

**Mathematics anxiety, attitudes, and academic performance
among senior high school students**

Pilimpinas S. Conding III*

Northeastern College, Santiago City, Isabela, Philippines

ABSTRACT

Mathematics anxiety remains a concern among students because it may affect confidence, engagement, and performance in Mathematics. However, limited local evidence describes its dimensions and relationship with students' attitudes, performance, and teacher reinforcement within a Philippine school context. The study determined the level of Mathematics anxiety among 56 Grade 12 students at Divine Word College of Urdaneta, Inc. using a descriptive survey design. Data were gathered through a questionnaire, interview, and documentary analysis and analyzed using frequency and percentage, weighted mean, Chi-square test, and simple correlation analysis. Results showed respondents had a moderately positive attitude toward Mathematics but experienced very high anxiety across test, numerical, affective, and course-related dimensions. Most profile variables were not significantly related to Mathematics performance, although family income was. Teacher reinforcements emphasizing engaging instruction, manageable tasks, and study skills were valued. The findings stress the need for supportive instruction and interventions addressing both academic and emotional needs.

Keywords: Mathematics anxiety, mathematics attitude, mathematics performance, teacher reinforcement, Grade 12 students.

Date Submitted: July 18, 2026

Date Accepted: July 24, 2026

Date Published: August 19, 2026

INTRODUCTION

Mathematics is an essential part of formal education and everyday life. It develops logical reasoning, quantitative skills, problem-solving abilities, and decision-making. It is also a fundamental component of science, technology, engineering, and mathematics (STEM) education. Despite its importance, however, many students experience difficulty and discomfort when dealing with mathematical concepts, computations, examinations, and problem-solving activities. One important factor associated with these experiences is mathematics anxiety.

Mathematics anxiety refers to the feelings of tension, apprehension, worry, or fear that arise when an individual is required to work with numbers or perform mathematical tasks. Richardson and Suinn (1972) originally described it as a condition in which feelings of tension and anxiety interfere with the manipulation of numbers and the solution of mathematical

*Corresponding author

DOI: <http://doi.org/10.69651/PIJHSS05031485>

Recommended citation:

Condong, P. S., III. (2026). Mathematics anxiety, attitudes, and academic performance among senior high school students. *Pantao (International Journal of the Humanities and Social Sciences)* 5 (3), 3638-3649.
<http://doi.org/10.69651/PIJHSS05031485>

problems. This definition emphasizes that mathematics anxiety is more than a simple dislike of the subject. It involves an emotional response that may interfere with a student's ability to perform mathematical tasks effectively.

The concept has been examined extensively in educational and psychological research. According to Bessant (1995), mathematics anxiety is multidimensional rather than a single, uniform experience. It may involve anxiety related to evaluation, numerical activities, performance, problem solving, and mathematics examinations. More recent research supports this multidimensional view. Lukowski et al. (2019), for instance, found that mathematics-specific anxiety may involve distinct dimensions associated with mathematical calculations, classroom situations, and mathematics tests. Thus, students may not experience anxiety in exactly the same manner or in the same mathematical situations.

Mathematics anxiety also has cognitive consequences. Ashcraft and Kirk (2001) explained that individuals with high mathematics anxiety may experience reduced working-memory efficiency during mathematical tasks. Anxiety can occupy cognitive resources that should otherwise be available for computation and problem solving. In the words of Ashcraft and Kirk (2001), mathematics anxiety can disrupt the working-memory processes required during mathematical performance. This helps explain why some students who possess adequate mathematical knowledge may nevertheless have difficulty demonstrating that knowledge when they are anxious.

The relationship between mathematics anxiety and achievement has been established across different educational settings. A large meta-analysis by Namkung et al. (2019), involving school-aged students, found a significant negative relationship between mathematics anxiety and mathematics performance. Similarly, Barroso et al. (2021) analyzed 747 effect sizes from 223 studies and reported a statistically significant negative association between mathematics anxiety and mathematics achievement. Their findings indicate that students who report higher levels of mathematics anxiety tend, on average, to demonstrate lower mathematics achievement. Zhang et al. (2019) likewise found a robust negative relationship between mathematics anxiety and mathematics performance, with the relationship appearing particularly pronounced among Asian students and senior high school students.

