influence on their academic performance and that although there is a direct relationship between learners who have low and high study habits and their academic performances in mathematics, a negative relationship existed between students with medium study habit and their academic performances. Based on these findings, it was recommended among others that the Nigerian Educational Research and Development Council (NERDC) should include study habit techniques in the secondary school curriculum so that students particularly with low study habit can be well equipped with knowledge of study habit techniques; Measurement and assessment of students' level of study habits for early detection and quick intervention should also be done as soon as students gain admission into the secondary school. Counsellors should also alert sensitise students on how to enhance effective study habits which could improve their academic performance in mathematics. Implications for teachers, counselors, policymaker, and curriculum planners emphasize the need to recognise the importance of emotional development of students and not only their cognitive development.

***Keywords**: Academic Performance, High Study Habit, Low Study Habit, Moderate Study Habit and Study Habit.*

INTRODUCTION

Globally, mathematics has been recognized as a compulsory subject and a basic requirement for admission into higher institutions of learning. This was why Aliyu, Idris, Gurkuma, Saidu and Anako (2023) submitted that since mathematics is found in most school curriculum, it can be described as the mother of all school subjects. Similarly, Adeneye and Abisola (2020), while highlighting the importance of mathematics pointed out that the problem solving, analytical, functional and aesthetic skills of students are facilitated through mathematical learning tasks. However, although educational stakeholders recognize the importance of mathematics, poor performance of students in the subject still persists. For instance, in the Secondary School certificate Examination result reported by Oguguo & Uboh, (2020), only 35.15%, 35.9%, 25.7%, 35.99% and 35.10% of students in Nigeria had a credit pass in mathematics between 2016 and 2020 respectively. Suan, Bamigbala and Ojetunde (2022) describe academic performance as how well **short** and long-term educational objectives are achieved by students, teachers, and other educational stakeholders. Consequently, as described by Saeid, Tajularipin, Mohd, Fariba, Mohd, Zhooriyonti and Zhooriyonti (2022), mathematics is often used as a tool to investigate students' academic achievement during examinations or tests.

Scholars and educational stakeholders across the globe have ascribed the poor performance of students in mathematics to factors such as attitude of learners towards mathematics (Chand, Chaudhary, Prassad & Chand, 2021); shortage of qualified teachers (Avong, 2013) and intellectual ability, (Mihahela, 2015). However, study habits which are the planned activities of learners to enhance their learning processes have been seen by Oyasola

and Adegoke (2023) as major contributors of students' academic performance. Jafari, Aghaei and Khatony (2019) also emphasized that good study habits leads to good grades and good grades makes it easy for students to be admitted into higher institutions which in turn makes students to have successful career.

However, although many investigations have been done on students' study habits, there have been conflicting results. For instance, the studies of Singh (2010), Aisha, Ajora and Niaz (2002), Anwane (2013), Jafari, Aghaei and Khatony (2019), Sarovar (2020) and Oyasola and Adegoke (2023), showed significant relationships between study habit and academic performance, research carried out by Menchak and Ndamnsah (2020) showed no significant relationships.

Thus, looking at research evidences on the contribution of students' study habit to their academic performance and the fact that some research findings did not find a significant relationship between these two variables, an investigation into the relationship between these two variables is worth studying. Also, few studies have been done on the various categories of students' study habit (low, medium and high) and their impacts on students' academic performance. In addition, very few studies have been carried out on study habit and mathematics performance when compared with other subjects such as English, Geography, Physics and the likes. Meanwhile, mathematics is a compulsory subject in most countries of the world. In addition, investigating various levels of students' study habit (low, moderate and high) as done in this study is important as it is believed that everyone have different levels of study habit. This is why this study investigates the relationship between study habit and academic performance of secondary school students in mathematics in Ogun State, Nigeria.

Hypotheses

1) Students' low study habit levels do not significantly correlate with academic performance in mathematics.
2) Medium study habit level of students does not significantly influence their academic performance in mathematics.
3) Students' high study habit levels do not significantly correlate with academic performance in mathematics

Study habit and Academic Performance

The study of Singh (1984) investigated the study habits of high, middle and low achieving adolescents and found a significant correlation between study habit and academic achievement as high achieving adolescents had significantly higher study habits than their counterparts who were low achievers. Middle achievers had significantly better study habits than low achievers. A research on students' study habit and their performance in physics was carried out by Vijayalakshmi (2006) and findings also showed a significant relationship. On Geography as a subject, Nandita and Tanime (2007) conducted a study-on-study habits and students' attitude towards mathematics and found positive and significant relationship. Similarly, the study of Bashir (2012) on adolescents' study habits and academic performance and that of Anwar (2013) also showed similar significant relationship between the two variables under consideration.

Also, research findings of Charles-Ogan and Alamina (2014)'s study which examined various categories of study habit and academic performance in mathematics of SS II students in Port Harcourt Local Government Area found that students (irrespective of their gender) had high academic performance when they had high level of concentration and devoted more time to problem solving. However, the study of Alade and Kuku (2017) which investigated the impact of frequency of testing on study habits and achievement in mathematics among public secondary school students in Ogun State, Nigeria did not find significant differences in students' study habits and their achievement in mathematics.

