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Study Habits and Anxiety Levels: Their Effects on the Academic Performance of Students in Mathematics

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INTRODUCTION

The Problem and Its Background

Students' academic performance is a key indicator of their development, and addressing factors such as study habits and anxiety levels helps them sustain and achieve higher levels of success, particularly in mathematics. The study of Capuno et al. (2019) revealed that students with good study habits perform well in mathematics, while those with higher anxiety levels tend to perform poorly. Moreover, many high school students exhibit high anxiety alongside poor study habits and low academic performance in mathematics, making this one of the major challenges in mathematics education.

In Nigeria, a study conducted by Odiri (2015) on the relationship between study habits and mathematics achievement revealed that, based on data from 500 students across 25 public secondary schools, those with good study habits achieved better in mathematics, while those lacking them tended to perform poorly. Meanwhile, in Colombia, the study by Acevedo et al. (2020) involving 127 secondary students emphasized that mathematical anxiety and academic performance in mathematics are inversely related, meaning that higher anxiety corresponds to lower academic performance.

These challenges are also experienced in the Philippines, where Balbacal's (2023) study on Junior High School students in Batangas revealed that those who consistently review, actively engage with lessons, and practice regularly achieve higher academic success than those with poor or irregular study routines. Meanwhile, in the same city, Reyes and Castillo's (2015) study involving students who took the departmental examination in algebra and trigonometry found that test anxiety may affect students' mathematics performance, as they obtained poor performance ratings and moderately experienced test anxiety.

At the local level, particularly at Diosdado Macapagal National High School, the researcher personally observes that most Grade 10 students exhibited signs of anxiety in mathematics, such as fear during tests and avoidance of board work or recitations. In addition, poor study habits were evident, including incomplete notes, delayed submission of assignments, and only a few students consulting teachers about the lessons. Lastly, their academic performance was generally below average, with some students failing to meet the required grade and only a small number achieving average or above-average results.

Given these considerations, this study is conducted at Compostela National High School, which is selected for its large Grade 10 population to ensure more reliable results. It investigated how study habits and anxiety levels relate to and predict students' academic performance in mathematics, while addressing the lack of local research on this topic. Although previous studies have examined these variables separately or in different contexts, few explore their combined effects with sex as grouping variable of the independent variable. By addressing this gap, the study aimed to provide a deeper understanding of how these factors interact and to serve as a basis for developing effective teaching strategies and interventions that improve mathematics performance and promote student well-being in Davao de Oro.

REVIEW OF RELATED LITERATURE AND STUDIES

The review of related literature presents previous studies and scholarly works that provide insights into the relationship between study habits, anxiety levels, and academic performance in mathematics. It serves as the foundation for understanding the variables of the study and identifying gaps that this research aims to address.

Study Habits. Developing effective study habits and organized learning strategies plays a crucial role in improving students' academic performance while reducing barriers to learning such as anxiety and poor study discipline (Fernandez et al., 2021). The study revealed that learners who maintain structured study routines, take organized notes, utilize available learning resources, participate actively in class discussions, and demonstrate commitment to learning tend to achieve better academic outcomes. Moreover, these practices not only enhance learning but also help lessen mathematics anxiety and improve overall performance.

Students who consistently apply disciplined and effective study practices generally attain higher academic performance than those with weaker study habits (Rabia et al., 2017). Supporting this finding, Siahi and Maiyo (2015) reported a positive correlation between study habits and academic achievement among secondary school students, emphasizing the need for both teachers and learners to promote and practice effective study behaviors.

Similarly, Marzulina et al. (2020) revealed that studies conducted in different educational contexts have confirmed that effective study habits significantly contribute to improved learning outcomes and academic success. Consequently, researchers recommend that schools develop and implement programs that strengthen students' study habits to enhance their overall academic performance (Tus et al., 2020)

Homework and Assignment. Homework and assignments play a crucial role in influencing students' academic outcomes (Fernández-Alonso et al., 2015). The results of the study found that after considering background variables, the frequency of homework and students' autonomy had the strongest influence on test results. Moreover, among individual factors, autonomy in doing homework was the most significant in both mathematics and science, surpassing the amount of effort or time spent.

Similar results from another study conducted by Fernández-Alonso et al. (2019) found that assigning homework more frequently has a greater positive impact on student performance than giving large amounts. Moreover, the results of the study also revealed a strong negative correlation between homework frequency and quantity in relation to science achievement, suggesting that in countries where homework frequency has less effect, the amount of homework assigned tends to have a greater influence on students' academic outcomes.

In Portugal, the study conducted by Rosário et al. (2018) supported the above idea by examining the perceptions of 4,265 elementary students regarding homework quality. The findings revealed that students valued homework more for its importance than its quality. Additionally, the results showed a strong relationship between students' homework behaviors and their mathematics achievement, emphasizing the importance of homework performance. Finally, a large-scale meta-analysis by Ozyildirim (2022), using data from 488 independent findings across 74 countries and seven TIMSS surveys involving 429,970 students, revealed that students who spent a moderate amount of time on homework showed a positive effect on academic achievement.

Time Allocation. Time allocation, encompassing effective time management and student engagement, significantly enhances student performance through sufficient study time, effective study habits, and active participation in academic tasks (Sakirudeen et al., 2017). The study examined the relationship between study habits and academic performance in mathematics among 200 senior secondary school students where results showed a significant relationship between time spent studying, note-taking practices, and library use with students' academic performance in mathematics.

Similarly, Fisher et al. (2015) found that the amount of instructional time devoted to a specific curriculum area is positively related to students' learning outcomes in that subject. The results also revealed significant differences in time allocation for reading and mathematics, including their sub-content areas. Furthermore, the study emphasized that the proportion of time students spend actively engaged in learning tasks positively affects achievement, while tasks completed with low success rates hinder learning.

Reading and Note-Taking. Several studies suggested that reading and note-taking are key determinants of students' academic performance (Bentil et al., 2018). The study involving 380 Junior High School students in Ghana, produced results that shows study habits, particularly reading and note taking, are strong predictors of academic performance. Moreover, the findings also indicated that these factors had a greater impact on students' academic outcomes compared to time management.

On the other hand, contrasting results were reported in the descriptive-correlational study by Tus et al. (2020), which involved 126 Grade 11 senior high school students. The findings revealed no significant relationship between study habits and academic performance. Despite this, the study emphasized the importance of improving students' study habits, particularly in note taking, reading skills, and maintaining good health, as these aspects can still contribute to better academic achievement.

Teacher Consultation. Teacher consultation plays a vital role in enhancing learning by providing students with valuable guidance, clarification, and feedback that strengthen their understanding and mastery of mathematical concepts (Schürmann et al., 2021; Balbacal, 2023). Further discussion in the study of Schürmann et al. (2021) revealed that during student and tutor consultations, most of the time was spent reviewing students' previous attempts or ideas for solving exercises and focusing on specific problem-solving strategies, while only a small portion of time was devoted to summarizing and reflecting on the solutions.

Meanwhile, the study conducted by Balbacal (2023) among 340 junior high school students from public schools in Laurel, Batangas emphasized that seeking guidance and consultation from teachers is an effective study habit that enhances students' understanding and mastery of mathematical concepts. Consulting teachers helps learners clarify doubts, comprehend difficult topics, and receive personalized support in problem solving, thereby strengthening their grasp of mathematical principles. However, the study also observed that some students rarely seek such consultations, missing opportunities for additional support. Thus, it highlighted the importance of encouraging students to actively engage with teachers for clarification and feedback to improve their learning and mastery of mathematics.

Study Habits and Academic Performance in Mathematics. Some studies revealed that students generally have positive attitudes toward studying mathematics and acknowledge that effective study habits and active engagement, such as asking questions and staying motivated, enhance understanding and performance (Addo, 2018). The study involved 911 students and 55 teachers using a quantitative approach found that students who regularly attended Mathematics classes showed a better understanding of topics and concepts than those who did not. Moreover, the study emphasized that asking questions enhances understanding and supports easier review.

In a subsequent study, 231 Grade 10 junior high school students from Agusan National High School in Cagayan de Oro City demonstrated a very positive attitude toward their study habits in learning Mathematics (Abalde & Oco, 2023). The study also emphasized that students viewed studying and learning Mathematics as essential, acknowledging that their success and academic growth greatly rely on their performance in the subject.

Meanwhile, a descriptive-correlational study conducted by Capuno et al. (2019) involving 177 Grade 9 students revealed that study habits and academic performance in Mathematics had a negligible positive correlation. This finding suggests that study habits contribute to students' performance in the subject, indicating that those with good study habits are more likely to perform well in Mathematics. Hence, the researchers of the study further recommended that schools must monitor the number of activities students participate in, as well as their grades, to evaluate the impact of multiple engagements on academic performance.

In addition, an efficient and effective study strategies are essential for achieving higher performance in Mathematics (Guinocor et al., 2020). Thus, recommended that students, especially in tertiary education, must develop an effective system of study habits to enhance comprehension and academic achievement.

Anxiety in Mathematics. Mathematics anxiety refers to feelings of fear, worry, and tension that interfere with mathematical performance and may develop from childhood through adulthood. Studies conducted internationally have consistently reported high levels of mathematics anxiety among students across different educational settings. For instance, Ngirande and Mutodi (2014) found high levels of mathematics anxiety among tertiary students in South Africa, while Suren and Kandemir (2020) reported similar findings among middle school students in Turkey, indicating that mathematics anxiety is a widespread concern across educational contexts.

In the Philippines, Rabuya (2023) reported that STEM students in Tacloban experienced moderate to high levels of mathematics anxiety, particularly before examinations, suggesting that evaluative situations intensify negative emotional responses toward mathematics.

Mathematics anxiety is also evident among college students and preservice teachers. Lazarra (2025) found that undergraduate students experienced moderate anxiety, particularly in relation to tests, grades, and fear of making mistakes. Likewise, Abuan and Taganap (2025) reported that preservice elementary teachers with higher mathematics anxiety showed greater apprehension toward teaching mathematics and lower confidence in explaining mathematical concepts.

Research further suggests that mathematics anxiety negatively affects reasoning, decision-making, problem-solving, and overall academic performance (Rocha & Alves, 2025). Students with high anxiety often struggle with quantitative tasks, limiting their success in mathematics-related fields. Consequently, researchers emphasize the importance of helping learners manage mathematics anxiety through appropriate instructional approaches and supportive learning environments (Ngirande & Mutodi, 2014).

To address this concern, studies recommend implementing proactive interventions both inside and outside the classroom. Raising awareness of mathematics anxiety, providing emotional support, and employing effective teaching and psychological strategies have been found to reduce anxiety and improve students' mathematical thinking, confidence, and academic performance (Finlayson, 2014; Kargar et al., 2010).