The relationship, however, should not be understood as a simple one-way cause-and-effect process. Carey et al. (2016) noted that poor mathematics performance may contribute to the development of mathematics anxiety, while anxiety may subsequently interfere with mathematical performance. This suggests a possible reciprocal relationship. Students who repeatedly experience failure may become increasingly anxious, while heightened anxiety may make subsequent mathematical learning more difficult. Such a cycle may gradually influence students' confidence, attitudes, classroom participation, and willingness to engage with mathematics.

Students' attitudes toward mathematics are therefore important in understanding mathematics anxiety. Attitude encompasses students' beliefs, feelings, perceptions, and dispositions toward mathematics. A positive attitude may encourage students to participate, persist in difficult tasks, and view mistakes as part of learning. A negative attitude, on the other hand, may be accompanied by avoidance, low confidence, and apprehension. In the Philippine context, Calingayan (2024) reported that senior high school students displayed a complex emotional relationship with mathematics, including mixed feelings about enjoyment, fear, anxiety, and distress. The study further indicated that students' attitudes toward mathematics were related to their mathematics performance.

Self-beliefs may also shape students' mathematical experiences. In a Philippine study of senior high school students in Zambales, Ablian and Parangat (2022) found that students reported high levels of mathematics anxiety alongside mathematics self-efficacy. The students described mathematics as difficult and acknowledged feelings of nervousness when learning

the subject. More recently, Amoranto and Manalaysay (2025) examined mathematics self-efficacy, mathematics anxiety, and perceptions of Pre-Calculus among Grade 11 STEM students in Central Luzon. Their study reinforces the importance of examining psychological factors when understanding mathematics performance among Filipino learners.

The social and instructional environment must also be considered. Mathematics anxiety does not develop in isolation from students' experiences with teachers, parents, classmates, and mathematics instruction. Beilock et al. (2010), for example, found that teachers' mathematics anxiety could influence students' mathematics achievement under particular classroom conditions. Szczygieł (2020) similarly examined the role of mathematics anxiety among parents and teachers and its relationship with children's mathematics anxiety and achievement. These findings suggest that students' mathematical experiences may be shaped not only by their individual characteristics but also by the people and learning environments surrounding them.

Teacher support is particularly relevant because teachers can influence how students interpret mathematical difficulty and failure. Supportive feedback, encouragement, appropriate scaffolding, opportunities for practice, and non-threatening assessment conditions may help students approach mathematics with greater confidence. Conversely, excessive emphasis on speed, public performance, or high-stakes testing may increase students' apprehension. Ramirez et al. (2018) emphasized the importance of understanding how students interpret mathematical situations and how these interpretations contribute to mathematics anxiety. Consequently, interventions should not focus solely on mathematical skills; they should also address students' emotional and cognitive responses to mathematics.

Evidence from Philippine schools further demonstrates the importance of examining mathematics anxiety in the local context. DeJesus (2024) investigated mathematics anxiety and academic performance among Grade 11 learners in a private school in Bulacan and specifically examined their relationship within General Mathematics. Vargas (2025), meanwhile, reported moderate to high mathematics anxiety among junior high school students in Bacolod City, with mathematics test situations producing particularly high anxiety. These studies demonstrate that mathematics anxiety remains a relevant concern among Filipino learners, although the nature and intensity of the experience may differ across educational levels and school contexts.

Other Philippine studies point to the possible importance of motivation and self-regulation. Colman and Simbulas (2024) found significant negative relationships between mathematics anxiety and grit, expectancy-value-cost motivation, and self-regulated learning among senior high school students. Espera and Sanchez (2025) further reported that mathematics anxiety partially mediated the relationship between mathematics self-efficacy and students' numeracy performance. These findings indicate that mathematics anxiety should be considered alongside other affective and motivational variables rather than treated as an isolated psychological condition.

Research has also examined approaches for reducing mathematics anxiety. Jardeloza et al. (2016), in a Philippine study involving first-year education students, investigated the use of Web 2.0 technology in mathematics learning as a possible means of addressing mathematics anxiety. International evidence likewise indicates that mathematics anxiety can be reduced through appropriate interventions. Coddington et al. (2023), in a meta-analysis of school-based interventions, found that therapeutic interventions reduced mathematics anxiety while mathematics skill interventions produced stronger gains in mathematics achievement. More broadly, Sammallahti et al. (2024) reported moderate overall effects of interventions on reducing mathematics anxiety and improving mathematics performance.

These findings are important because mathematics anxiety may have consequences beyond a single examination or mathematics course. Persistent anxiety may discourage

students from participating in mathematics-related activities and may influence their educational decisions. Ramirez et al. (2018) noted that mathematics anxiety has implications for students' academic development and continued engagement with mathematics. It may also affect participation in STEM-related fields, where mathematical competence is often required.

