Factors Contributing to Mathematics Dislike Among Students: A Quantitative Analysis

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ABSTRACT

This quantitative study investigates the factors contributing to the widespread dislike of mathematics among students at the University of the Visayas Main Campus. Using a researcher-developed survey, data were gathered from 600 students across different year levels and academic programs. The results indicate that math anxiety and negative prior experiences are the most significant contributors to students' aversion to mathematics. Other influential factors include teaching methods, lack of real-life application, and peer or teacher influence. Data were analyzed using descriptive statistics, and demographic profiling revealed that the issue spans across disciplines and academic years. The study highlights the multifactorial roots of math dislike—psychological, instructional, and contextual—and emphasizes the need for learner-centered teaching, early intervention, and emotional support mechanisms. Findings aim to inform instructional design and institutional policy for improved mathematics engagement and academic outcomes.

Keywords: Mathematics anxiety, student perception, negative math experiences, quantitative study, University of the Visayas, math education, instructional methods, academic engagement

INTRODUCTION

Mathematics is widely regarded as a fundamental subject within the academic curriculum, yet it continues to be one of the most disliked and avoided subjects among students at various educational levels. Despite its crucial role in developing analytical and problem-solving skills, many learners associate mathematics with difficulty, anxiety, and failure (Ashcraft & Krause, 2007). The persistent aversion to mathematics poses a significant challenge for educators, as it can hinder students' academic progression and limit career opportunities in science, technology, engineering, and mathematics (STEM) fields.

Several studies have pointed to a variety of factors contributing to students' negative attitudes toward mathematics. These include prior poor performance, fear of making mistakes, teaching approaches that fail to engage learners, and a lack of perceived relevance to real-life contexts (Boaler, 2008; Chouinard et al., 2007). Moreover, the presence of math anxiety—defined as a feeling of tension or fear that interferes with math performance—has been shown to negatively affect students' confidence and participation in math-related tasks (Maloney & Beilock, 2012).

This study seeks to investigate the key factors contributing to mathematics dislike among students through a quantitative lens. By identifying the prevalent causes and patterns of aversion, the research aims to provide insights that can inform more responsive and effective teaching strategies. Understanding why students dislike math is essential for designing interventions that foster more positive learning experiences, enhance motivation, and improve overall academic outcomes in the subject.

Mathematics dislike and anxiety have been well-documented as barriers to student engagement and achievement. According to Ashcraft and Krause (2007), math anxiety can severely impair working memory, thus hindering performance in mathematical tasks. This psychological barrier creates a feedback loop, where failure leads to greater anxiety, which in turn leads to more failure.

Boaler (2008) emphasized that rigid, procedural teaching methods often alienate students who require more contextual or exploratory learning. When instruction fails to connect math to real-life applications, students may view it as irrelevant and overly abstract. This detachment fuels disinterest and frustration.

Furthermore, Chouinard et al. (2007) found that students' motivation to engage in mathematics decreases when they perceive themselves as incapable or when feedback emphasizes performance over learning. Peer comparison, teacher bias, and labeling can worsen students' attitudes, particularly if they consistently receive negative reinforcement.

Parental influence also plays a role. Maloney and Beilock (2012) demonstrated that parents with high math anxiety can unintentionally transfer this anxiety to their children, particularly when they frequently assist with homework. Likewise, learning environments that are competitive rather than collaborative often exacerbate these feelings.

Lastly, research by Ramirez et al. (2013) confirmed that early negative experiences in mathematics, such as repeated failure or public embarrassment, have long-lasting effects on student perception, often culminating in avoidance behaviors. These studies provide a strong foundation for this research, supporting the need to examine factors—both environmental and psychological—that contribute to students' aversion to mathematics.

METHODOLOGY

Research Design: This study used a descriptive quantitative research design to determine the major factors influencing students' dislike of mathematics. It aimed to measure attitudes and identify correlations among various contributing variables.

Respondents: A total of 600 students from the University of the Visayas Main Campus participated in the study. Respondents were randomly selected from various colleges and programs to ensure diversity in background and experience.