Behavioral Factors. Various studies uncovered that behavioral factors play a crucial role in influencing mathematics anxiety, as they directly impact the ways in which students approach learning and engage with various mathematical tasks and activities (Salazar, 2025). Among 341 randomly selected Grade 10 students from General Santos City National High School, it was revealed that the students experienced a moderately high level of anxiety specifically related to behavioral factors. Moreover, the findings of the study pointed out that this type of anxiety was primarily attributed to poor study habits, procrastination, and the avoidance of math-related tasks, with irregular study routines being identified as the most significant concern among the respondents.

These issues must be addressed with proper attention, and the use of constructive learning strategies to manage behavioral factors, such as cooperative group activities, can effectively reduce mathematics anxiety (Mutodi & Ngirande, 2014). The findings explained that participating in cooperative group work enables students to share ideas openly, ask questions without fear of judgment, explain mathematical concepts to one another, clarify their understanding interactively, and express their feelings about learning. Moreover, through this approach, students not only strengthened their comprehension of mathematical concepts but also built confidence and reduced behavioral tendencies that contribute to mathematics anxiety.

Cognitive Factors. Cognitive factors have been consistently identified as a significant source of mathematics anxiety, greatly influencing and shaping students' overall ability to process, retain, and perform mathematical tasks effectively (Salazar et al., 2025).

In a broader perspective, the systematic review of Kour and Rafaqi (2024) on 40 studies, with 21 included in their analysis, identified that cognitive factors are considered to be one of the two major contributors to mathematics anxiety. Their extensive review further highlighted in detail how difficulties in processing mathematical concepts, as well as the impact of classroom environments, significantly contribute to the development of anxiety.

On the other hand, the book of Mammarella et al. (2020), entitled *Mathematics Anxiety*, explained that simple addition and multiplication problems showed no significant effects of mathematics anxiety, with only the usual increase in time and errors as mathematical problems became more complex. The study ultimately concluded that students with higher levels of anxiety performed considerably slower compared to their low-anxiety counterparts, particularly when mathematical problems required carrying. Thus, in such cases, only the low-anxiety group managed to maintain efficiency and consistency in their performance, while higher-anxiety groups experienced significantly more disrupted and inconsistent results.

Environmental Factors. Environmental factors significantly contribute to mathematics anxiety, as classroom conditions and learning experiences strongly influence students' attitudes toward mathematics (Kour & Rafaqi, 2024). A review of studies conducted between 2013 and 2023 identified environmental factors as one of the primary contributors to mathematics anxiety, highlighting the impact of classroom environments and learning conditions on students' experiences.

Research has shown that traditional teaching methods, rigid classroom practices, and limited instructional diversity can increase students' anxiety toward mathematics (Mutodi & Ngirande, 2014; Peker & Ertekin, 2011). Factors such as strict authority, public exposure during class activities, time pressure, and the lack of varied teaching approaches were found to heighten anxiety among learners. Similarly, a study among preservice teachers in Turkey revealed that heavy reliance on traditional instructional methods contributed significantly to mathematics anxiety (Peker & Ertekin, 2011).

Similar findings have been reported in the Philippines. Estonanto and Dio (2019) found that teacher-related factors were among the major causes of mathematics anxiety among STEM students in Southern Luzon. Time-pressured assessments, fast-paced discussions, rigid teaching approaches, and limited teacher support were identified as factors that intensified students' anxiety, particularly in challenging subjects such as Calculus.

Psychological Factors. Mathematics anxiety is recognized as a distinct psychological construct that specifically arises from mathematical learning experiences and should be addressed independently from other emotional or social concerns (Cheng et al., 2022). Their study involving more than 28,000 students emphasized that mathematics anxiety is a unique form of anxiety directly associated with mathematical tasks and learning situations.

Psychological factors such as grade-related concerns, fear of failure, and stress during problem-solving activities have been identified as major contributors to mathematics anxiety (Oclarit et al., 2025). Among non-mathematics major students, grade expectations emerged as the primary source of anxiety, with most respondents reporting moderate levels of mathematics anxiety.

Given these findings, researchers emphasize the importance of addressing psychological factors through appropriate interventions. Mutodi and Ngirande (2014) recommended fostering positive attitudes toward mathematics to help reduce anxiety. They also noted that while moderate anxiety may serve as motivation, it should remain within manageable levels to prevent negative effects on students' academic performance.

Anxiety and Performance in Mathematics. Several studies have consistently demonstrated that mathematics anxiety exerts a negative impact on students' academic performance. The meta-analysis study, synthesized findings from 131 studies, have confirmed a negative relationship between mathematics anxiety and mathematics performance across both primary and secondary grade levels. Moreover, the results of their study have indicated that grade level does not serve as a moderating factor in this relationship; however, students' previous performance in mathematics was found to predict their subsequent levels of mathematics anxiety.

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Meanwhile, another meta-analysis conducted by Zhang et al. (2019), which examined 49 studies, have also revealed that there is a significant negative relationship between mathematics anxiety and performance.

Specifically in the Philippines, the quantitative study conducted by Jolejole-Caube et al. (2019), which involved 76 Grade 7 learners from Macalpi-ay National High School and San Jose National High School in Leyte, emphasized that mathematics anxiety significantly affects students' academic outcomes, as it is negatively associated with their performance in the subject. Lastly, the study conducted by Lazarra (2025) among 127 undergraduate students from the College of Science at the University of Eastern Philippines also revealed a weak negative correlation between mathematics anxiety and academic performance, suggesting that while anxiety remains a relevant factor, it may not strongly predict achievement, as contextual or cultural influences may also play a role.

Academic Performance in Mathematics. Several international assessments have reported declining mathematics performance among students across different educational levels, highlighting persistent challenges in mathematics achievement worldwide (Mazana et al., 2020; NAEP, 2023). Using data from the National Examination Council of Tanzania from 2008 to 2016, Mazana et al. (2020) found consistently high failure rates in mathematics, particularly in lower secondary basic mathematics. Similarly, the National Assessment of Educational Progress (NAEP, 2023) reported a decline in mathematics scores among 13-year-old students in the United States, with larger decreases observed among lower-performing learners.

In the Philippines, Cabuquin and Abocejo (2023) found that junior high school students who performed well in mathematics also tended to achieve higher overall academic performance. The study further revealed that gender had no significant influence on mathematics achievement, suggesting equal potential among male and female learners. Meanwhile, at the undergraduate level, Lazarra (2025) reported that most students from the University of Eastern Philippines obtained grades within the lower achievement range, indicating difficulties that may be linked to cognitive, emotional, or instructional factors. Likewise, Abuan and Taganap (2025) found that preservice elementary teachers with stronger mathematics performance demonstrated greater confidence in teaching the subject, whereas those with weaker performance experienced higher levels of mathematics teaching anxiety.

The varying levels of mathematics achievement may be explained by multiple contributing factors. According to Bah (2021), poor performance in mathematics is influenced by students' personal circumstances, misconceptions about the subject, teacher and learner characteristics, ineffective teaching methods, language barriers, inadequate learning resources, family influence, school environment, educational policies, and limited institutional support. These factors collectively affect students' academic opportunities and future development.

THEORETICAL FRAMEWORK

This study is anchored in the Social Cognitive Theory of Albert Bandura, which explains that human behavior is shaped through the dynamic and reciprocal interaction of personal, behavioral, and environmental factors. Central to this theory is the idea that individuals are not merely influenced by external conditions but actively regulate their own behavior through internal processes, as human functioning is largely guided by self-influence (Bandura, 1991). This perspective highlights how cognition and emotion shape behavior, emphasizing that mood influences how performance is monitored and interpreted. It also explains that negative self-evaluations can reduce effectiveness, while emotional distress may lead individuals to focus more on failures than successes. Thus, learning and performance result from the interaction of thoughts, behaviors, and environmental factors.

In relation to the study, students' anxiety levels and study habits in mathematics can be explained within this reciprocal framework. Anxiety, as a personal factor, influences how students perceive and respond to mathematical tasks, affecting their confidence and focus. Meanwhile, study habits represent the behavioral strategies students use to manage learning, such as time allocation and completing assignments. These are shaped by both internal states and environmental conditions. Together, the interaction of anxiety and study habits helps explain differences in students' academic performance in mathematics.

The conceptual framework is based on Bandura's Social Cognitive Theory, showing how the independent variables which are anxiety levels (cognitive, behavioral, environmental, and psychological) and study habits (homework, time management, reading and note-taking, and teacher consultation), having sex as grouping variable, interact to influence the dependent variable which is the students' academic performance in mathematics.

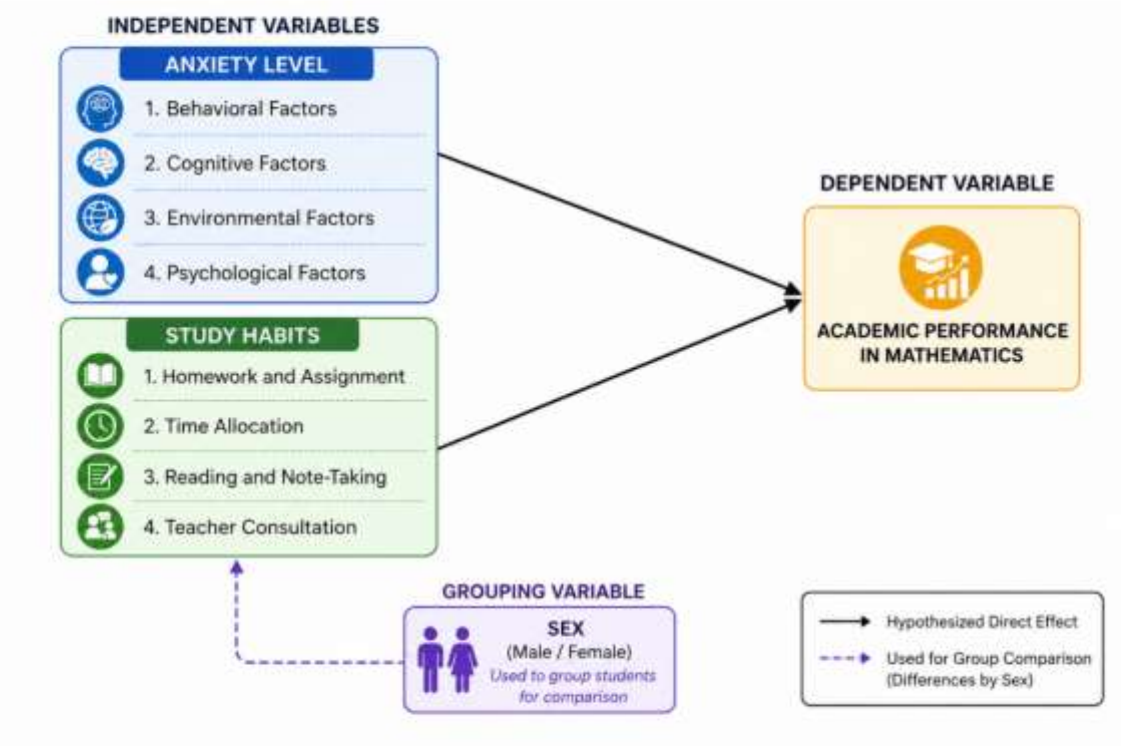

Figure 1: Conceptual Framework of the study

Statement of the Problem

This study aimed to determine the relationship of study habits and anxiety levels on the academic performances in mathematics of the Grade 10 students from Compostela National High School. Specifically, sought to answer the following questions:

1. What is the demographic profile of the students in terms of sex?
2. What is the level of anxiety in mathematics among students in terms of;

2.1 Behavioral Factors;

2.2 Cognitive Factors;

2.3 Environmental Factors; and

2.4 Psychological?

3. What is the level of study habits in mathematics among students in terms of;

3.1 Homework and Assignment;

3.2 Time Allocation;

3.3 Reading and Note-Taking; and

3.4 Teacher Consultation

4. What is the academic performance of the students in mathematics?
5. Is there a significant relationship between anxiety levels and academic performance?
6. Is there a significant relationship between study habits and academic performance?
7. Is there a significant difference in anxiety levels when grouped according to sex?
8. Is there a significant difference in study habits when grouped according to sex?
9. Do anxiety levels and study habits significantly predict the academic performance?

Null Hypotheses

The following hypotheses were tested using the appropriate statistical tool which will be set at 0.05 level of significance:

HO_1. There is no significant relationship between anxiety levels and academic performance in mathematics.

HO_2. There is no significant relationship between study habits and academic performance in mathematics.

HO_3. There is no significant difference in anxiety level when grouped according to sex.

HO_4. There is no significant difference in study habits when grouped according to sex.

HO_5. Anxiety levels and study habits do not significantly predict the academic performance of Grade 10 students in mathematics.

Scope and Delimitation

This study focused on examining the relationship between students' study habits and anxiety levels with their academic performance in mathematics. A total of 258 Grade 10 students, consisting of 121 males and 137 females, were selected as respondents of the study. The study was carried out at Compostela National High School during the third quarter of the school year 2025–2026. Moreover, sex was also considered as a grouping variable for the independent variable.

The research was limited to Grade 10 students of Compostela National High School only and does not include other grade levels or schools. It focused on mathematics as the subject of concern, specifically topics covered during the third quarter only. The findings were confined to the said school and were not generalized to all students in Davao de Oro. Furthermore, the scope was limited by the accuracy and honesty of the respondents' answers to the questionnaire administered by the researcher.

Significance of the Study

This research highlights how study habits and anxiety levels affect Grade 10 students' performance in mathematics. Its findings offer useful insights for different stakeholders, as outlined below:

Learners. The result of the study would help them become aware of how their study habits and anxiety levels affect their performance in mathematics, encouraging better learning strategies.

Teachers. The result of the study would provide insights into the challenges students face, allowing them to design more effective teaching methods and classroom interventions.

School Administrators. The result of the study would serve as a basis for implementing programs and policies that support student well-being and academic success.

Parents. The results from the study would inform them about factors influencing their children's performance, guiding them in providing proper academic and emotional support at home.

Future Researchers. The results of the study would act as a reference for further studies on the interaction of cognitive and emotional factors affecting academic performance, particularly in mathematics.

Definition of Terms

This section presents the key terms used in the study to provide clarity and avoid ambiguity. Moreover, the terms are defined operationally as they are applied within the context of this research.

Academic Performance. This refers to the level of students' performance in mathematics. In this study, it was measured through their mathematics examination scores in the third quarter.

Anxiety Levels. This refers to the fear, worry, or nervousness the students feel specifically when dealing with mathematics, which can affect their confidence and performance in class activities, assessments, and problem-solving. It is categorized into four factors: behavioral, cognitive, environmental, and psychosocial.

Behavioral factors. This term refers to the students' observable actions and avoidance behaviors influenced by anxiety in mathematics, including their tendency to withdraw from challenging tasks, class participation, and math-related activities, as well as their reluctance to seek help or attend classes when feeling anxious or unprepared.

Cognitive factors. These refers to the students' thoughts, beliefs, and mental processes affected by anxiety in mathematics, including negative self-perceptions about their abilities, difficulty recalling and applying learned concepts, challenges in processing problem-solving steps, and mental blocks experienced during math assessments.

Environmental factors. This term refers to the external conditions and influences within the students' learning environment that contribute to anxiety in mathematics, including classroom dynamics, teaching style, lesson pace, physical setup, and social pressures from teachers, parents, or peers that affect their comfort and focus during math learning.

Homework and Assignment. This term refers to the students' commitment and responsibility in accomplishing mathematics assignments, which includes their consistency in completing tasks, viewing assignments as essential to learning, dedicating time to review before tests, solving challenging problems, and submitting their work on time.

Note-taking and Reading. This term refers to the students' strategies and habits in recording key information during mathematics lessons and organizing their study sessions, including setting learning goals, managing study time effectively, and prioritizing challenging topics to enhance comprehension and retention.

Psychological factors. This term refers to the students' emotional and physiological responses associated with anxiety in mathematics, including feelings of nervousness, stress, panic, and physical symptoms such as tension, sweaty palms, or increased heart rate when facing math-related tasks, especially during tests or time-pressured situations.

Sex. This term refers to the biological distinction of the students as male or female, used in analyzing differences in study habits, anxiety levels, and academic performance in mathematics.

Study Habits. This term refers to the regular practices and strategies students use in preparing for mathematics. For this research, study habits are categorized into four areas: homework and assignment, time allocation, reading and note-taking, and teacher consultation.

Teacher Consultation. This term refers to the students' initiative and frequency in seeking guidance from their mathematics teachers to clarify lessons and address difficulties, as well as the teachers' availability, clarity of explanations, and willingness to provide support when approached for assistance.

Time allocation. This term refers to how students organize and manage their time for studying mathematics, including following a personal study schedule, engaging in math-related activities, maintaining consistent study habits, and selecting suitable times and environments that promote better understanding and learning.

METHODS

This chapter provides the description of the research methods which includes research design, research locale, respondents of the study, research instrument, validation of instrument, research procedure, and statistical treatment of the data.

Research Design

This study used a quantitative research design, which involved gathering and analyzing numerical data to examine patterns, assess relationships, make predictions, and generalize the findings to larger populations (Rana et al., 2021). Specifically, it employed a predictive correlational research design that examined the degree to which independent variables could forecast the value of a dependent variable based on their measurable relationships (Devi et al., 2022). Moreover, grounded in theory and statistical analysis, it identified which variables effectively predicted an outcome without manipulating any conditions. It was also designed to answer precise questions about how variables related to each other, using hypothesis testing to make inferences and forecast outcomes (Brodowicz, 2024).

This research design was appropriate for the study because it examined how study habits and anxiety levels predicted students' academic performance in mathematics without applying any form of intervention. Through statistical analysis, it helped identify the strength of these predictive relationships and determine which factors had the greatest influence on students' examination results. It also considered sex as a grouping variable to aid in determining whether the predictive effects of study habits and anxiety differed between male and female students. Overall, this design supported the study's purpose of understanding how the components of study habits and anxiety levels contributed to learners' academic performance in mathematics.

Research Locale

The study was conducted in one of the public schools in the municipality of Compostela. The Municipality of Compostela is situated in the plains of Davao de Oro and traces its origins to the pre-World War II period, when it was a forested area inhabited by the Mandaya people along the Agusan River. Its name is believed to have been derived from either a Spanish settlement or a friar who introduced the devotion to Señor Santiago de Apostol. Early settlers from Luzon and the Visayas arrived in 1939 and lived harmoniously with the natives, though development was interrupted by World War II before communities were later rebuilt.

Moreover, Compostela became an official municipality in 1948 under President Elpidio Quirino and was separated from Nabunturan in 1957 under President Carlos P. Garcia, paving the way for local governance and development. Infrastructure improvements in the 1970s, particularly in roads and irrigation, strengthened its agricultural economy, making it a key rice-producing area alongside banana production and transforming it into a progressive municipality with growing economic and educational opportunities.

Specifically, the study was conducted at Compostela National High School (CNHS), which is situated along Lapu-Lapu Street in Poblacion, Compostela, Davao de Oro. The school began with limited resources, holding evening classes in borrowed classrooms and using kerosene lamps for lighting (Berdin, 2019). It gradually expanded with more teachers, improved facilities, and a growing student population, eventually transitioning from a community high school to a national high school after the implementation of Republic Act No. 6655. With support from the government, PTA, and other organizations, it has developed into a key educational institution in the municipality.

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At the time of the study, it was a public school occupying a 3-hectare site bounded on the west by Compostela Central Elementary School and on the east by Maputi Creek, facing south along the municipal road, with a wide oval field at the rear. The institution caters to a large and diverse student population and provides Junior High School programs spanning from Grade 7 to Grade 10. At the start of School Year 2018–2019, CNHS had a total of 4,639 learners and 168 faculty and staff for both Junior and Senior High School programs (Berdin, 2019).

For the purpose of this study, the focus was on the Grade 10 students enrolled in the school year 2025–2026. From this population, a sample of respondents was selected to ensure that the data accurately represented the targeted group, and the study was pilot-tested at this school prior to its full conduct to validate the research instruments and procedures.

Although the researcher taught at Diosdado Macapagal National High School, a former annex of CNHS, the Grade 10 population there was relatively small, which limited the scope of the study. Thus, CNHS was a more suitable setting for collecting sufficient and reliable data.