Despite the growing body of literature, further investigation remains necessary in specific school and community contexts. International findings cannot automatically be generalized to Filipino students because students' experiences are influenced by educational practices, family circumstances, school environments, cultural expectations, and previous experiences with mathematics. Philippine studies have begun to address this concern, but the literature remains comparatively limited and fragmented across educational levels and local settings. The recent Philippine literature includes studies on mathematics anxiety and academic performance, self-efficacy, motivation, technology-assisted instruction, and perceptions of mathematics, but these studies differ in respondents, instruments, dimensions of anxiety, and school contexts.

The present study responds to this need by examining mathematics anxiety among Grade 12 students at Divine Word College of Urdaneta, Inc. It considers students' personal characteristics, mathematics performance, attitudes toward mathematics, dimensions of mathematics anxiety, and the reinforcement strategies used by teachers to address students' fear of mathematics. The original study specifically identifies mathematics test anxiety, numerical anxiety, negative affect toward mathematics, positive affect toward mathematics, and mathematics course anxiety as dimensions for investigation.

The study is anchored on the view that mathematics anxiety is a multidimensional phenomenon involving cognitive, affective, behavioral, and situational components. It is also informed by research showing that anxiety may interfere with working memory, mathematics performance, attitudes, and engagement. By examining these variables within the context of Grade 12 students, the study seeks to provide evidence that may assist teachers and school administrators in developing appropriate strategies for reducing mathematics anxiety and strengthening students' mathematical learning.

The concern is therefore not simply whether students obtain satisfactory grades in mathematics. More importantly, the study seeks to understand what students experience when they encounter mathematics and how these experiences may be associated with their academic performance. Understanding these relationships can help educators create a classroom environment in which students are encouraged to participate, persist, make mistakes, and develop greater confidence in learning mathematics.

Statement of the problem

This study aimed to determine the level of mathematics anxiety among Grade 12 students at Divine Word College of Urdaneta, Inc., and examine its relationship with students' attitudes toward mathematics and mathematics performance. It also sought to identify the teacher reinforcements used to help students cope with fear and anxiety related to mathematics.

Specifically, the study sought to answer the following questions:

1. What is the profile of the Grade 12 student respondents in terms of age, gender, birth order, highest educational attainment of parents, occupation of parents, and gross monthly income of parents?
2. How may the mathematics performance of the respondents be described based on their semi-final grades?
3. What is the level of the respondents' attitude toward mathematics?

4. What is the level of mathematics anxiety among the respondents in terms of mathematics test anxiety, numerical anxiety, negative affect toward mathematics, positive affect toward mathematics, and mathematics course anxiety?
5. What teacher reinforcements are used to help reduce students' fear and anxiety toward mathematics?
6. Is there a significant difference in the mathematics performance of the respondents when they are grouped according to their profile?
7. Is there a significant relationship between the respondents' attitudes toward mathematics, mathematics anxiety, and mathematics performance when grouped according to their profile?

METHODOLOGY

The study employed the descriptive survey method. This design was considered appropriate because it allows the researcher to describe, analyze, and interpret the prevailing characteristics and conditions of a particular group. Calmorin (1995) explained that descriptive research is appropriate when the researcher seeks to determine the extent to which different conditions exist among members of a group. Similarly, Guba (1987) noted that the descriptive method is suitable for investigating existing conditions, while Whitney (1999) described it as a method for determining prevailing conditions and organizing data to guide practice.

The study was conducted at Divine Word College of Urdaneta, Inc. in Urdaneta City, Pangasinan. The institution is a Catholic, non-stock, and non-profit educational institution administered by the Society of the Divine Word Missionaries (SVD).

The respondents were 56 Grade 12 students enrolled in Mathematics at Divine Word College of Urdaneta, Inc. Of the total, 29 students (51.79%) were from Grade 12–Blessed Aloysius, while 27 students (48.21%) were from Grade 12–Blessed Gregory. Thus, all 56 Grade 12 students constituted the respondents of the study.

The researcher used a structured questionnaire as the primary instrument for data collection. An informal interview was also conducted during the retrieval of the questionnaires to check and countercheck the respondents' answers. The questionnaire was developed following a review of related literature and studies. It consisted of five parts: personal circumstances of the respondents; academic performance in Mathematics during the semi-finals; attitude toward Mathematics; dimensions of Mathematics anxiety; and teacher reinforcements intended to ease Mathematics anxiety.