Similarly, the study of Jafari, Aghaei and Khatony (2019) which sought the influence of study habits on the academic achievement of medical science students in Kermanshah-Iran showed a positive and significant relationship between study habits and academic achievement. In the same vain, Sarovar (2020) found significant relationship between study habit and students' academic performance. Meanwhile, studies like those of Menchak and Ndamnish (2020), Evans and Julius (2015), Roya and Murthy (2016), Arul (2014) found negative significant relationships between these two variables under investigation. These differences in literature are among the reasons for this present study.

METHODOLOGY

Research Design

The design used in this study was a descriptive survey design. This design is suitable as the participants used for the study offered information that was descriptive enough to analyse data for the study.

Sample and Sampling Technique

Random sampling method was used in picking the two secondary schools in two Local Government Areas of Ogun State. In these two schools, out of the 300 students that were picked through stratified random sampling, only 205 who filled the questionnaire properly and rated low, moderate and high on the Study Habit Inventory of Bakare (1977) were eventually used for the study.

Ethical Statement

Ethical approval was collected from the Faculty of Education Post Graduate Coordinator of Olabisi Onabanjo University, Ogun State Nigeria as well as the Ado- Odo Ota Zonal Education Officer of the Teaching Service Commission, Ogun State, Nigeria. Participants were informed about the reason for the study and the fact that participation in the study can only be by their willingness to do so.

Research Instrument

The two research instruments used to collect data for the study were the Secondary School Academic Performance Inventory (SSAP) and Study Habit Inventory (SHI).

Secondary School Academic Performance Inventory (SSAP).
The percentage grade students obtained in mathematics in the West African Senior Secondary School Certificate Examination was used to calculate the correlation between their study habit and academic performance. For the purpose of this study, students with A and B grade were rated 5, those with C scored 4, those with D were rated 3, students who had E were rated 2 while those with F were rated 1.

Study Habit Inventory.
Study Habit Inventory (SHI) of Bakare (1977) is a 45 items five-point scale self-report inventory with a reliability coefficient of 0.73. The response to each of the items comprised the following: 1 (*almost never*), 2 (*less than half of the time*), 3 (*more than half of the time*), and 4 (*almost always*). The researcher made use of this inventory because of it's psychometric characteristics as well as its ability to identify the strength and weaknesses of students' study practices.

Method of Data Analysis

The statistical analyses used in this study were Means, standard deviations and correlation coefficient. Correlation coefficient was used to determine the significant correlation between the students with low, moderate and high study habits and their level of mathematics anxiety at 0.05 level of significance.

RESULTS AND DISCUSSIONS

Hypotheses Testing

1) Hypothesis 1: Students' low study habit levels do not significantly correlate with academic performance in mathematics. .

Table 1. Descriptive Statistics of Low Study Habit and Students' Academic Performance in Mathematics

	N	Minimum	Maximum	Mean	Std. Deviation
Low Study Habit	68	35.5	74.1	52.262	9.7122
Academic performance in mathematics	68	0	9	7.65	2.736
Valid N (listwise)	68				

In table 1 above, the mean score of students with low study habit is 52.3 while the mean score of their academic performance in mathematics is 7.65. Also, while the standard deviation score of students with high study habit is 9.71, the standard deviation of mathematics anxiety is 2.73.

Table 2. Relationship between Low Study Habit and Mathematics Performance of Students

		Low Study Habit	Mathematics Score
Low Study Habit	Pearson Correlation	1	.050
	Sig. (2-tailed)		.681
	N	68	68
Academic performance in mathematics	Pearson Correlation	.05	1
	Sig. (2-tailed)	.681	
	N	68	68

Table 2 above shows a positive correlation co-efficient between study habit and mathematics performance of students with low study habit (r=0.05). Since the p value is set at 0.05, the correlation coefficient (r value) is statistically significant. The null hypothesis of no significant relationship between students with low study habit and their academic performance is therefore rejected.

The first hypothesis of no significant relationship between students with low study habit and their academic performance in mathematics was rejected as r value was statistically significant at 0.05 level of significance. Apart from this, the result also showed that low study habit was positively correlated with students' academic performance in mathematics. This means that as students with low study habit are being equipped on how to increase their level of study habit, their academic performances will likely increase. This has a good implication as it will go a long way to reduce dropout rates especially since the subject under consideration is mathematics which is a compulsory subject and major requirement admission into higher institutions in most countries of the world. The studies of Singh (1984), Denta (1983), Aisha et al (2002), Paira and Archana (2011), Anwane (2013),

Jafari, Aghaei and Khatony (2019), Sadry, Mustapha and Shafati (2019), Sarovar (2020) and Oyasola and Adegoke (2023) agreed with this study as they also found significant relationship and positive correlation between study habit and academic performance. The only difference between the present study and the studies mentioned above is that they focused on study habit and academic performance and not specifically students' study habit and academic performance in mathematics. Moreover, the different levels of low, moderate and high study habit were not considered like it was in this present study.

