

Study Habit, Attitude and Sex as Correlates and Influencers on Students' Academic Achievement in Mathematics in Delta Central Senatorial District

AKPOBOME, Rita Enamegwono and Prof. O. P. Ajaja

Science Education Department, Delta State University, Abraka

Abstract: *In Delta Central Senatorial District, the study looked at study habits, attitudes, and sex as correlates and influencers on students' academic achievement in mathematics. Correlational design was employed. 9,253 mathematics students made up the study's population. 285 SSII students took part in the study. Data gathering instruments included Study Habit Scale (SHS), Mathematics Attitude Scale (MAS), and students' third term Mathematics examination scores. Using Cronbach Alpha, the reliability of SHS and MAS was established. For SHS and MAS, the obtained r values were 0.72 and 0.74. The t -test and Pearson Product Moment Correlation were used to examine the data. The results showed that: there was no statistically significant difference in the mean achievement scores of male and female students, but there was a significant correlation between students' study habits, attitudes, and mathematics achievement. The findings revealed that students' study habits and attitudes, rather than their sex, affected their mathematics achievement levels. Consequently, it was advised that school administrators arrange an orientation for students on how to create proper study habits and attitudes toward mathematics.*

Keywords: Study Habit, Attitude, Sex, Academic Achievement

Introduction

The ability of humanity to live comfortably on our planet has historically been greatly influenced by mathematics as a tool for comprehending science. Most people agree that mathematics is the language of science, technology, and other fields like art and culture, and that it is vital to the development of both the country and of humanity. Mathematics is the cornerstone of a student's ability to grow and increase their capacity for reasoning and thinking. The mathematical foundation should be taught in elementary schools to improve mental acuity, creativity, and innovativeness (Oyededeji, 2016). The significance of mathematics in human endeavours cannot be overstated. Mathematics is significant for four reasons: it is crucial for life skills, economic progress, and a source of mathematical education (Anibueze, 2015). Mathematics is one of the core and required courses at the secondary level of school because of its importance and use in daily activities as well as its role as a springboard for future careers in a range of areas. Mathematics is widely acknowledged as a subject that must be taught at all levels of school in both developed and developing countries. Since mathematics has a profound effect on intelligence, learning it encourages precise and accurate habits that keep a guy from being sloppy or negligent. It improves a man's mental sharpness and develops his cognitive abilities.

Despite the importance of mathematics in Nigeria, pupils consistently perform poorly in external examinations in this subject. This pattern of underwhelming student performance in the West African Senior Secondary Certificate Examination (WASSCE) was confirmed by the Chief Examiner's report for 2015–2019 in mathematics. Only 616, 370 candidates (38.68 percent) obtained credit in Mathematics out of 1,593,511 candidates that sat for the examination in 2015. In 2016, 878,040 candidates received credit in Mathematics, accounting for 52.97 percent of 1,657,618 candidates that sat for the examination. In 2017, 923,486 candidates obtained credit in Mathematics, accounting for 59.22% of 1,559,416 candidates that sat for the examination. When compared to 2017, students' Mathematics performance in 2018 was down roughly 10%. In 2018, out of 1,572,396 students who took the examination, 785,883 (49.98 percent) candidates had credit in Mathematics. Out of the 1,590,173 candidates that took the examination, 1,020,519 (64.18 percent) obtained credit in Mathematics (Dayo, 2019).

The poor performance of students may be attributed to various factors which can be broadly categorized in to schools', teachers' and students' factors. This study however focused on students' factors since tremendous efforts has been made by the Delta State Government in area of school renovation, provision of educational resources, employment of qualified teachers among others. Students' factors that affect learning in this study are the intra or within individual factors like intelligence, motivation, interests, learning styles, study habits, attitudes, sex among others which predispose students towards learning. The study focused on students' study habits, attitudes, sex and how they affect their achievement in Mathematics.

