

MATH ANXIETY: UNDERSTANDING AND REDUCING MATH ANXIETY IN THE CLASSROOM

INTRODUCTION

Math anxiety is a widespread and deeply rooted issue that negatively affects students' confidence, performance, and long-term academic paths. This project examines the causes, effects, and potential solutions to math anxiety and explores how educators can play a crucial role through intentional support and effective instructional design.

INQUIRY QUESTION

What are the underlying causes of math anxiety in high school students, and what strategies can educators implement to effectively reduce this anxiety and improve student outcomes in mathematics?

RATIONALE

Why Math Anxiety?

During my student teaching, I was surprised by how many students experienced math anxiety and how it impacted their confidence and willingness to engage. I noticed that many students felt defeated or frustrated before even attempting a math problem. This helped me understand that math anxiety goes beyond just disliking the subject, but it acts as a mental and emotional block that prevents students from engaging and realizing their capabilities in math! I wanted to understand this better so I could learn how to support these students.

DEFINITION

Math Anxiety: A feeling of tension, fear, or apprehension that interferes with math performance, often causing students to avoid math-related tasks and doubt their abilities, regardless of their actual skill level and knowledge.

TPEP

Criterion 3: Recognizing individual student learning needs and developing strategies to address those needs.

By acknowledging the impact of math anxiety, I am actively working to create an inclusive classroom environment where all students feel supported, understood, and empowered to succeed in mathematics.

RESEARCH

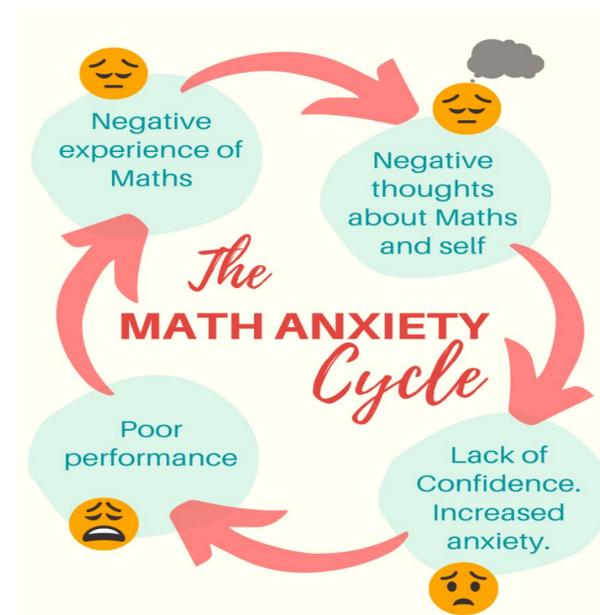
CAUSES:

- Negative past experiences in math classes
- Pressure to perform well (from teachers or parents)
- Fixed-mindset beliefs about math abilities (believe you're either "good" or "bad" at math)
- Fear of making mistakes and being judged by peers or teachers
- Stereotypes (such as "girls aren't good at math" or "math is only for smart people")

SYMPTOMS:

- Avoidance of math-related tasks or classes
- Physical symptoms (sweating, fast heartbeat, stomachaches during math)
- Freezing or forgetting learned content during tests
- Negative self-talk or low confidence in math
- Emotional reactions like frustration, fear, or even crying during assignments

THE CYCLE:



<https://learnwithconfidence.com/2020/10/19/help-your-child-overcome-math-anxiety/>

IMPACTED POPULATIONS:

- All students – math anxiety can affect learners across all ages, abilities, and backgrounds.
- Girls and women – more likely to experience math anxiety due to societal gender expectations and stereotypes.
- Students from marginalized backgrounds (low-income households, multilingual learners, and underrepresented racial groups) often experience higher levels of math anxiety.

EFFECTS ON STUDENTS:

- Avoidance of math-related subjects
- Lower academic achievement and participation
- Reduced working memory and concentration during math tasks
- Decreases confidence and self-efficacy in mathematics
- Long-term impact on career choices, especially in STEM fields

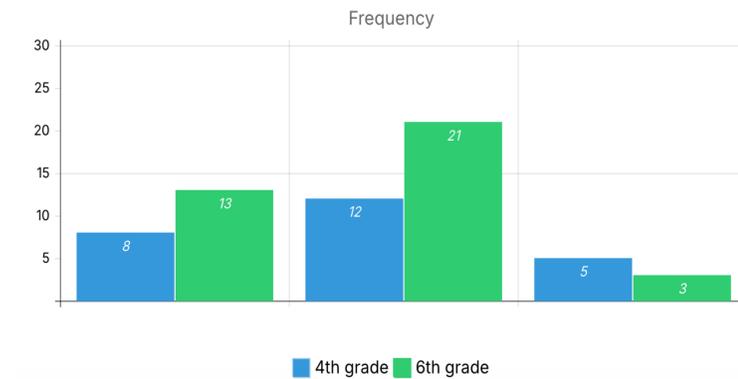
STRATEGIES TO REDUCE MATH ANXIETY:

- Emphasize a growth mindset and mistake-making
- Foster a supportive classroom culture
- Model calm and enthusiastic math teaching
- Use collaborative learning and low-stakes activities

ROLE OF TEACHERS AND PARENTS:

- Teachers can reduce stigma by normalizing mistakes and sharing their math struggles.
- Parents should avoid expressing math anxiety at home (ex, "I was never good at math either")
- Build trusting relationships so students feel supported when trying difficult problems
- Celebrate progress and growth, not just correct answers
- Communicate consistently about student progress and emotional needs

Mathematics Anxiety Scores



<https://files.eric.ed.gov/fulltext/EJ1357687.pdf>

ACTION

Taking action to address math anxiety is extremely important for ensuring all students have equitable access to meaningful math learning. By proactively supporting students' emotional well-being and confidence, educators and families can break the cycle of anxiety and fear and help students reach their full potential.

- Create supportive classroom environments that encourage risk-taking and celebrate mistakes as learning opportunities
- Provide professional development for teachers on recognizing and addressing math anxiety
- Use varied teaching methods and growth mindset language to build students' math self-efficacy
- Advocate for school-wide policies that prioritize mental health and reduce stigma around math struggles.

FINAL THOUGHTS

Math anxiety is a real and serious issue that affects students emotionally, academically, and personally. It cannot be ignored. As a future math educator, I am committed to addressing this head-on in my classroom. I want every student to know that it's okay to feel anxious and that they are not alone. We will create a space where it's safe to make mistakes, ask questions, and grow together. Moving forward, I hope to continue this work by conducting research through student surveys, one-on-one conversations, and ongoing reflection to support my students better and break the cycle of math anxiety.

REFERENCES