However, the study of Menchak and Ndamnsah (2020) did not concur with this present study as it found no significant relationship between study habit and academic performance in English language, likewise the finding of Fakeye and Amao (2013), Evans and Julius (2015), Roya and Murthy (2016), Arul (2014). Nevertheless, the study of Ranjana and Kumar (2012) and those of Riaz et al (2002) concurs with this study in spite of geographical location differences.

Hypothesis 2: Medium study habit level of students does not significantly influence their academic performance in mathematics.

Table 3. Descriptive Statistics of Moderate Study Habit and Students' Academic Performance in Mathematics

	N	Minimum	Maximum	Mean	Std. Deviation
Moderate Study Habit	99	.0	95.8	58.648	8.7908
Score Medium	99	0	9	7.72	2.445
Valid N (listwise)	99				

The mean score of students with moderate study habit is 58.6 in table 3 above, while the mean score of their academic performance in mathematics is 7.72. Also, while the standard deviation score of students with moderate study habit is 8.79, the standard deviation of mathematics anxiety is 2.45.

Table 4. Relationship between Moderate Study Habit and Mathematics Performance of Students

		Medium Study Habit	Score Medium
Medium Study Habit	Pearson Correlation	1	-.187
	Sig. (2-tailed)		.063
	N	99	99
Score Medium	Pearson Correlation	-.187	1
	Sig. (2-tailed)	.063	
	N	99	99

Table 4 above shows a statistical but negative correlation co-efficient between study habit and mathematics performance of students with moderate study habit (r=-0.187) at 0.05 level of significance. Thus, the null hypothesis of no significant relationship between students with moderate study habit and their academic performance is rejected.

The second hypothesis of no significant relationship between students with moderate study habit and their academic performances was not rejected as result showed a statistically significant but negative correlation. The implication of this finding is that students with medium level of study habit in mathematics must be assisted early to have high study habit as that moderate level cannot facilitate their academic performance in mathematics. However, in the literature, study habit differences in relation to mathematics anxiety have not been widely

established but few studies have found results that are consistent with this present finding. For instance, this finding agrees with that of Silverrajoo and Hassan (2018) who found significant but negative and weak relationship between the two variables (study habit and students' academic performance).

Hypothesis 3: Students' high study habit levels do not significantly correlate with academic performance in mathematics.

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Table 5. Descriptive Statistics of High Study Habit and Students' Academic Performance in Mathematics

	N	Minimum	Maximum	Mean	Std. Deviation
High Study Habit	38	64.4	82.5	70.168	4.5187
Score High	38	0	9	6.66	3.574
Valid N (listwise)	38				

In table 5 above, the mean score of students with high study habit is 70.16 while the mean score of their academic performance in mathematics is 6.66. Also, while the standard deviation score of students with high study habit is 4.51, the standard deviation of mathematics anxiety is 3.57.

Table 6. Relationship between High Study Habit and Mathematics Performance of Students

		High Study Habit	Score High
High Study Habit	Pearson Correlation	1	.210
	Sig. (2-tailed)		.206
	N	38	38
Score High	Pearson Correlation	.210	1
	Sig. (2-tailed)	.206	
	N	38	38

Table 6 above shows negligible positive correlation but statistically significant relationship between high study habit and academic performance in mathematics of students with high study habit (r=0.021). By implication, the null hypothesis of no significant relationship between students with high study habit and their level of academic performance in mathematics is rejected.

The third hypothesis of no significant relationship between students with high study habit and their academic performances revealed a significant but negligible relationship between high study habit and academic performance. This finding is in agreement with the study of Charles-Ogan and Alamina (2014) who found similar results. However, the study of Alade and Kuku (2017) did not concur with the result of this present study despite the fact that they were both conducted in the same state of the federation and for the same level of secondary school students. This may be attributed to the fact that students used in the previous study were exposed to varying test frequencies.

CONCLUSION AND RECOMMENDATIONS

This study's findings have proved that low, medium and high study habits correlate significantly with the academic performance of Ogun State secondary school students in mathematics. Furthermore, although, there was a slight relationship between students with high study habit categorization and their academic performance and negative correlation between those with medium study habit and their academic performance, report of the present

study also showed positive correlation between students with low study habit and their academic performance. This report is encouraging as it shows the possibility of increasing the study habits of students with low study habits if early detection and intervention is made. This could increase the proficiency of students as well as their competencies in mathematics. The result of the present study would also help sensitize parents, teachers, counselors, curriculum planners and policy makers on proactive steps that could be taken to help students develop high study habits. The present study therefore presumes that the academic performance of secondary school students is as a result of their study habits.

Thus, the following are recommended for students and educational stake holders:

1. The Nigerian Educational Research and Development Council (NERDC) should include study habit techniques in the secondary school curriculum so that students particularly with low study habit can be well equipped with knowledge of study habit techniques;
2. Students' level of study habits should be determined immediately they enter secondary school.
3. Group guidance should be organized in schools by professional counsellors in order to equip students with effective study habits.
4. A functional school library that could motivate students to use library resources to stimulate their study skills should be provided in all secondary schools.
5. Enough awareness should be created for parents to help their children create personal time table at home and also give them enough time to study.

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