The Mathematics Attitude Scale was a standardized instrument developed and validated by E. A. Edjan. The Mathematics Anxiety Scale was authored by Richard Kazelskis of the University of Southern Mississippi and contained descriptions of ordinary and academic situations that could elicit Mathematics anxiety. The questionnaire was not subjected to another try-out because standardized instruments were used.

The study examined five dimensions of Mathematics anxiety: Mathematics Test Anxiety, Numerical Anxiety, Negative Affect toward Mathematics, Positive Affect toward Mathematics, and Mathematics Course Anxiety.

Before collecting the data, the researcher sought permission from the office of the President and the school principal to administer the questionnaire to the respondents. The questionnaires were administered to the Grade 12 students and subsequently retrieved. Follow-up visits to the respondents' homes were conducted during weekends, resulting in the reported 100% retrieval of the questionnaires. The collected data were then organized, tabulated, analyzed, and interpreted statistically.

In addition to the questionnaire and interview, the researcher used documentary analysis. The students' Mathematics grades for the semi-finals were obtained from the class adviser and used as the measure of academic performance.

The collected data were tallied, tabulated, analyzed, and interpreted using several statistical tools.

Frequency and percentage were used to describe the respondents' profile, including age, gender, birth order, parents' educational attainment, parents' occupations, family income, and students' semi-final Mathematics grades.

The weighted mean was used to analyze the respondents' attitudes toward Mathematics, their level of Mathematics anxiety, and the effectiveness of teacher reinforcements intended to reduce Mathematics anxiety.

The Chi-square test was employed to test the hypotheses concerning significant differences. The study used a 0.05 level of significance as the basis for determining whether the null hypothesis would be accepted or rejected.

Finally, simple correlation analysis was used to determine the relationships among the respondents' profile, attitudes toward Mathematics, Mathematics anxiety, and Mathematics performance. The interpretation of correlation coefficients followed the principle that coefficients range from -1 to $+1$, with values closer to either extreme indicating stronger relationships and a coefficient of zero indicating no linear relationship (Pallant, 2010).

Overall, the statistical treatment consisted of frequency and percentage, weighted mean, Chi-square test, and simple correlation analysis. These tools were used to describe the respondents, determine their attitudes and anxiety levels, evaluate teacher reinforcements, test differences, and examine relationships among the study variables.

RESULTS AND DISCUSSION

The study involved 56 Grade 12 students. Most of the respondents were 17 years old, comprising 35 students or 62.50% of the sample. Those aged 18 accounted for 16 students (28.57%), while only 5 respondents (8.93%) were 16 years old. In terms of gender, females slightly outnumbered males, with 30 (53.57%) and 26 (46.43%), respectively.

With respect to birth order, the largest group consisted of youngest children, with 19 respondents (33.93%), followed closely by eldest children with 18 (32.14%). Middle children accounted for 14 (25.00%), while only children comprised 5 (8.93%). The distribution indicates that the respondents came from varied family structures.

The educational backgrounds of the parents were also diverse. Among the fathers, college graduates constituted the largest group at 18 (32.14%), followed by high school graduates at 12 (21.43%). Among the mothers, 15 (26.78%) were college graduates and 14 (25.00%) were high school graduates. These figures indicate that many respondents had parents who had reached secondary or tertiary education.

Parental occupations likewise varied. Among fathers, company employees formed the largest group at 10 (17.86%), while government employees, drivers, and retired employees each accounted for 8 (14.29%). Among mothers, housewives constituted the largest group at 14 (25.00%), followed by company employees at 9 (16.07%) and vendors at 8 (14.29%).

Family income was concentrated in the highest income category used in the study. Forty respondents, or 71.43%, reported a gross monthly family income of ₱16,001 and above. No respondent reported an income below ₱8,000. The socioeconomic profile therefore suggests that the sample was largely composed of students from relatively economically stable households. However, this finding should be interpreted only within the income categories used in the study and should not be taken as a direct measure of household wealth.

The respondents generally demonstrated satisfactory to high performance in Mathematics. Twenty-one students (37.50%) obtained grades between 86 and 90, making this the largest group. Fourteen students (25.00%) obtained grades of 91–95, while 12 (21.43%) received grades of 81–85. Five students (8.93%) obtained grades between 96 and 100, and only four (7.14%) fell within the 75–80 range.