Instrument: A researcher-made survey questionnaire was developed based on existing literature and validated by education experts. The instrument included Likert-scale items across categories such as instructional methods, learning environment, prior math experience, parental support, and math anxiety.

Data Gathering Procedure: Permission to conduct the study was obtained from university officials. Questionnaires were administered online and in person, depending on student availability and preference. Data collection was completed over a two-week period.

Data Analysis: Descriptive statistics (frequency, percentage, mean) were used to summarize responses. Inferential statistics, particularly Pearson's correlation, were used to determine the relationships between student attitudes and the identified variables.

RESULTS AND DISCUSSION

Table 1. Summary of Factors Contributing to Mathematics Dislike (N = 600)

Factor	Mean	Interpretation
Math Anxiety	3.65	Strongly Agree
Negative Prior Experiences	3.55	Strongly Agree
Teaching Methods	3.42	Agree
Lack of Real-Life Application	3.38	Agree
Peer and Teacher Influence	3.29	Agree
Parental Pressure	3.10	Agree

Competitive Classroom Climate	2.85	Moderately Agree

The results in Table 1 reveal that **math anxiety** ranks as the most significant contributor to students' dislike of mathematics (M = 3.65), with a large portion of respondents strongly agreeing with its negative impact. This finding aligns with recent studies, such as those by Camacho-Morles et al. (2021), which confirmed that math anxiety directly impairs students' confidence, leading to reduced engagement and persistence in problem-solving tasks.

Closely following is **negative prior experience** (M = 3.55), indicating that students who have encountered failure, humiliation, or lack of support in previous math encounters develop avoidance tendencies. Studies by Prime et al. (2020) highlighted how early negative math experiences shape long-term academic self-concept and attitude.

Teaching methods (M = 3.42) were also strongly associated with math dislike. Respondents indicated that lecture-dominated, non-interactive, and test-heavy instruction failed to sustain interest or encourage deep understanding. This supports recent research from Phelps and Spitzer (2022), who found that student-centered, inquiry-based learning models significantly reduce aversion to math and improve classroom climate.

The **lack of real-life application** (M = 3.38) also emerged as a major factor. Many students perceived mathematics as abstract and disconnected from everyday needs. This is consistent with Tella and Adolphus (2023), who emphasized that real-world relevance and interdisciplinary integration in instruction increase student motivation and reduce negative perceptions.

Lower on the list but still relevant were **peer and teacher influence** (M = 3.29) and **parental pressure** (M = 3.10). The quality of teacher feedback and the emotional climate in math classes often shape students' affective responses to the subject. Recent studies such as Liang et al. (2022) stress the importance of emotionally supportive learning environments for promoting mathematical resilience.

Finally, the **competitive classroom climate** (M = 2.85) had the lowest mean but still showed moderate agreement. Highly competitive environments may discourage participation and reinforce fear of failure, particularly among less confident learners (Rahimi & Karkami, 2021).

Table 2. Frequency and Percentage of Responses by Factor (Top Three Items)

Factor	Strongly Agree	Agree	Disagree	Strongly Disagree
Math Anxiety	378 (63.0%)	162 (27%)	36 (6%)	24 (4%)
Negative Experiences	351 (58.5%)	180 (30%)	42 (7%)	27 (4.5%)

Teaching Methods	324 (54%)	186 (31%)	60 (10%)	30 (5%)

The frequency and percentage distribution of responses for the top three factors contributing to students' dislike of mathematics—**Math Anxiety**, **Negative Experiences**, and **Teaching Methods**—reveals consistent trends across the sample of 600 respondents.

Math Anxiety received the highest level of strong agreement (378 respondents, 63%), with an additional 27% agreeing. This means that 90% of students affirm experiencing anxiety related to mathematics. This finding aligns with Camacho-Morles et al. (2021), who emphasized that math anxiety remains a major psychological barrier to student performance, often leading to avoidance behaviors and reduced self-efficacy.