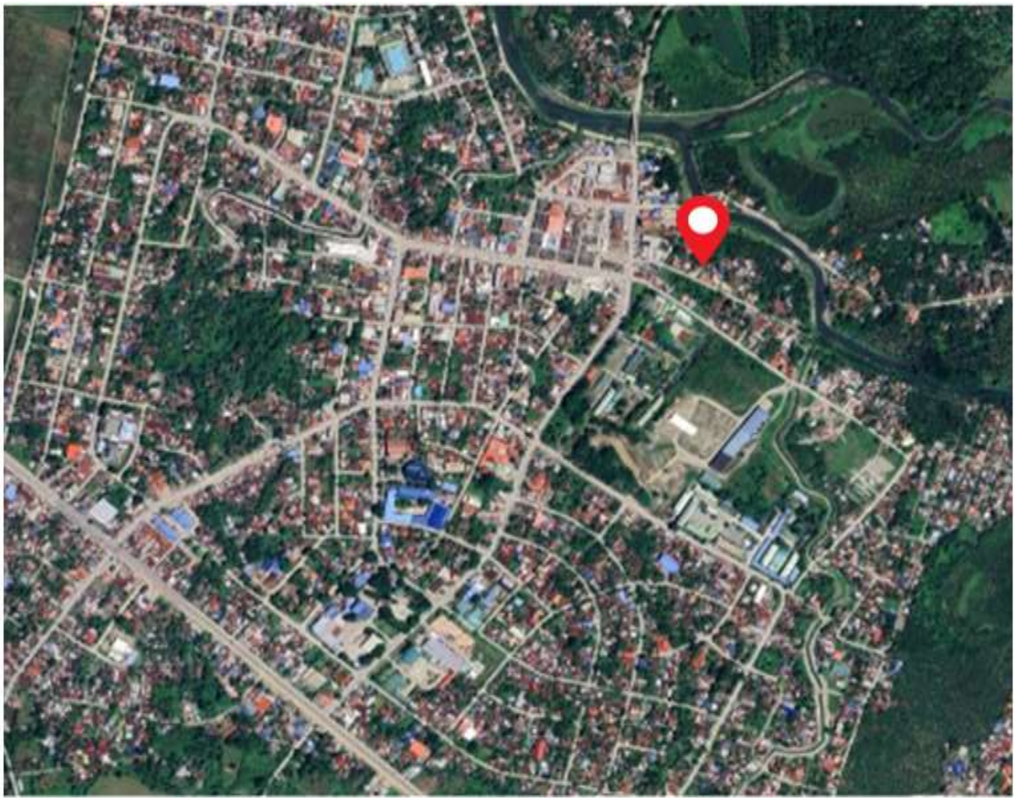

Figure 2: Vicinity Map of Compostela, Davao de Oro highlighting the location of Compostela National High School

Research Respondents

The respondents of this study comprised selected Grade 10 students of Compostela National High School, who participated in both the pilot testing and the main conduct of the research. The study utilized systematic random sampling, a straightforward and adaptable technique for selecting respondents from a finite population. In this method, participants were chosen at regular intervals from an ordered list, ensuring that each member of the population had an equal chance of being included in the sample. Moreover, this technique involves selecting a random starting point between 1 and k from a population list and then including every kth element thereafter.

To further strengthen the sampling process, stratified sampling was also employed. After applying the systematic approach, the population was grouped into strata based on sex. The total number of male and female students was identified, and samples were proportionally allocated from each group. This was done by

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determining how many participants should come from each sex category and then selecting them accordingly within the sampling frame. Through this procedure, both male and female students were adequately represented, allowing for a more balanced and dependable comparison between groups.

Figure 3 Distribution of Grade 10 Students' Population and Sample by Sex at Compostela National High School (SY 2025–2026)

Category	**Population (N)**	**Sample (n)**
Male	366	121
Female	412	137
Total	788	258

Based on Figure 3 above, the total population of Grade 10 students at Compostela National High School for the school year 2025–2026 was 778, composed of 366 males and 412 females. From this population, a sample of 258 students was determined using a standard sample size calculator with a 5% margin of error. Stratified sampling based on sex was then applied by grouping the population into male and female categories and allocating the sample proportionally. Accordingly, 121 males and 137 females were selected, and respondents from each group were chosen through systematic random sampling. This procedure ensured that both groups were adequately and proportionally represented in the study.

Moreover, Grade 10 students were chosen as the target respondents because, compared to lower grade levels, they have already been exposed to more advanced mathematics lessons and assessments. This prior exposure makes them better equipped to provide meaningful insights regarding their study habits, anxiety levels, and how these factors relate to their academic performance in mathematics. Only Grade 10 students enrolled for the school year 2025–2026 at Compostela National High School who have taken the 3rd quarter examinations are included in the study, while those who have dropped out earlier or have not taken the 3rd quarter exams are excluded.

Research Instrument

This study used a Likert-scale survey questionnaire to collect data on Grade 10 students' demographics, study habits, and anxiety levels. The instrument was administered in both printed and digital (Google Form) formats, allowing respondents to choose whichever option they find more comfortable and convenient.

The questionnaire has three sections. The first section gathered the basic demographic information, including name (optional), grade level (required), sex (required), and 3rd quarter examination score in mathematics (required). The second section contained 20 items assessing anxiety levels in mathematics, with five questions for each factor (behavioral, cognitive, environmental, and psychological) adapted from the study of Salazar (2025). The third section included 20 items measuring study habits in mathematics, with five questions for each factor: Homework and Assignment, Time Allocation, Reading and Note-Taking, and Teacher Consultation, adapted from Atsuwe and Moses (2017). Both scales were modified to fit the school context, using simplified wording and removing selected items to ensure clarity and relevance. Additionally, sections two (Math Anxiety) and three (Study Habits) used a 4-point Likert scale, with response options of 4 – Strongly Agree, 3 – Agree, 2 – Disagree, and 1 – Strongly Disagree.

After the responses were collected, the data were interpreted using the scales provided below. The scale below presents the interpretation of students' anxiety levels in mathematics across behavioral, cognitive, environmental, and psychological domains. A higher score indicates a greater level of anxiety, while a lower score reflects a lesser degree of anxiety in mathematics.

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Scale of the Anxiety levels in Mathematics

Score Range	Interpretation	Description
3.50 – 4.00	Strongly Agree	Students experience strong and frequent feelings of anxiety in mathematics.
2.50 – 3.49	Agree	Students experience noticeable and recurring feelings of anxiety in mathematics.
1.50 – 2.49	Disagree	Students experience mild and infrequent feelings of anxiety in mathematics.
1.00 – 1.49	Strongly Disagree	Students experience almost no feelings of anxiety in mathematics.

On the other hand, the scale below presented the interpretation of the extent of students' study habits in mathematics based on Homework and Assignment, Time Allocation, Reading and Note-Taking, and Teacher Consultation. A high mean score indicates strong and consistent study habits, while a low mean score reflects weak or infrequent study practices.

Scale of the Study habits in Mathematics

Score Range	Interpretation	Description
3.50 – 4.00	Strongly Agree	Students demonstrate strong and consistent study habits in mathematics.
2.50 – 3.49	Agree	Students demonstrate noticeable and recurring study habits in mathematics.
1.50 – 2.49	Disagree	Students demonstrate mild and infrequent study habits in mathematics.
1.00 – 1.49	Strongly Disagree	Students demonstrate minimal or almost no study habits in mathematics.

Below is the scale of the Third Quarter examination scores of the students. The academic performance of the respondents was interpreted based on the Department of Education's grading system under DepEd Order No. 8, s. 2015, which sets the performance standards reflected in learner report cards: Outstanding (90–100), Very Satisfactory (85–89), Satisfactory (80–84), Fairly Satisfactory (75–79), and Did Not Meet Expectations (below 75).

For this study, the 40-item test scores were classified as Outstanding (36–40), Very Satisfactory (31–35), Satisfactory (26–30), Fairly Satisfactory (21–25), and Did Not Meet Expectations (0–20). Higher scores indicated greater mastery of the competencies, while lower scores reflected areas needing improvement.

Scale of Third Quarter examination scores of the students

Score Range	Interpretation	Description
36 – 40	Outstanding	Students show excellent mastery of mathematical concepts and skills.
32 - 35	Very Satisfactory	Students demonstrate a high level of understanding and can apply mathematical concepts accurately with minimal errors.
28 – 31	Satisfactory	Students show adequate and consistent understanding of mathematics.

24 – 27	Fairly Satisfactory	Students show partial understanding and need improvement in several areas.
0 – 23	Did not meet Expectations	Students show limited understanding and require significant support in mathematics.

Validation of Instruments

A panel composed of both internal and external validators examined the adapted research instrument to confirm its validity and reliability prior to its administration in the study. The validation process involved a detailed evaluation of the instrument's content, organization, and alignment with the study's focus on anxiety levels and study habits in Mathematics. Internal validators assessed the instrument according to institutional standards and its relevance within the school context, while external validators provided an impartial perspective to enhance the overall quality of the instrument.

Following the validation process, a pilot test was conducted with a small group of 20 students from Compostela National High School who were not part of the actual study sample to determine the clarity, comprehensibility, and practical applicability of the items. Subsequently, the reliability of the instrument was assessed using Cronbach's alpha to measure its internal consistency. The result yielded a Cronbach's alpha value of 0.874, which indicated a very good level of reliability, thus confirming that the instrument was suitable for use and the study could proceed with data collection.

Furthermore, this comprehensive validation and pilot testing procedure ensured that the instrument was effective, reliable, and appropriate for addressing the objectives of the study.

Data Gathering Procedure

Below are the proper protocols that were considered before and during the collection of data.

Ethical Clearance Preparation and Approval Process. The researcher prepared and submitted all necessary requirements to the Ethics Research Committee to obtain certification, ensuring that the study follows ethical standards when involving student respondents. These requirements included the research proposal, which outlines the objectives, methods, and importance of the study; the informed consent form, which explains the purpose, process, and possible risks to participants; and the survey questionnaires, which were reviewed for compliance with ethical guidelines. The sampling procedure and recruitment process were also explained to maintain fairness and transparency. Data gathering only began once ethical clearance has been granted, showing the researcher's commitment to protecting the rights, privacy, and well-being of all respondents.

Formal Request to Conduct Research. After obtaining clearance from the Ethics Research Committee, the researcher prepared a formal request letter addressed to the Schools Division of Davao De Oro, Compostela East District Office, and to the School Principal of Compostela National High School to ask approval for the data collection. Moreover, the researcher sought official authorization from the school administration to conduct the study among selected Grade 10 students. When permission was granted, a pilot test of the survey instrument was carried out with a small group of students who are not included in the actual respondents. This process aimed to check the clarity, reliability, and validity of the questionnaire. The feedback gathered from the pilot testing was used to make necessary revisions and ensure that the instrument is appropriate and effective before its final administration.

Administering of Questionnaires. The finalized survey questionnaire was administered in printed or digital form and was distributed to the selected Grade 10 students of Compostela National High School. The instrument is composed of three parts: personal information, items measuring anxiety levels, and items assessing study habits in mathematics. Before answering, the researcher explained the purpose of the study, provide clear instructions, and remind the respondents of their rights and confidentiality. Moreover, students

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were allotted sufficient time, with a maximum of one hour, to carefully and honestly accomplish the questionnaire during their class hours in the third quarter of SY 2025–2026.