Siahi and Maiyo (2015) described a study habit as a structured and intentional pattern of studying that has resulted in a degree of consistency on the part of students in terms of understanding academic subjects and passing exams. Consistency in reading, writing, resource management, and learning is a result of the students' study habit. Study habits refer to a student's level of regular study behaviour that is characterised by effective study routines (such as material reviews) and takes place in a supportive environment. Good study habits lead to the capacity for independent work. Musa and Garba (2019) viewed student's study habits as the ways in which they arrange their private readings after class in order to become experts in the field. Good study habits, according to the authors, benefit students since they enable them to become authorities in their subjects of study and achieve great performance,

whereas bad habits act as barriers to learning and failure. In this study, student's study habits are simply their method of study, whether it is systematic, effective, or ineffective. Studies show that good study habits positively correlate with achievement (Hayede, Seyede, Shadman, Minoo & Ehsan, 2017; Tranhen, Jalil, Mohammadali & Kamran, 2015).

The secret is to learn how to study more efficiently rather than laboriously. This holds true the more a student advances in their academic career. Even though some students can get by in school without putting in much work, the vast majority of students succeed by developing and employing effective study habits. Successful students schedule their study time specifically for each day of the week and then stick to that schedule. Students that study erratically and randomly frequently outperform those who follow a set study schedule. Again, successful students use study group effectively. When students work in groups, they can complete activities more quickly, get help from other students when they are having problems grasping a concept, and even teach others, which helps both the tutee and the tutor internalise the subject matter. Successful students also review what they learnt during the week on the weekends. As a result, they will be prepared to continue learning new concepts that build on their earlier academic work and skills from the previous week. According to the researcher, developing good study habits can help students learn more efficiently and change their attitudes toward learning.

Attitude refers to person's tendency to react favourably or unfavourably to a specific thing. Students' attitude, according to Ozsoy and Memis (2009), is the learners' propensity toward likes and dislikes in a given field. The term "attitude toward mathematics" refers to a person's interest in or feelings about the subject. As a result, attitude toward mathematics refers to one's feelings about learning Mathematics, whether they are negative or positive. Student attitudes have the power to either help or hinder learning. One of the most important aspects influencing students' academic success is their attitude. However, because such impacts are often inferred, its impact on achievement may be underappreciated. Academic achievement is recognized to be linked to one's attitude toward a subject, whether positive or negative. Negative attitudes can cause students to develop a dread of the subject, which can lead to decreased attention, attendance, loss of interest and study of the subject (Kingir & Aydemir, 2012). When students describe a subject as challenging, their motivation to learn the subject or course is reduced. Students' negative attitudes regarding the subject may grow and shape as a result of their classroom experiences and information about course requirements. Negative attitudes discourage, restrict, and even hinder learning, positive growth, and progress. Students with acquire a positive attitude, on the other hand, are better equipped to nurture and improve their academic performance (Tytler, 2014).

It is crucial to remember that learners' beliefs and views about the subject matter, such as whether they enjoy it or not and if they find it valuable, can have a significant impact on their learning outcomes. Since attitude might be implicit, it has not received adequate attention from all parties involved in education. Attitude is a significant aspect determining learning processes. Attitudes, which are viewed as more or less positive and consist of emotions, beliefs, values and behaviour, have an impact on a person's way of thinking, acting and behaving. This has significant consequences for teaching and learning (Mensah, Okyere & Kuranchie, 2013). Attitude have significant impact on behaviour, which aids in understanding and predicting how people would act in a variety of situations. Although not physically visible, attitudes can be inferred from observed behaviours and responses that show and feelings. They are triggered by specific stimuli, which cause them to gradually become a habit. When faced with activities, a person's behaviour and decisions are more influenced by his or her beliefs and past experiences than by their familiarity with certain tasks.

Numerous studies have shown that the factors that affect students' success in mathematics include their attitude because this affects their aptitude, willingness to learn, decision-making, and reaction to difficulties. Without it, one can hardly perform because it defines the amount of involvement, interest, and personal effort (Can & Boz, 2012; Kingir & Aydemir, 2012). Negative attitudes lead to a tendency toward dread, anxiety, and stress, which leads people to engage in other counterproductive behaviours and ultimately prevents them from enjoying the depth of mathematics and the range of techniques available for enhancing one's understanding of the subject. As a result, the student displays low motivation, a decline in engagement, boredom, and behavioural issues such as avoiding class or lessons. This is actually obvious when the instructor gives a wonderful lesson, but the student comes across as distant and aloof.