Overall, 35 of the 56 respondents, or 62.50%, obtained grades of at least 86. Only a small proportion obtained grades within the lowest grade bracket reported. The findings therefore show that the respondents were generally academically successful in Mathematics despite the high levels of anxiety identified in the succeeding analyses.

The respondents demonstrated a moderately positive attitude toward Mathematics, with an overall weighted mean of 2.87. Their responses suggest that they recognize the importance of Mathematics even though they do not consistently experience strong enjoyment of the subject.

The strongest attitude was reflected in the belief that being good at Mathematics provides greater opportunities for success, which obtained a weighted mean of 4.10. Students also recognized the contribution of Mathematics to their thinking and reasoning, with a mean of 3.85, and expressed interest in acquiring further knowledge in Mathematics, with a mean of 3.80.

In contrast, the weakest responses concerned enjoyment and personal preference. Considering Mathematics as a favorite subject received a mean of only 2.12, while feeling happier in Mathematics class than in other classes obtained 2.15. These results suggest an important distinction: students appear to value Mathematics more than they enjoy it.

This pattern is significant in interpreting the findings. A student may recognize Mathematics as useful and important for future success without developing a strong emotional attachment to the subject. Thus, positive attitudes in this group appear to be largely functional or utilitarian rather than based primarily on enjoyment.

The most striking finding of the study is the very high level of Mathematics anxiety among the respondents. The five dimensions produced a grand weighted mean of 4.29, classified as Very Anxious. Mathematics Test Anxiety ranked first with a mean of 4.34, followed by Negative Affect toward Mathematics at 4.31, Mathematics Course Anxiety at 4.30, Positive Affect toward Mathematics at 4.27, and Numerical Anxiety at 4.24. Importantly, all five dimensions were classified as Very Anxious.

The results indicate that anxiety was not confined to examinations. It extended to numerical activities, classroom experiences, and students' emotional responses to Mathematics. Test-related situations were particularly problematic. The highest individual anxiety rating was associated with being given a surprise Mathematics quiz, with a weighted mean of 4.47. Taking a final examination obtained 4.45, while receiving a final Mathematics grade obtained 4.43.

The findings on negative affect reinforce this concern. The dimension produced a weighted mean of 4.31. The statement that Mathematics usually makes students feel uncomfortable and nervous received 4.37, while the experience of one's mind going blank when solving Mathematics problems received 4.35. These responses indicate that the anxiety is not merely a matter of dislike. It may also involve difficulty maintaining concentration and thinking clearly during mathematical activities.

Numerical tasks produced a similarly high level of anxiety, with an overall mean of 4.24. Division generated the highest anxiety at 4.30, followed by multiplication at 4.27 and subtraction at 4.25. Even addition, the lowest-rated mathematical operation, obtained a mean of 4.23.

Taken together, these results present a noteworthy contrast. The respondents performed relatively well academically, yet they reported very high anxiety. High grades, therefore, should not automatically be interpreted as evidence that students are comfortable or confident in Mathematics. The present findings suggest that academic performance and emotional well-being may not always move together.

The Chi-square analyses showed that age, gender, birth order, father's educational attainment, mother's educational attainment, and father's occupation did not produce significant differences in Mathematics performance.

For age, the computed Chi-square was 2.637, compared with a critical value of 15.507 at 8 degrees of freedom. The result was not significant. Similarly, gender yielded a computed Chi-square of 0.584, which was below the critical value of 9.488. Thus, male and female respondents did not differ significantly in their Mathematics performance. Birth order also showed no significant difference. The computed Chi-square of 8.666 was lower than the critical value of 21.026 at 12 degrees of freedom. Likewise, father's educational attainment produced a computed value of 24.354, lower than the critical value of 41.337. Mother's educational attainment also failed to reach significance, with a computed Chi-square of 14.431 compared with a critical value of 43.773. Father's occupation likewise showed no significant difference in students' Mathematics grades. The computed Chi-square was 28.798, compared with a critical value of 43.773 at 32 degrees of freedom.

Family income was the only profile variable that showed a significant difference in Mathematics performance. The computed Chi-square was 29.824, exceeding the critical value of 26.296 at 16 degrees of freedom. The null hypothesis was therefore rejected for this variable.

This result deserves careful interpretation. It indicates that Mathematics grades were distributed differently across family-income groups. It does not, by itself, prove that higher income causes better Mathematics performance. Income may be associated with access to learning materials, educational support, study environments, or other resources, but the present analysis did not establish which of these factors explains the difference.