Collection of Data. As the questionnaires were distributed in printed form, the completed survey sheets were collected immediately after the respondents finished answering while the responses in digital form were automatically recorded on the google excel sheet created by the researcher. The researcher was present throughout the process to provide clarification and address any concerns from the participants. All accomplished questionnaires were carefully checked to identify and exclude incomplete or invalid responses, ensuring the accuracy and reliability of the data. The valid responses were then organized, encoded, and prepared for statistical analysis to meet the objectives of the study. Moreover, the researcher guaranteed that all information gathered were kept strictly confidential and used only for the purposes of this study.

Statistical Treatment of Data

The gathered data were organized, tallied, and presented in tables. To ensure accuracy in analysis and interpretation, appropriate statistical techniques were utilized. Each tool was specifically applied to address the research questions and hypotheses, providing results that directly correspond to the study's objectives.

Frequency and Percentage. This was used to describe the profile of the student-respondents in terms of sex. This tool used to directly address Statement of the Problem No. 1.

Mean. This was employed to determine the level of anxiety in mathematics among students in terms of behavioral, cognitive, environmental, and psychological factors. It was also used to assess the level of study habits in terms of homework and assignment, time allocation, reading and note-taking, and teacher consultation. Moreover, this addresses Statements of the Problem Nos. 2 and 3.

Frequency Distribution. Measures such as frequency distribution were used to describe students' academic performance based on their third-quarter Mathematics examination scores, categorized into score ranges with corresponding frequencies, percentages, and descriptive equivalents. Furthermore, this corresponds to Statement of the Problem No. 4.

Pearson r. This determined the degree of relationship between anxiety levels and academic performance, as well as between study habits and academic performance in mathematics. Moreover, this tool addresses Statements of the Problem Nos. 5 and 6 and tests Null Hypotheses HO1 and HO2.

Independent Sample t-test for Equality of Means. This were utilized to determine whether there is a significant difference in anxiety levels and study habits in mathematics when students are grouped according to sex. This tool also corresponds to Statements of the Problem Nos. 7 and 8 and tests Null Hypotheses HO3 and HO4.

Multiple Linear Regression. This was used to determine whether anxiety levels and study habits significantly predict the academic performance of Grade 10 students in mathematics. In addition, this tool addresses Statement of the Problem No. 9 and tests Null Hypothesis HO5.

Ethical Considerations

The researcher carefully observed the following ethical considerations throughout the conduct of the study. These ethical considerations were guided by the standards set by the Department of Science and Technology (DOST) – Philippine Health Research Ethics Board (PHREB). In accordance with these guidelines, the study strictly adhered to professional accountability and ethical practices to protect the respondents from any form of physical and psychological harm. Furthermore, the respondents were assured that their participation was voluntary and that they had the right to withdraw from the study whenever they deemed it necessary.

Social Value. This study provided significant value in understanding how study habits and anxiety levels related to the academic performance of Grade 10 students in mathematics at Compostela National High

School. The findings contributed to the improvement of teaching strategies and interventions that may help enhance students' mathematics performance and overall well-being. At the school level, the results served as a basis for teachers and school administrators in developing programs that support learners in managing anxiety and improving study habits. The study also contributed to the existing body of knowledge regarding mathematics education in Davao de Oro.

Informed Consent. The researcher explained the purpose, objectives, and procedures of the study to the respondents before the administration of the questionnaire. The respondents were informed that their participation was voluntary and that they had the right to withdraw at any point if they felt uncomfortable. Clear instructions regarding the survey questionnaire were provided, and the respondents were encouraged to ask questions whenever clarification was needed. Moreover, consent was secured from the respondents before they participated in the study.

Risk, Benefits, and Safety. The respondents may have experienced minimal inconvenience, such as time constraints or slight discomfort while answering the questionnaire. To address these concerns, the researcher administered the survey during their vacant period with the permission of the school authorities and ensured that the respondents were given enough time, with a maximum of 30 minutes, to answer the questionnaire carefully. The study benefited the respondents because the findings may help improve teaching practices and develop interventions that support better mathematics performance and student well-being.

Privacy and Confidentiality of Information. All information gathered from the respondents was treated with strict confidentiality and was used solely for academic purposes. The researcher ensured the anonymity of the respondents by not requiring identifying information in the questionnaire. The collected data were securely stored and protected from unauthorized access in accordance with the provisions of the Data Privacy Act of 2012. Moreover, responses gathered through printed questionnaires and digital forms were carefully handled, encoded, and used only for the completion of the study.

Justice. The respondents were selected fairly through the appropriate sampling procedure based on the objectives of the study. All selected Grade 10 students were given equal opportunity to participate regardless of sex or section. The researcher ensured that no respondent was forced to participate and that all participants were treated with respect and fairness throughout the conduct of the study.

Transparency. The researcher honestly disclosed the purpose, procedures, and objectives of the study to the respondents and school authorities. Since the study was conducted purely for academic purposes, no conflict of interest existed. The researcher also ensured that the data gathered, methods used, and results obtained were presented truthfully and accurately.

Qualification of the Researcher. The researcher was qualified to conduct the study since he was a candidate for the Master's Degree in Education major in Mathematics. The researcher had also undergone research-related subjects and training as part of his academic preparation. The researcher also gained sufficient knowledge and experience in conducting research, administering questionnaires, collecting data, and analyzing results necessary for the completion of the study.

Adequacy of Facilities. The administration of the questionnaire was conducted in a conducive learning environment within the school premises to ensure that the respondents answered comfortably and without distractions. Printed questionnaires and digital forms were properly prepared to facilitate efficient data collection.

Community Involvement. The participation of the Grade 10 students and the cooperation of the school community contributed significantly to the success of the study. The researcher respected the culture, values, and welfare of the respondents during the conduct of the research. The findings of the study were expected to help the educational community better understand the relationship between study habits, anxiety levels, and mathematics performance among students.

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RESULTS

This chapter presented, analyzed, and interpreted the collected data. The findings of the study are organized and discussed in relation to the statement of the problem and are aligned with the research questions stated in Chapter One. Moreover, each set of data is systematically presented to provide clear answers to the problems posed in the study.

Demographic Profile

Table 1 Frequency and Percentage Distribution of Respondents by Sex

	MALE	FEMALE	TOTAL
Population of Grade 10 Learners in CNHS (S.Y. 2025 – 2026)	366	412	778
Number of Sample Respondents	121	137	258
Percentage of Sample Respondents	46.90%	53.10%	100%

Table 1 shows the distribution of Grade 10 learners and sample respondents by sex where the total population consists of 366 males and 412 females, making 778 learners overall. Out of this population, 121 or 46.90% of the respondents are male, while 137 or 53.10% are female, with a total of 258 sample respondents. Overall, the majority of respondents are female.

Students' Level of Anxiety in Mathematics

Table 2 Behavioral Factors of Anxiety in Mathematics

Items As a student, …	Mean	Descriptive Equivalent
1. I avoid practicing difficult math problems, which makes me feel more anxious during exams.	2.73	Agree
2. I usually participate in math class even if I feel anxious about answering questions.	2.05	Disagree
3. I avoid asking for help in math because I'm afraid of being judged by other.	2.64	Agree
4. I try to avoid math-related task outside school (e.g., math clubs, competitions) due to anxiety.	2.50	Agree
5. I tend to skip math classes when I feel unprepared or overwhelmed.	2.19	Disagree
Overall Mean	**2.42**	**Disagree**

Table 2 above displays the behavioral factors of anxiety in mathematics among students. Among the five items on behavioral factors of anxiety, most were rated as "agree," referring to students experiencing noticeable and recurring feelings of anxiety, particularly in avoiding practicing difficult math problems (2.73), avoiding asking for help (2.64), and trying to avoid math-related tasks (2.50).

However, the overall mean is 2.42, which is described as "disagree," indicating that students experienced mild and infrequent feelings of anxiety in mathematics. Such description is also observed in items such as skipping classes (2.19) and participating in class despite anxiety (2.05). Overall, the results suggest that students generally exhibit mild and infrequent behavioral manifestations of anxiety in mathematics.

Table 3 Cognitive Factors of Anxiety in Mathematics

Items As a student, …	**Mean**	**Descriptive Equivalent**
1. I often think I am not good at mathematics.	2.97	Agree
2. I believe that with effort, I can succeed in math.	1.75	Disagree
3. I find it hard to process and remember multiple steps involved in solving math problems.	3.01	Agree
4. My mind goes blank when I have to recall formulas or procedures during a math exam.	2.97	Agree
5. Even when I understand a math concept, I sometimes forget how to apply it in tests.	3.07	Agree
Overall Mean	**2.75**	**Agree**

On the other hand, Table 3 above presents the cognitive factors of anxiety in mathematics among students. Among the five items, most were rated as “agree,” indicating that students experience noticeable and recurring cognitive manifestations of anxiety in mathematics. This is reflected in statements such as finding it hard to process and remember multiple steps in solving math problems (3.01), forgetting how to apply concepts during tests (3.07), experiencing mind blanking when recalling formulas or procedures (2.97), and believing that they are not good at mathematics (2.97).

Although one item was rated as “disagree,” specifically the belief that effort leads to success in mathematics (1.75), indicating that students experience mild and infrequent positive cognitive beliefs in this aspect. Yet, the overall mean of 2.75 falls still falls under “agree,” suggesting that students generally experience noticeable and recurring cognitive anxiety in mathematics. Overall, the results indicate that cognitive factors of anxiety are present and commonly experienced among the respondents in mathematics.

Table 4 Environmental Factors of Anxiety in Mathematics

Items As a student, …	**Mean**	**Descriptive Equivalent**
1. I feel nervous when my math teacher asks me to solve a problem in front of the class.	3.00	Agree
2. My math teacher’s teaching style makes it hard for me to understand math concepts.	2.64	Agree
3. The pace of my math class is manageable, so I do not feel anxious.	2.16	Disagree
4. The physical setup of the classroom (e.g., seating arrangement, group works) affects my focus during math lessons.	2.76	Agree
5. I feel anxious when my parents compare my math performance to that of my siblings, peers, or classmates.	2.65	Agree
Overall Mean	**2.64**	**Agree**

The environmental factors of anxiety in mathematics among students is presented on Table 4 above where among its five items, most were rated as “agree,” indicating that students experience noticeable and recurring anxiety influenced by their learning environment. This is reflected in feeling nervous when asked by the teacher to solve problems in front of the class (3.00), difficulty understanding lessons due to teaching style (2.64), the effect of classroom setup on focus during lessons (2.76), and anxiety caused by parental comparison of math performance (2.65).

Only one item was rated as "disagree," which refers to the pace of the math class being manageable (2.16), indicating a mild and infrequent experience of anxiety in this aspect. The overall mean of 2.64 falls under "agree," suggesting that environmental factors contribute to noticeable and recurring feelings of anxiety in mathematics among the respondents.