It should be mentioned that many intelligent students who do not perform to the most of their ability also struggle to study or succeed in mathematics. On the other hand, students who develop positive attitudes toward the subject get involved in the information and are inspired to succeed in the subject because they respect, appreciate, and are interested in it. Consequently, cultivating a positive attitude might lead to not only learning Mathematics but becoming superior at it, regardless of past performance and students' sex.

Umoh (2003) described sex as a psychological word used to describe behaviours and characteristics that people are anticipated to possess based on whether they were born as male or female. Sex is the biologically established traits that make a person male or female, such as having a penis for men and a vagina for women. The author said that although women are scared, timid, mild, dull, submissive, and verbose, men are bold, aggressive, tactful, and economical with their words. In addition, men typically do the more challenging tasks because women are seen as feminine in a natural environment. As a result, at school, men are more likely to enrol in challenging courses like mathematics, while women choose careers that won't interfere with their prospects of getting married, fulfilling their marriage-related obligations, or becoming mothers. The issue of sex differentiation is a serious issue in Nigeria culture. In Nigeria, it is believed that Mathematics is a masculine subject and therefore should be dominated by male students. But a survey of the literature indicated that there is conflicting evidence on whether male students outperform their female counterparts in mathematics. The study, thus, sought to determine if sex predicts students' academic achievement in Mathematics.

In light of this, the study examined study habit, attitude, and sex as correlates and influencers of students' academic achievement in mathematics.

Statement of the Problem

Outcome of the analysis of the WASSCE Chief Examiner's Report (2015-2019), mathematics students typically performed poorly. Despite government efforts to raise students' achievement in science in general and mathematics in particular through school renovation, the provision of instructional materials, the hiring of qualified teachers, and regular and prompt payment of teachers, among other measures, the performance of students in mathematics continues to be poor. According to the researcher, students' poor mathematics performance may be related to their study habits, attitudes, and sexual orientation. If students develop solid study habits and a favourable attitude toward mathematics, they will perform better in mathematics classes. The study's problem: What influences do study habits and attitudes have on students' academic success in mathematics?

Purpose of the Study

The study examined the influences study habit, attitude and sex have on students' academic achievement in Mathematics and also if the variables are correlates of mathematics achievement. The specific purpose include to:

1. determine the connection between study habits and mathematical achievement of students;
2. determine the connection between students' attitudes and mathematical achievement;
3. Examine the disparity in mean mathematics achievement scores between male and female students.

Hypotheses

The following hypotheses further guided the study:

1. There is no significant correlation between students' study habits and mathematics achievement.
2. There is no significant correlation between students' attitudes and mathematics achievement.
3. The mean achievement scores of male and female students in mathematics do not significantly differ.

Methodology

Correlational design was employed in carrying out the study. The population of the study comprised 9,253 Mathematics students in Delta Central Senatorial District. The sample of the study comprised 285 Senior School II (SSII) students from 8 Public Senior Schools in Delta Central Senatorial District. Study Habit Scale (SHS), Mathematics Attitude Scale (MAS) and Students' third term past results in Mathematics the 2021/2022 academic session were used for data collection. The SHS and MAS were validated by three experts. Reliability of the SHS and MAS were established using Cronbach Alpha. This was done by administering the SHS and MAS ones to 30 Mathematics students in a school outside the sampled schools. The responses of the students were scored and subjected to Cronbach Alpha analysis. The obtained r value for SHS and MAS were 0.72 and 0.74 respectively. SHS and MAS were administered on the sampled students who responded to the items in it. SHS and MAS were collected along with the student's past results in Mathematics in the 2021/2022 academic session and analyzed using t-test and Pearson Product Moment Correlation

Results

The results of the analysed data were presented in tables as follows:

- There is no significant correlation between students' study habits and mathematics achievement.