The correlation analyses revealed several important patterns. When respondents were grouped according to age, the relationship between attitude and anxiety was positive but not statistically significant ($r = .62$, $p = .574265$). Birth order also produced a strong negative correlation ($r = -.86$), but the relationship was not significant ($p = .14$). These results indicate that the observed patterns were not sufficiently strong statistically to support generalization beyond the sample. A different pattern emerged when respondents were grouped according to their fathers' educational attainment. The correlation was strong and negative ($r = -.87$) and statistically significant ($p = .004971$). This indicates that, within these groups, more positive attitudes toward Mathematics were associated with lower levels of anxiety.

Father's occupation produced a similar result. The correlation between attitude and anxiety was $r = -.80$, with $p = .009628$, indicating a statistically significant negative relationship. Mother's educational attainment, however, showed only a weak positive relationship ($r = .28$, $p = .465553$), which was not significant. Mother's occupation also produced a weak positive relationship ($r = .35$, $p = .321472$) that failed to reach statistical significance.

Family income yielded the strongest reported relationship. The correlation between attitude and anxiety was $r = -.95$, with $p = .01332$, indicating a statistically significant and very strong inverse relationship in the analyzed groups. The lower-income groups tended to report less positive attitudes and higher anxiety, whereas some middle and higher-income groups reported more positive attitudes and somewhat lower anxiety.

These findings point to a consistent but qualified pattern: a more positive attitude toward Mathematics tends to accompany lower anxiety in several socioeconomic groupings, particularly those based on fathers' educational attainment, fathers' occupation, and family

income. However, this should not be interpreted as proof that parental education, occupation, or income directly causes Mathematics anxiety. The study design and correlation analysis establish association, not causation.

The respondents rated the teacher reinforcement strategies as Very Effective, with an overall weighted mean of 4.34. The most highly rated strategy was making Mathematics engaging and accessible, which obtained a mean of 4.46. This was followed by breaking down tasks into manageable parts (4.45) and equipping students with appropriate study skills (4.43). Cultivating a growth mindset and treating mistakes as opportunities for learning received 4.41, while incorporating real-world applications received 4.39. Other highly rated strategies included reframing negative thoughts (4.38), building students' self-efficacy (4.36), creating a safe and positive learning environment (4.34), and shifting emphasis from memorization toward understanding (4.32).

The pattern is meaningful. Students did not identify a single technique as sufficient. Instead, they favored approaches that make Mathematics understandable, manageable, relevant, and less threatening. The strongest ratings were given to instructional strategies that reduce the perceived difficulty of mathematical tasks and help students see Mathematics as something they can understand and apply.

The findings reveal a clear tension in the respondents' mathematical experience. On one hand, the students generally performed well, with 62.50% obtaining grades of 86 or higher. On the other hand, their overall Mathematics anxiety was Very Anxious (grand weighted mean = 4.29). Their attitude toward Mathematics was only Moderately Positive (weighted mean = 2.87).

The results therefore suggest that satisfactory academic performance does not necessarily mean that students experience Mathematics positively. The respondents recognized the value of Mathematics and associated competence in the subject with future success, yet they remained highly anxious, especially in situations involving tests, grades, and problem-solving.

The findings also show that most demographic characteristics were not significantly associated with differences in Mathematics performance. Family income was the exception. This suggests that socioeconomic circumstances may deserve closer attention when examining differences in academic outcomes.

Finally, the respondents' strong ratings for teacher reinforcement provide a practical direction. They favored engaging instruction, manageable tasks, study skills, growth-oriented thinking, real-world applications, and supportive classroom practices. These strategies are consistent with the central finding of the study: the students may be capable of performing well in Mathematics, but they need learning experiences that reduce fear and strengthen confidence while maintaining academic rigor.

CONCLUSION

The study concludes that Mathematics anxiety is a significant concern among Grade 12 students even when they are able to perform satisfactorily in the subject. The findings suggest that academic competence does not necessarily mean that students are comfortable, confident, or emotionally at ease when dealing with Mathematics. Students may recognize the importance of Mathematics and understand its value for their future while still experiencing fear, tension, nervousness, and discomfort. This situation highlights the need to look beyond grades when assessing students' experiences in Mathematics. Their emotional responses should also be

considered because persistent anxiety may affect participation, concentration, confidence, and willingness to engage in mathematical activities.