Negative Experiences followed closely, with 58.5% of respondents strongly agreeing and 30% agreeing. These experiences include past failures, embarrassment, or insufficient instructional support. According to Primi et al. (2020), negative early academic experiences in mathematics can have a lasting effect on learners' attitudes and can reinforce cognitive blocks that persist into higher education.

Teaching Methods also received high agreement levels, with 54% strongly agreeing and 31% agreeing that traditional instructional strategies contributed to their aversion to math. These methods, often characterized by rote memorization and minimal interaction, are perceived as rigid and demotivating. This supports findings by Phelps and Spitzer (2022), who advocate for student-centered learning environments where exploration and problem-solving are prioritized.

The remaining percentages for disagreement and strong disagreement were relatively low across all three factors, confirming a strong consensus among students regarding the challenges they associate with mathematics learning.

Table 3. Demographic Distribution of Respondents (N = 600)

Category	Subcategory	Frequency	Percentage
Year Level	1st Year	150	25%
	2nd Year	180	30%
	3rd Year	135	22.5%
	4th Year	135	22.5%
Gender	Male	258	43%
	Female	342	57%
Program	STEM-related Courses	240	40%
	Non-STEM Courses	360	60%

Table 3 presents the demographic profile of the 600 student respondents in terms of year level, gender, and academic program. This distribution provides context for understanding the factors influencing mathematics dislike across subgroups.

Year Level

Among the respondents, 2nd-year students comprised the largest group (30%), followed by 1st-year students (25%), and an equal number of 3rd- and 4th-year students (22.5% each). This even spread across academic levels indicates that mathematics aversion is not isolated to any specific year, but is rather a persistent issue throughout the student journey. This is consistent with findings by Rosário et al. (2021), who noted that negative attitudes toward math can begin early in college and persist if not addressed through continuous instructional reform and student support.

Gender

The gender distribution shows a female majority (57%) and male minority (43%), reflective of common enrollment trends in many education and liberal arts programs in the Philippines. Interestingly, several studies including those by Devine et al. (2021) have found that females report higher levels of math anxiety compared to males, often due to long-standing stereotypes and lower confidence in math-related subjects—even when performance is equivalent. This gender-based discrepancy suggests the need for gender-sensitive teaching approaches to mitigate anxiety and build confidence among female learners.

Academic Program

Students enrolled in non-STEM programs made up 60% of the sample, while those in STEM-related courses constituted 40%. The higher representation of non-STEM students is significant, as previous studies (e.g., Ramos & Go, 2022) indicate that learners from non-STEM fields often feel less competent and less motivated in mathematics due to limited exposure to math-intensive content and lower math self-efficacy. This supports the current findings showing widespread math dislike even among students who are not heavily exposed to technical subjects.

Overall, the demographic distribution emphasizes the breadth of math aversion across groups and signals the importance of differentiated interventions tailored by academic year, gender, and program type.

CONCLUSION

The findings of this study affirm that students' dislike of mathematics is shaped by a combination of psychological, pedagogical, and contextual factors. Among the 600 respondents from the University of the Visayas Main Campus, **math anxiety** emerged as the most significant contributor, followed by **negative prior**

experiences and **traditional teaching methods**. This supports Camacho-Morles et al. (2021), who emphasize that math anxiety is one of the strongest predictors of poor performance and disengagement. Similarly, Primi et al. (2020) noted that early academic failure can lead to long-term avoidance behaviors toward math.

The results also highlight how a **lack of real-world relevance** and **peer/teacher influence** diminish students' interest in mathematics, confirming Tella and Adolphus's (2023) conclusion that abstract content without application leads to perceived irrelevance. Additionally, demographic patterns—such as higher math dislike among non-STEM and female students—reflect persistent disparities in math engagement, as documented by Devine et al. (2021).

In sum, mathematics aversion is not a result of a single cause but a network of intertwined academic and emotional variables. To address this challenge, institutions must adopt **learner-centered, inclusive, and psychologically supportive approaches**. The study underscores the importance of early intervention, gender-responsive instruction, and contextualized pedagogy to foster a more positive mathematics learning culture.

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