Table 1

Summary of Pearson Product Moment Correlation of Students' Study Habit and Mathematics Achievement Scores

Variables	N	Mean	SD	r-cal	Sig. (2-tailed)	Decision
Study Habit	285	59.14	7.99	0.223	0.041	Rejected
Achievement	285	64.63	7.18			

Table 1 demonstrates a substantial correlation ($r = 0.788$, $P(0.000) < 0.05$) between students' study habits and their mathematics achievement results. The null hypothesis is thus disproved. As a result, there is a strong link between students' study habits and their success in mathematics.

- There is no significant correlation between students' attitudes and mathematics achievement.

Table 2

Summary of Pearson Product Moment Correlation of Students' Attitude and Mathematics Achievement Scores

Variables	N	Mean	SD	r-cal	Sig. (2-tailed)	Decision
Attitude	285	60.63	8.59	0.511	0.000	Rejected
Achievement	285	64.63	7.18			

$r = 0.511$, $P(0.000) < 0.05$ in table 2 demonstrates a substantial correlation between students' attitudes and mathematics achievement results. The null hypothesis is thus disproved. As a result, there is a considerable link between students' attitudes and mathematics achievement.

- The mean achievement scores of male and female students in mathematics do not significantly differ.

t-test Comparison of Mathematics Mean Achievement Scores of Male and Female Students

Sex	N	Mean	SD	df	t-cal	Sig. (2-tailed)	Decision
Male	146	64.47	7.19	283	0.399	0.690	Not Rejected
Female	139	64.81	7.19				

Table 3 shows that there is no statistically significant difference between the mean achievement scores of male and female students, with $t = 0.399$, $P(0.690) > 0.05$. Consequently, the null hypothesis is not disproved. As a result, there is no apparent difference in the mean mathematics achievement levels of male and female students.

Discussion

The study found a strong positive correlation between students' study habits and mathematics achievement. This suggests that students' habit of studying influences their achievement in Mathematics. A probable explanation for this finding is that when students have good and excellent study habits in Mathematics, there is high tendency of great improvement in the students' performance in Mathematics. Students can acquire and keep up good scores in mathematics by developing strong study habits. Academic achievement will stay low, though, if students have poor and inconsistent study habits. Because of this, many students struggle in mathematics, not because they lack talent, but rather because they lack the proper study habits. This result is consistent with that of Onoshakpokaiye (2015), who discovered a strong correlation between students' academic achievement and their study habits. This implies that students' academic performance can only be improved when they adopt or cultivate good study habits.

The study then shown a substantial correlation between students' attitudes and mathematics achievement. This suggests that having a good attitude helps students learn. Students tend to spend longer time studying a certain subject when motivational variables like attitude are ingrained in them. Studies showed that students who put more time into their studies perform better and meet expectations (Twoli, Maundi, Kii & Kithinji, 2007). The research's findings corroborate those of Owino, Yungungu, Ahmed, and Ogolla (2015), who discovered a positive correlation between students' attitudes toward biology and their academic achievement. Secondary Certificate in Biology in Kenya.

The study's findings ultimately demonstrated that there is no discernible difference between male and female students' mean achievement levels in mathematics. In other words, mathematics performance between male and female students is fairly equal. This conclusion minimises the advantage that male students have over female students in mathematics and science in general. This result is consistent with that of Eze, Ezenwafor, and Obi (2015), who discovered that there is no significant correlation between sex and academic achievement among university students enrolled in vocational and technical education.

Conclusion

The study's results led to the following conclusions: Students' study habit influences their mathematics achievement scores. As a result, students with good study such as regular studying, note-review, study in group and planned study time perform better in Mathematics than their counterparts with bad study habits such as irregular studying, non-review of notes, non-involvement in study group and unplanned study time. The study also comes to the conclusion students' attitudes have a beneficial impact on their success in mathematics. Additionally, it was concluded that sex had no bearing on students' performance in mathematics.