The findings further imply that Mathematics anxiety should not be treated simply as a personal weakness or lack of ability. Students come to the classroom with different family experiences, economic circumstances, expectations, and forms of support. These conditions may influence how they perceive Mathematics and how they respond to mathematical challenges. The findings involving family income and paternal factors suggest that the home environment deserves greater attention. However, these relationships should not be interpreted as proof that parents or socioeconomic conditions directly cause Mathematics anxiety. Rather, they point to the importance of examining the kinds of support, expectations, resources, and pressures that students experience outside the classroom.

The apparent influence of paternal factors also provides an important direction for schools. Fathers, like mothers, can contribute to students' attitudes toward Mathematics through encouragement, expectations, communication, and involvement in learning. Parents should be encouraged to focus less on immediate academic performance and more on effort, persistence, understanding, and improvement. Students need to feel that difficulty in Mathematics is a normal part of learning. A supportive home environment can help them approach challenges without excessive fear of failure.

For Mathematics teachers, the findings emphasize the importance of instructional clarity and accessibility. Difficult mathematical concepts should be presented in manageable steps. Students should be given sufficient opportunities to practice, ask questions, correct mistakes, and develop confidence before moving to more complex tasks. Assessment practices should also be carefully considered. Unexpected or highly threatening assessment situations may intensify students' anxiety. Teachers can instead provide adequate preparation, clear instructions, guided practice, and assessment formats that allow students to demonstrate what they have learned without unnecessary fear.

The study also underscores the value of making Mathematics more engaging and meaningful. Teachers can use real-life situations, visual representations, collaborative activities, and appropriate technology to make abstract concepts easier to understand. Mathematics should not be presented merely as a collection of formulas and procedures to memorize. Students need to see its relevance to everyday life, future careers, and practical decision-making. When lessons become more meaningful, students may be more willing to participate and persist when they encounter difficulty.

The findings support the development of a school-based intervention program for Mathematics anxiety. Such a program should address both academic and emotional needs. It may include Mathematics study skills, problem-solving strategies, guided practice, confidence-building activities, and appropriate techniques for managing anxiety during assessments. Teachers and guidance personnel can work together in identifying students who require additional support. Parents should also be included so that the assistance provided in school is reinforced at home.

Finally, the findings provide opportunities for further research. The observed differences involving paternal and maternal factors deserve closer examination because quantitative results alone cannot explain why these patterns occurred. Future researchers may use interviews or focus-group discussions to explore parental expectations, communication, academic pressure, and support. Similar studies may also be conducted in other schools and educational settings to determine whether the findings are consistent across different groups of Filipino students.

On the whole, the study emphasizes that improving Mathematics learning requires more than improving students' academic skills. Students also need confidence, encouragement, supportive relationships, and classroom experiences that make Mathematics less threatening

and more understandable. Addressing Mathematics anxiety should therefore be a shared responsibility of teachers, parents, guidance personnel, and school administrators. A learning environment that combines academic rigor with emotional support can help students approach Mathematics with greater confidence, persistence, and willingness to learn.

REFERENCES

- Ablian, J. D., & Parangat, K. B. (2022). Mathematics anxiety and mathematics self-efficacy among senior high school students in public secondary schools. *International Journal of Computer Engineering in Research Trends*, 9(2), 21–33. <https://www.ijcert.org/index.php/ijcert/article/view/663>
- Amoranto, C., & Manalaysay, E. (2025). Predicting success in Pre-Calculus: The role of self-efficacy, math anxiety, and perception among STEM students. *Psychology and Education: A Multidisciplinary Journal*, 48(2), 240–246. <https://doi.org/10.70838/pemj.480209>
- Ashcraft, M. H., & Kirk, E. P. (2001). The relationships among working memory, math anxiety, and performance. *Journal of Experimental Psychology: General*, 130(2), 224–237. <https://doi.org/10.1037/0096-3445.130.2.224>
- Barroso, C., Ganley, C. M., McGraw, A. L., Geer, E. A., Hart, S. A., & Daucourt, M. C. (2021). A meta-analysis of the relation between math anxiety and math achievement. *Psychological Bulletin*, 147(2), 134–168. <https://doi.org/10.1037/bul0000307>
- Beilock, S. L., Gunderson, E. A., Ramirez, G., & Levine, S. C. (2010). Female teachers' math anxiety affects girls' math achievement. *Proceedings of the National Academy of Sciences*, 107(5), 1860–1863. <https://doi.org/10.1073/pnas.0910967107>
- Bessant, K. C. (1995). Factors associated with types of mathematics anxiety in college students. *Journal for Research in Mathematics Education*, 26(4), 327–345. <https://doi.org/10.5951/jresmetheduc.26.4.0327>
- Calmorin, L. P. (1995). *Methods of research and thesis writing*. Rex Book Store.
- Carey, E., Hill, F., Devine, A., & Szücs, D. (2016). The chicken or the egg? The direction of the relationship between mathematics anxiety and mathematics performance. *Frontiers in Psychology*, 6, Article 1987. <https://doi.org/10.3389/fpsyg.2015.01987>
- Codding, R. S., Goodridge, A. E., Hill, E., Kromminga, K. R., Chehayeb, R., Volpe, R. J., & Scheman, N. (2023). Meta-analysis of skill-based and therapeutic interventions to address math anxiety. *Journal of School Psychology*, 100, Article 101229. <https://doi.org/10.1016/j.jsp.2023.101229>
- Colman, S. C. J. A., & Simbulas, L. J. C. (2024). GRIT, expectancy-value-cost motivation, self-regulated learning and mathematics anxiety of senior high school students. *International Journal of Education Research for Higher Learning*, 30(2). <https://ojs.uic.edu.ph/index.php/IJER/article/view/17>