Table 5 Psychological Factors of Anxiety in Mathematics

Items As a student, …	Mean	Descriptive Equivalent
1. I feel anxious before taking a math test.	3.02	Agree
2. I feel stressed during math exams even if I have studied.	2.91	Agree
3. I experience sweaty palms or increased heart rate when taking a math test.	2.80	Agree
4. I remain calm even if I cannot solve a math problem immediately during a test.	2.38	Disagree
5. I feel tense when solving math problems under time pressure.	3.08	Agree
Overall Mean	**2.84**	**Agree**

Lastly, the Table 5 above presents the psychological factors of anxiety in mathematics among students. Among its five items, most were rated as "agree," indicating that students experience noticeable and recurring psychological manifestations of anxiety in mathematics. This is reflected in feeling anxious before taking a math test (3.02), feeling stressed during exams even when prepared (2.91), experiencing physical signs such as sweaty palms or increased heart rate during tests (2.80), and feeling tense when solving math problems under time pressure (3.08).

Similar to the previous table, only one item was rated as "disagree," which refers to remaining calm when unable to solve a math problem immediately during a test (2.38), indicating a mild and infrequent experience of emotional control in this situation. Moreover, the overall mean of 2.84 falls under "agree," suggesting that psychological factors of anxiety are generally present and commonly experienced by the respondents in mathematics.

Students' Level of Study Habits in Mathematics

Table 6 Homework and Assignment

Items As a student, …	Mean	Descriptive Equivalent
1. I do my math assignments.	3.26	Agree
2. I view my math assignments as necessary, so I dedicate my time to doing them.	2.97	Agree
3. I read my math assignments before tests.	3.08	Agree
4. I tend to stop working on my math assignments when they become too	2.46	Disagree

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difficult.		
5. I submit my math assignments on time.	3.14	Agree
Overall Mean	**2.98**	**Agree**

The Table 6 above presents the homework and assignment component of students' study habits in mathematics where among its five items, most were rated as "agree," indicating that students demonstrate noticeable and recurring study habits in completing mathematics tasks. Specifically, reflected in doing math assignments (3.26), submitting assignments on time (3.14), reading assignments before tests (3.08), and viewing assignments as necessary, which leads to dedicated effort (2.97).

On the other hand, one item received a "disagree" rating, specifically the tendency to stop working on math assignments when they become too difficult (2.46). This implies that such behavior occurs only occasionally and is not a dominant habit among the students. Despite this, the computed overall mean of 2.98 still falls under the "agree" category, indicating that, in general, students demonstrate fairly consistent and positive study habits in terms of completing homework and assignments in mathematics.

Table 7 Time Allocation

Items As a student, …	Mean	Descriptive Equivalent
1. I have personal timetable/schedule for studying mathematics.	2.75	Agree
2. I study each of my lessons that appear on my math timetable/schedule before the day ends.	2.79	Agree
3. I am active in math-related extra curricula activities in school.	2.78	Agree
4. I read and understand math better when the surrounding is quiet, like at night.	3.08	Agree
5. I only study math when the timetable/schedule for tests is out.	2.22	Disagree
Overall Mean	**2.72**	**Agree**

The time allocation component of students' study habits in mathematics is presented in table 7 above in which among its five items, majority were rated as "agree," indicating that students demonstrate noticeable and recurring study habits in managing their time for mathematics learning. Specifically, reflected in having a personal timetable or schedule for studying mathematics (2.75), studying lessons before the day ends (2.79), participating in math-related extracurricular activities (2.78), and understanding mathematics better in a quiet environment such as at night (3.08).

Similar to the previous component, only one item was rated as "disagree," which refers to only studying mathematics when the schedule of tests is released (2.22), indicating a mild and infrequent practice of this behavior. Moreover, the overall mean of 2.72 falls under "agree," suggesting that students generally demonstrate noticeable and recurring study habits in terms of time allocation in mathematics.

Table 8 Reading and Note-Taking

Items As a student, …	Mean	Descriptive Equivalent
1. I usually take notes during math lectures.	3.31	Agree
2. I have the ability to note down important point during math lectures.	3.17	Agree
3. I set goals for every math study session.	2.90	Agree

4. I have specific time of the day during which I study math.	2.80	Agree
5. I rarely reach even 80% of my set goals for each Math study session.	2.17	Disagree
Overall Mean	**2.87**	**Agree**

The Table 8 above presents the reading and note-taking component of students' study habits in mathematics. Majority of the items were rated as "agree," indicating that students demonstrate noticeable and recurring study habits in taking notes and organizing their learning in mathematics. Specifically, usually taking notes during math lectures (3.31), having the ability to write down important points during discussions (3.17), setting goals for each study session (2.90), and having a specific time of the day for studying mathematics (2.80).

Among the 5 items, only one item was rated as "disagree," which refers to rarely reaching at least 80% of set goals for each math study session (2.17), indicating a mild and infrequent occurrence of this behavior. In addition, the overall mean of 2.87 falls under "agree," suggesting that students generally demonstrate noticeable and recurring study habits in terms of reading and note-taking in mathematics.

Table 9 Teacher Consultation

Items As a student, …	**Mean**	**Descriptive Equivalent**
1. I usually ask questions in math class when I am confused.	3.07	Agree
2. I usually avoid going to the teacher to clarify math concepts I don't understand.	2.45	Disagree
3. I consult my math teacher at least once in two weeks.	2.55	Agree
4. My teachers make out time to help me when come with math problems.	2.94	Agree
5. My teacher's explanations in math class are usually very clear.	3.23	Agree
Overall Mean	**2.85**	**Agree**

Lastly, the teacher consultation component of students' study habits in mathematics is presented on table 9 above. In which among its five items, majority were rated as "agree" thus, indicating that students occasionally engage in teacher consultation when learning mathematics. Specifically, reflected in usually asking questions in class when confused (3.07), consulting the teacher at least once in two weeks (2.55), perceiving that teachers allocate time to help with math problems (2.94), and finding teacher explanations clear in math class (3.23).

However, one item was rated as "disagree," which refers to avoiding going to the teacher to clarify misunderstood math concepts (2.45), indicating that this behavior occurs less frequently among the students. Moreover, the overall mean of 2.85 falls under "agree," suggesting that students occasionally demonstrate study habits related to teacher consultation in mathematics.

Academic Performance of Students in Mathematics

Table 10 Frequency Distribution of Students' Mathematics Examination Scores by Sex

Range of Examination Scores	**Male**	**Female**	**Overall**	**Overall Percentage**	**Descriptive Equivalent**
36 - 40	8	3	11	4.26%	Outstanding

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32 - 35	5	4	9	3.49%	Very Satisfactory
28 - 31	6	14	20	7.75%	Satisfactory
24 – 27	13	34	47	18.22%	Fairly Satisfactory
0 - 23	89	82	171	66.28%	Did Not Meet Expectations
Total Number of Respondents	121	137	258	100%	

The table 10 presents the distribution of students' mathematics examination scores by sex. The interpretation and corresponding range of scores are revised based on DepEd Order No. 8 in which majority of students fall under the "Did Not Meet Expectations" category, comprising 171 learners or 66.28% of the sample, with both males and females having high counts in this range. Meanwhile, only a small number of students reached the "Outstanding" level with 11 learners or 4.26%, and "Very Satisfactory" with 9 learners or 3.49%. On the other hand, a moderate number of students are classified as "Satisfactory" with 20 learners or 7.75% and the "Fairly Satisfactory" with 47 learners or 18.22%, where females outnumber males. Overall, the results indicated that most students demonstrate low academic performance in mathematics.

Relationship between Anxiety Levels and Academic Performance

Table 11 Correlation of Anxiety Levels with Academic Performance

Variables	P - Value	Correlation Coefficient (r)	Remarks
Anxiety Levels	0.017	- 0. 149	Significant, Negligible Correlation
Academic Performance			

Table 12 displays the correlation of the anxiety levels of the learners to their academic performance through Pearsons' Correlation. The p-value of 0.017 is less than 0.05, indicating a significant relationship. However, the correlation coefficient (r = -0.149) shows a very weak (negligible) negative correlation between anxiety levels and academic performance. Thus, suggesting that as anxiety levels in mathematics increases, academic performance of students tends to decrease.

Relationship between Study Habits and Academic Performance

Table 12 Correlation of Study Habits with Academic Performance

Variables	P - Value	Correlation Coefficient (r)	Remarks
Study Habits	0.000	0.219	Significant, Very Weak Positive Correlation
Academic Performance			

On the other hand, table 13 exhibited results of the correlation between the study habits and academic performance of the students where the p-value of 0.000 is less than 0.05, thus also indicating a significant relationship. However, the correlation coefficient (r = 0.219) shows a very weak positive correlation between study habits and academic performance. In summary, this means that as study habits improve, academic performance tends to increase.

Difference in Anxiety Levels When Grouped According to Sex

Table 13 Independent Sample Test for Equality of Means Analysis of Anxiety Levels according to Sex

Sex	Mean	P - Value	Remarks
Male	2.64	0.131	Not Significant
Female	2.69		

The results presented in Table 14 reveal the difference in mathematics anxiety levels when students are grouped according to sex. The mean scores for males (2.64) and females (2.69) thus indicating that both groups experience noticeable and recurring level of anxiety in mathematics. Although the mean score of females is slightly higher compared to males, the difference between the two groups remains minimal.

Furthermore, the computed p-value of 0.131 indicates that this observed difference is not statistically significant. This means that any variation in the anxiety levels between male and female students may only be due to chance rather than a meaningful distinction. Overall, the findings suggest that there is no significant difference in mathematics anxiety levels between male and female students.

Difference in Study Habits When Grouped According to Sex

Table 14 Independent Sample Test for Equality of Means Analysis of Study Habits according to Sex

Sex	Mean	P - Value	Remarks
Male	2.80	0.001	Significant
Female	2.90		

Meanwhile, Table 15 presents a different set of results in terms of the difference in study habits when grouped according to sex. The data show that the mean score for females (2.90) is higher than that of males (2.80), indicating that female students demonstrate comparatively better study habits. This difference in mean scores reflects a more consistent and observable pattern of effective study behaviors among females. In addition, the computed p-value of 0.001 indicates that the difference between the two groups is statistically significant.

This implies that the variation in study habits between male and female students is not due to chance and represents a meaningful difference. Overall, the results suggest that study habits significantly differ by sex, with female students demonstrating better study habits than their male counterparts.