Recommendations

The following were recommended:

1. Students should study regularly, organize study group, review notes after class and plan their study time.
2. School administrators should organize orientation for students on how to develop appropriate study habits and attitude towards Mathematics.
3. Teachers should properly present content materials to all students to learn well which will eventually enhance their attitude towards Mathematics.

References

- Anibueze, C. O. (2015). Improvisation of instructional materials for the functional teaching/learning of mathematics in Enugu North LGA in the 21st century. *IMT International Journal of the Arts and Sciences*, 1(1), 26-37.
- Can, H. B., & Boz, Y. (2012). A cross-age study on high school students' attitudes towards chemistry. *International Journal on New Trends in Education and Their Implications*, 3(3), 82-89.
- Dayo, A. (2019). Students' performance in 2019 West African Senior Secondary Certificate Examination (WASSCE). Retrieved 12/29/2021 from <https://www.vanguardngr.com/2019/07/waec-releases-2019-wassce-results-records-64-credit-pass-in-english-maths/>.

- Eze, T. I., Ezenwafor, J. I., & Obi, M. N. (2015). Effects of age and gender on academic achievement of vocational and technical education (VTE) students of a Nigerian university. *Journal of Emerging Trends in Educational Research and Policy Studies (JETERAPS)*, 6(1), 96-101.
- Hayede, R. L., Seyede, F. S. F., Shadman, R. M., Minoo, M. C., & Ehsan, K. N. L. (2017). The relationship between the study habits and the academic performance of medical science students. *Journal of Holistic Nursing and Midwifery*, 27(2), 65-73.
- Kingir, S., & Aydemir, N. (2012). An investigation of the relationships among 11th grade students' attitudes toward chemistry, metacognition and chemistry achievement. *Gazi University Journal of Education*, 32, 823–842.
- Mensah, J. K., Okyere, M., & Kuranchie, A. (2013). Student attitude towards mathematics and performance: Does the teacher attitude matter? *Journal of Education and Practice*, 4(3), 132– 139.
- Musa, D. C., & Garba, A. (2019). Attitude to mathematics, study habit and academic performance of selected secondary schools in Makurdi metropolis. *Journal of Advance Research in Mathematics and Statistics*, 6(7), 24-43.
- Onoshakpokaiye, E. O. (2015). Relationship of study habits with mathematics achievement. *Journal of Education and Practice*, 6(10), 168-170.
- Owino, O. A., Yungungu, A. M., Ahmed, O., & Ogolla, B. O. (2015). The relationship between students attitude towards biology and performance in Kenya certificate of secondary education biology in selected secondary schools in Nyakach, Kenya. *Research Journal of Educational Studies and Review*, 1(5), 111-117.
- Oyedeki, O. A. (2016). Perseverance, study habit and self-concept as predictors of students' performance in secondary school mathematics in Nigeria. *Journal of Leadership and Instruction*, 3(7), 131-139.
- Ozsoy, G., & Memis, A. T. (2009). Metacognition, study habits and attitudes. *International Electronic Journal of Elementary Education*, 2(1), 154-166.
- Siahi, E. A., & Maiyo, J. K. (2015). Study of the relationships between study habits and academic achievement of students: A case of Spicer Higher secondary school. *International Journal of Educational Administration and Policy Studies*, 7(7), 134-141.
- Tranhen, T., Jalil, K., Mohammadali, H., Kamran, S.A. (2015). Correlation of study habit with academic achievement among students attending the national medical science Olympiad. *Journal of Advances in Medical Education (JAMED)*, 1(1), 30-37.
- Twoli, N., Maundi, J., Muindi D., Kiiio, M. & Kithinji, C. (2007). *Instrumental methods in education: A course book for general teaching methods*. Nairobi: Kenya institute of education.
- Tytler, R. (2014). Attitudes, identity, and aspirations toward science. In N. G. Lederman and S. K. Abell (eds), *Handbook of Research in Science Education*, (pp 82-103). New York, NY: Routledge.
- Umoh, C. G. (2003). A theoretical analysis of the effect of gender and education on human resources development. *Journal of Curriculum Development, Organization of Nigeria*, 10(1), 1 – 4.