- DeJesus, R. B. (2024). Mathematics anxiety and its relationship to the academic performance in General Mathematics of learners. *Psychology and Education: A Multidisciplinary Journal*, 18(1), 88–95. <https://doi.org/10.5281/zenodo.10841832>
- Espera, J. R., & Sanchez, R. (2025). Mediating roles of mathematics motivation and mathematics anxiety on the relationship between mathematics self-efficacy and numeracy of the students. *Psychology and Education: A Multidisciplinary Journal*, 47(5), 675–688. <https://doi.org/10.70838/pemj.470509>
- Guba, E. (1987). *Experiments, studies, surveys and investigations*. Ohio State University Press.
- Jardeloza, J., Chiong, I. C., & Pechon, R. G. (2016). The effect of using Web 2.0 technology in learning mathematics to the mathematics anxiety of the first year education students of the University of the Immaculate Conception. *International Journal of Education Research for Higher Learning*, 22(2). <https://ejournals.ph/article.php?id=13328>
- Lukowski, S. L., DiTrapani, J. B., Jeon, M., Wang, Z., Schenker, V. J., Doran, M. M., Hart, S. A., Mazzocco, M. M. M., & Petrill, S. A. (2019). Multidimensionality in the measurement of math-specific anxiety and its relationship with mathematical performance. *Learning and Individual Differences*, 70, 100–110. <https://doi.org/10.1016/j.lindif.2019.02.007>
- Namkung, J. M., Peng, P., & Lin, X. (2019). The relation between mathematics anxiety and mathematics performance among school-aged students: A meta-analysis. *Review of Educational Research*, 89(3), 459–496. <https://doi.org/10.3102/0034654319843494>
- Pallant, J. (2010). *SPSS survival manual: A step by step guide to data analysis using SPSS* (4th ed.). McGraw-Hill.
- Ramirez, G., Shaw, S. T., & Maloney, E. A. (2018). Math anxiety: Past research, promising interventions, and a new interpretation framework. *Educational Psychologist*, 53(3), 145–164. <https://doi.org/10.1080/00461520.2018.1447384>
- Richardson, F. C., & Suinn, R. M. (1972). The mathematics anxiety rating scale: Psychometric data. *Journal of Counseling Psychology*, 19(6), 551–554. <https://doi.org/10.1037/h0033456>
- Sammallahti, E., Finell, J., Jonsson, B., & Korhonen, J. (2024). A meta-analysis of math anxiety interventions. *Educational Psychology Review*. <https://doi.org/10.1007/s10648-023-09845-0>
- Szczygieł, M. (2020). When does math anxiety in parents and teachers predict math anxiety and math achievement in elementary school children? The role of gender and grade year. *Social Psychology of Education*, 23, 1023–1054. <https://doi.org/10.1007/s11218-020-09570-2>
- Vargas, S. (2025). Math anxiety of junior high school students: Basis for supported technology-assisted instruction. *Psychology and Education: A Multidisciplinary Journal*, 42(2), 345–354. <https://doi.org/10.70838/pemj.420207>
- Whitney, F. L. (1999). *Elements of research*. Prentice Hall.
- Zhang, J., Zhao, N., & Kong, Q. P. (2019). The relationship between math anxiety and math performance: A meta-analytic investigation. *Frontiers in Psychology*, 10, Article 1613. <https://doi.org/10.3389/fpsyg.2019.01613>