Predictive Influence of Anxiety Levels and Study Habits on Academic Performance

Table 15 Multiple Regression Analysis of Anxiety Levels and Study Habits as Predictors of Academic Performance

Variables	R^2	B	P - Value	Remarks
Constant	0.62	11.959	0.089	Not Significant
Anxiety Levels		-2.979	0.053	Not Significant
Study Habits		5.843	0.001	Significant

The results in table 16 shows that $R^2 = 0.062$, which means that 6.2% of the variation in academic performance is explained by anxiety levels and study habits, indicating weak but significant predictive power. Study habits significantly predict academic performance, while anxiety shows a negative but non-significant effect. Overall, study habits have a significant influence on academic performance, whereas anxiety levels do not, and the model is significant but explains only a small portion of the variation.

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DISCUSSIONS AND CONCLUSION

This chapter presents the discussions, conclusion, and recommendations of the study.

Discussions

After the data are analyzed and interpreted, the following findings are discussed:

Students' Level of Anxiety in Mathematics

The findings showed that students generally exhibited low behavioral anxiety but noticeable and recurring cognitive, environmental, and psychological anxiety in mathematics. This pattern suggests that most learners do not openly avoid math tasks, yet they still experience significant internal tension through worrying thoughts, stressful emotions, and negative perceptions about mathematics. In other words, the anxiety is more "in the mind and emotions" than in visible actions like skipping activities or refusing to answer.

From the standpoint of Bandura's Social Cognitive Theory, this internalized pattern of anxiety reflects the personal component of the triadic reciprocal causation. Cognitions (e.g., self-doubt, fear of failure) and emotions (e.g., tension, nervousness) shape how students interpret and respond to math tasks, even when they still choose to participate behaviorally. Bandura (1991) explains that people regulate their functioning through self-influence, and that negative self-evaluations can narrow attention toward failures rather than successes. In this study, students' internal anxiety appears to color how they monitor their own performance, making them more sensitive to mistakes and less confident, which in turn may influence how effectively they engage with learning.

In terms of behavioral factors, the results showed that students did not frequently avoid mathematics-related tasks, though some hesitation was noted in seeking help and facing difficult activities. This suggests that learners remain willing to show up and try, but that they encounter "critical moments" where anxiety still interferes—for example, when solving challenging problems or asking questions in front of others. Salazar (2025) pointed out that avoidance behaviors often develop when tasks are perceived as threatening or too difficult, and this study indicates that students may be on the borderline: they are not yet fully avoiding, but they are already feeling vulnerable in certain situations.

Within Bandura's triadic model, these behaviors reflect the interplay between personal factors (e.g., anxiety, confidence), behavior (e.g., participating or hesitating), and the environment (e.g., teacher responses, peer reactions). When students anticipate negative evaluation or embarrassment, their anxious thoughts and emotions (personal) may lead to cautious or hesitant behaviors, especially in demanding tasks. At the same time, supportive environments such as cooperative learning, constructive feedback, and positive peer interactions. These can counteract this trend by reinforcing students' self-beliefs and encouraging participation (Mutodi & Ngirande, 2014). Thus, suggests that interventions should not only encourage participation but also reduce cognitive load through scaffolded problem-solving, so that tasks feel more manageable and less threatening.

Cognitive anxiety emerged as one of the most evident dimensions. Students reported difficulty processing mathematical procedures, remembering concepts, and dealing with self-doubt, which indicates that they may be experiencing excessive cognitive load when working with mathematics. Rather than simply reflecting weak prior knowledge, these experiences suggest that students' working memory is being overloaded by simultaneous demands including understanding concepts, recalling steps, and managing worry. Moreover, Salazar (2025) noted that such mental strain interferes with retention and application of mathematical concepts.

In terms of Social Cognitive Theory, these findings illustrate how personal cognitive processes (e.g., beliefs about one's ability, mental strategies, intrusive thoughts) influence observable behavioral outcomes like task persistence and problem-solving performance. When anxious thoughts consume mental resources, students' capacity to process new information and execute procedures is reduced, which may lead to more errors and

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reinforce negative self-evaluations. To break this cycle, instruction should deliberately aim to reduce cognitive load through structured scaffolding, guided practice, and step-by-step learning experiences. By breaking complex problems into smaller, manageable parts, teachers can support students' self-regulation and gradually strengthen their self-efficacy, aligning with Bandura's view that efficacy beliefs are built through successful mastery experiences.

The findings also highlighted the role of environmental factors in shaping mathematics anxiety. Classroom conditions, teaching strategies, and social influences all appeared to affect how students experienced math lessons. Anxiety, therefore, is not merely an internal trait; it is also shaped by how instruction is delivered and how students are treated during learning activities. Mutodi and Ngirande (2014) argued that limited instructional variety and failure to respond to diverse learning needs can intensify mathematics anxiety, which is consistent with the current results.

Within Bandura's triadic reciprocal causation, this underscores the environmental component: classroom structures, teacher behaviors, and peer dynamics interact continuously with students' personal beliefs and behavioral patterns. A rigid, high-pressure environment can reinforce negative self-perceptions and anxious reactions, while supportive and varied instruction can promote positive coping and engagement.

This suggests the value of designing classrooms that not only provide multiple ways of explaining concepts, but also explicitly teach coping strategies and stress management, such as stress inoculation training. Such interventions can help students reinterpret challenging tasks as opportunities to learn rather than as threats to their self-worth.

Psychological factors such as stress, tension, and nervousness during math tasks were also commonly reported. Evaluative situations like tests, quizzes, and time-limited problem-solving, remained strong triggers of emotional pressure. Salazar (2025) emphasized time pressure as a major source of anxiety during problem solving; the present findings support this, showing that many students still experience math assessments as emotionally charged events.

From a Social Cognitive Theory perspective, these emotional reactions are part of the personal domain that influences how students choose to act. Bandura (1991) notes that mood and affect shape the way individuals monitor and judge their own performance. Students who feel consistently tense and worried are more likely to interpret minor mistakes as evidence of overall inability, which can lead to reduced effort or a reluctance to take risks. To address this, the findings point to the need for interventions that directly target emotional regulation, such as stress inoculation training, test-taking preparation, and coping-skills development. By equipping students with strategies for managing stress (e.g., breathing techniques, cognitive reframing, practice under simulated test conditions), schools can modify the personal factor of anxiety, which then has the potential to improve both behavior (sustained effort, participation) and performance in line with Bandura's model.

Students' Level of Study Habits in Mathematics

The study found that students generally displayed noticeable and recurring study habits across all dimensions, indicating that many already engage in learning behaviors that support academic participation. This includes consistent work on assignments, scheduling study time, taking notes, and consulting teachers when needed. These behaviors suggest that, at least at the behavioral level, students are making deliberate efforts to meet academic expectations.

Within Bandura's Social Cognitive Theory, these study habits correspond to the behavioral component of the triadic system. Actions like doing homework, planning study time, and organizing materials are not random; they are shaped by students' personal factors such as motivation, self-regulation, and beliefs about the value of effort and by environmental influences, including teacher expectations and classroom norms. Moreover, Bandura (1991) underscores that human functioning is guided by self-regulatory processes. In this context, students' study habits reflect their attempts to regulate their own learning behavior in response to both internal goals and external academic demands.

In the domain of homework and assignments, students consistently completed and submitted tasks and prepared for assessments. This pattern implies that learners recognize the importance of academic responsibilities and are willing to invest effort outside class hours. The study of Ozyildirim (2022) reported that moderate and consistent homework engagement positively contributes to academic achievement. In the current findings, these behaviors indicate that students are not fundamentally disengaged, even if performance outcomes remain modest.

Viewed through Bandura's triadic reciprocal causation, homework behavior lies at the intersection of personal motivation (e.g., aspirations, perceived usefulness of math), behavioral routines (e.g., setting aside time, following instructions), and environmental contingencies (e.g., grading systems, feedback, parental oversight). Students' willingness to complete homework suggests that the environment is successfully prompting certain behaviors, but the persistent performance challenges highlight that homework may need to be better structured to reduce cognitive load. This can be done by aligning tasks with students' current understanding and providing clear scaffolds. In additions, feedbacks that emphasizes progress and mastery, rather than just correctness, could also strengthen positive self-evaluations and support the personal factor in Bandura's framework.

With respect to time allocation, students generally showed effective management of study schedules and lesson reviews, indicating a basic level of self-regulation. Fisher et al. (2015) emphasized that active engagement in learning tasks is linked to higher achievement, and time management is one of the practical expressions of that engagement.

Within the Social Cognitive Theory, effective time management reflects the dynamic interaction of personal self-regulatory skills, behavioral planning, and environmental demands such as deadlines and exam schedules. Students who manage their time well are demonstrating the capability to anticipate demands and adjust their behavior accordingly, which aligns with Bandura's view that individuals actively shape their own behavior through forethought and planning.

However, the persistence of low overall performance suggests that time management, while present, may not always be directed toward strategies that reduce cognitive load (e.g., spaced practice, targeted review of difficult topics). This indicates the need for instruction that not only encourages students to study longer, but also teaches them how to study more effectively, especially in ways that ease mental burden and strengthen understanding.

The findings further revealed that note-taking and organizing learning materials are commonly practiced. Students make efforts to write important information and set learning goals, which are behaviors associated with deeper processing of content. Moreover, note-taking and reading skills are valuable components of academic success, as they help structure and consolidate knowledge (Tus et al.,2020).

In Bandura's framework, these behaviors highlight how personal cognitive processes such as attention, goal-setting, and strategic thinking are connected to observable actions like organizing notebooks, highlighting key ideas, and summarizing lessons. When students actively process information through note-taking, they are engaging in self-regulation and self-organization, both of which are central to Social Cognitive Theory. Still, if these strategies are not explicitly guided to reduce cognitive load (for example, through visual organizers, worked examples, or annotated notes), students may be exerting considerable effort without achieving proportional gains in understanding. Moreover, this underscores the importance of training students in structured note-taking methods that help them organize complex mathematical ideas more efficiently.

Teacher consultation was also evident, though not consistently practiced by all students. Those who sought clarification and feedback demonstrated a willingness to use available support systems. The results of the study conducted by Balbacal (2023) found that teacher consultation enhances understanding and mastery of mathematical concepts, which is consistent with this study's emphasis on its potential benefits.

Through the lens of Social Cognitive Theory, teachers represent a powerful environmental influence. Their feedback, encouragement, and instructional style can significantly shape students' personal beliefs about their capability and their behavioral choices regarding seeking help. When students consult teachers, they are engaging in a behavior that can directly modify their personal factors (e.g., boosting confidence, clarifying misconceptions) and indirectly shape their future engagement. Encouraging more consistent teacher-student interaction through open-door policies, scheduled consultation hours, or structured feedback conferences that can strengthen this environmental component. Such interactions can be leveraged not just for content clarification but also for co-developing coping strategies and scaffolded learning plans that gradually decrease cognitive load.

Academic Performance of Students in Mathematics

The results showed that most students did not meet the expected level of academic performance in mathematics, although a number achieved satisfactory to outstanding levels. Overall, achievement remained relatively low despite the presence of generally positive study habits and the absence of severe behavioral avoidance.

This pattern suggests that simply having study habits and attending to tasks is not enough when other factors such as the quality of instruction, prior knowledge gaps, and persistent anxiety are at play. Similar observations were reported by Lazarra (2025), where many students also clustered in the lower achievement categories. In addition, the current findings therefore point to a more complex picture of performance, one where effort and participation coexist with lingering cognitive and emotional barriers.

Meanwhile, in Bandura's triadic reciprocal causation, academic performance is viewed as an outcome of continuous interaction among personal factors (e.g., anxiety, self-efficacy, prior knowledge), behavioral patterns (e.g., study habits, class participation), and environmental influences (e.g., instructional quality, classroom climate, availability of learning resources). The relatively low performance in this study indicates that the balance among these three elements is not yet optimal. While students demonstrate effort behaviorally, their personal anxieties and possibly fragmented conceptual understanding, combined with environmental challenges, appear to limit the effectiveness of that effort. This reinforces the need for a comprehensive intervention approach that not only strengthens study habits but also reduces cognitive load and addresses emotional and instructional factors.

Relationship Between Anxiety Levels and Academic Performance

The study found a significant but very weak negative relationship between anxiety levels and academic performance. Students with higher anxiety tended to perform slightly lower, but the strength of this association was minimal. This suggests that while anxiety does play a role, it is not a dominant or standalone predictor of achievement.

Jolejole-Caube et al. (2019) noted that anxiety can interfere with concentration and problem-solving, which is consistent with the direction of the relationship observed. However, the weak magnitude implies that some students may still perform reasonably well despite feeling anxious, possibly due to compensatory factors such as strong study habits, supportive environments, or high motivation.

On the other hand, from the perspective of Bandura's Social Cognitive Theory, anxiety functions as a personal factor that influences behavior, but its impact is mediated and moderated by the behavioral and environmental components. Learners who have effective study strategies, strong self-efficacy, or supportive teachers may be able to buffer the negative effects of anxiety on performance. Conversely, students with high anxiety and weak environmental or behavioral supports may experience more substantial performance declines.

This aligns with the finding that anxiety alone cannot strongly predict performance; it is the interaction among anxiety, behavior, and environment that ultimately shapes outcomes. Practically, this underscores the importance of pairing anxiety-reduction strategies (e.g., stress inoculation training, coping-skills development) with instructional scaffolds that reduce cognitive load, rather than addressing anxiety in isolation.

Relationship Between Study Habits and Academic Performance

The study also revealed a significant but very weak positive relationship between study habits and academic performance. Students with better study habits tended to obtain slightly higher scores in mathematics, but again, the strength of the relationship was limited.

This finding indicates that productive study behaviors do contribute to achievement, but they cannot fully compensate for other weaknesses, such as conceptual gaps, high anxiety, or unsupportive learning environments. Abalde and Oco (2023) likewise emphasized the role of study habits in learning mathematics, yet the present results suggest that their influence is modest when examined alone.

Within Bandura's framework, study habits represent the behavioral factor that interacts with personal beliefs (e.g., self-efficacy, attitudes toward math) and environmental conditions (e.g., instructional quality, feedback). The weak relationship points to the possibility that many students are engaging in study behaviors that are not optimally aligned with deep learning or cognitive efficiency. For instance, they may spend time on repetitive practice without sufficient conceptual support, or they may study under high stress and time pressure.

This indicates that interventions should focus not just on encouraging students to study more, but on teaching them how to study in ways that reduce cognitive load and deepen understanding, such as using worked examples, concept mapping, and distributed practice. When these more effective strategies are embedded in a supportive environment, the behavioral factor of study habits can work more synergistically with personal and environmental components to enhance performance.

Difference in Anxiety Levels When Grouped According to Sex

The absence of a significant difference in anxiety levels between male and female students suggests that mathematics anxiety is experienced at similar levels across sexes. This indicates that the sources and expressions of anxiety in this context are not strongly gender-dependent, but are instead shaped by academic and classroom conditions that affect both groups.

Through the lens of Social Cognitive Theory, this finding can be interpreted as evidence that male and female students in this setting are exposed to similar environmental demands and instructional practices, which, in turn, generate comparable patterns of personal reactions and behavioral responses. Since anxiety is comparable across sexes, interventions aimed at reducing anxiety such as stress inoculation, scaffolded instruction, and supportive feedback can reasonably be designed to target the whole class, rather than being highly differentiated by sex. This supports the idea that improving the overall learning environment and addressing common cognitive and emotional challenges can benefit all learners.

Difference in Study Habits When Grouped According to Sex

In contrast, the significant difference in study habits according to sex, with female students demonstrating stronger study habits than male students, points to differences in how academic responsibilities and learning strategies are enacted behaviorally. Female students in this study appear to show higher levels of self-regulation and academic engagement in mathematics-related tasks.

From the standpoint of Bandura's triadic reciprocal causation, these differences in behavior may result from the interaction of personal characteristics (e.g., beliefs about schooling, self-discipline, achievement goals) and environmental experiences (e.g., social expectations, teacher feedback, family influences) that have historically shaped the way male and female students approach study. Overtime, these combined influences may have fostered stronger study habits among female students in this context.

Because study habits are modifiable behaviors, these findings suggest that interventions can deliberately strengthen the study habits of male students by modeling effective strategies, providing structured routines, and offering consistent feedback. Aligning these efforts with stress-reduction and cognitive-load reduction strategies may be especially helpful for those who also experience internal anxiety. In line with Bandura's theory, such interventions can leverage observational learning, guided practice, and self-regulatory training to help students of all sexes develop more effective and sustainable study routines.

Predictive Influence of Anxiety Levels and Study Habits on Academic Performance

Finally, the analysis showed that anxiety did not significantly predict academic performance, whereas study habits significantly influenced performance, although only to a small extent. This means that study habits are more directly connected to achievement than anxiety among the respondents, but that both variables, taken together, still explain only a limited portion of the variation in students' mathematics performance.

Within Bandura's Social Cognitive Theory, this finding reinforces the idea that academic performance is not determined by a single factor, but by the ongoing interaction of personal, behavioral, and environmental influences. Anxiety (personal) and study habits (behavioral) are important components, yet the modest predictive power observed suggests that other variables such as instructional quality, availability of learning resources, prior mathematical preparation, classroom climate, motivation, and self-efficacy likely play a substantial role in shaping outcomes.

Interpreted this way, the results point toward the need for multi-layered interventions. On the personal level, students would benefit from programs aimed at managing anxiety, such as stress inoculation training, test-taking strategy workshops, and coping-skills development, which can help them maintain focus during high-stakes tasks. On the behavioral level, students require guidance in developing high-quality study habits that reduce cognitive load, such as scaffolded problem-solving routines, structured note-taking, strategic review, and appropriate use of teacher consultation. On the environmental level, improvements in instructional design, classroom climate, and availability of supportive resources are essential to create conditions where both anxiety and effort can be more productively channeled.

Overall, when viewed through Bandura's triadic reciprocal causation, the study suggests that effective improvement in mathematics performance will require coordinated changes in personal, behavioral, and environmental domains. Interventions that simultaneously reduce cognitive load, manage stress, and enhance study strategies within a supportive classroom environment are more likely to produce meaningful and sustained gains in students' mathematical achievement than efforts that target any single factor in isolation.

CONCLUSIONS

Based on the findings of the study, students exhibited low behavioral anxiety but noticeable levels of cognitive, environmental, and psychological anxiety in mathematics, suggesting that their anxiety is experienced more internally than through observable avoidance behaviors. Although students generally remain willing to participate in mathematics activities, they continue to struggle with self-doubt, difficulty processing mathematical concepts, and emotional pressure, particularly during tests and other evaluative situations. In terms of study habits, students demonstrated recurring positive practices in completing homework and assignments, managing study time, taking notes, and consulting teachers, although there are still areas that need improvement, particularly in maintaining consistency, persistence, and actively seeking academic support.

Despite these positive study behaviors, students' academic performance in mathematics remained generally low, with most not reaching the expected level of achievement, although some attained satisfactory to outstanding results. The study also revealed that there was no significant difference in mathematics anxiety when students were grouped according to sex, indicating that both male and female students experience similar levels of anxiety. However, female students displayed stronger study habits than their male counterparts. Furthermore, anxiety had a significant but very weak negative relationship with academic performance, while study habits had a significant but very weak positive relationship, showing that both variables are related to achievement but only to a limited extent.

In terms of predictive influence, anxiety did not significantly predict academic performance, whereas study habits had a significant but small influence on students' mathematics achievement. These findings suggest that anxiety and study habits alone cannot fully explain students' academic performance, as other personal, behavioral, and environmental factors also contribute to learning outcomes. Overall, the results highlight the importance of adopting a more comprehensive approach that not only strengthens effective study habits and manages mathematics anxiety but also improves instructional practices, classroom environments, and learning support systems to promote better performance in mathematics.

RECOMMENDATIONS

1. **Learners** are encouraged to strengthen their study habits by maintaining consistent study schedules, setting realistic academic goals, and practicing effective learning strategies that promote deeper understanding of mathematical concepts. They are also encouraged to develop healthy ways of managing anxiety, particularly during tests and challenging mathematical tasks, through proper preparation and positive learning attitudes.

2. **Teachers** are encouraged to provide supportive and engaging learning experiences that help reduce students' cognitive and psychological anxiety in mathematics. The use of varied teaching strategies, scaffolded instruction, constructive feedback, and an encouraging classroom atmosphere may help students build confidence, improve understanding, and participate more actively in mathematics learning.

3. **School Administrators** are encouraged to develop and support programs that promote effective study habits and address students' mathematics anxiety. Activities such as study skills training, academic intervention programs, stress management seminars, and teacher development initiatives may contribute to creating a more positive and student-centered learning environment.

4. **Parents** are encouraged to provide continuous academic and emotional support by fostering productive study routines at home, monitoring their children's learning progress, and encouraging a positive attitude toward mathematics. Their guidance and encouragement may help students manage anxiety and become more confident in their abilities.

5. **Future Researchers** are encouraged to investigate other factors that may influence students' academic performance in mathematics, since anxiety and study habits explain only a limited portion of achievement. Future studies may include variables such as motivation, self-efficacy, teaching strategies, classroom environment, prior mathematical knowledge, and learning resources. Researchers may also consider using larger and more diverse samples, employing different research designs that can examine causal relationships, and utilizing additional data collection methods to minimize the limitations associated with self-report measures.

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