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De-stressing Interventions: Strategies for Learner Anxiety in Learning Mathematics in the Modern World

May Flor L. Cabangon [1], Maria Rebecca B. Talledo, EdD [1]
mfcabangon@gmail.com / 0009-0006-6352-1382

1 – Abra State Institute of Sciences and Technology

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Abstract

Mathematics anxiety remains a concern among learners, particularly in courses that require reasoning, problem-solving, and public performance. In Mathematics in the Modern World, anxiety may affect students' confidence, participation, and academic performance. This study aimed to determine the level and sources of mathematics anxiety among first-year Social Work students and examine the effectiveness of selected de-stressing interventions in reducing anxiety and improving academic performance. The study employed an exploratory sequential mixed – methods design involving seventy-seven (77) first-year Social Work students from sections 1A and 1B at Abra State Institute of Sciences and Technology, Main Campus La Paz Extension. Qualitative data were gathered through semi-structured interviews and analyzed using thematic analysis. The findings served as the basis for developing the Mathematics Anxiety Test. Quantitative data were collected through pretests, posttests, and pre and post administration of anxiety test. The interventions included the Stationed Activity Strategy for data collection, presentation, and interpretation, and the Combined Non-lyrical Instrumental Music and Reflective Journaling Strategy for applying logic in real-life arguments. Data were analyzed using mean, standard deviation, paired-samples t-test, and Pearson Product-Moment Correlation. Findings revealed high to very high levels of mathematics anxiety, particularly in public performance, fer of embarrassment and judgment, teacher-related anxiety, and test and quiz anxiety. Students' performance improved from fair in the pretest to very good in the posttest. The interventions reduced mathematics anxiety and improved academic performance. However no significant relationship was found between performance improvement and anxiety reduction after the intervention. Learner-centered and emotionally supportive interventions can help reduce mathematics anxiety and improve academic performance. However, improvement in performance and reduction in anxiety may occur independently.

Keywords: *public performance anxiety, fear of embarrassment and judgment, teacher-related anxiety, test and quiz anxiety, Stationed Activity Strategy, Combined Non-lyrical Instrumental Music and Journaling*

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Introduction

Background and rationale

Mathematics develops logical reasoning, analytical thinking, and problem-solving skills that are necessary for academic success and real-life decision-making. Mathematics, as one of the key subjects of learning, is engaged for the development of such skills that enable learners to interpret data, analyze arguments, and use numbers in real-world contexts. However, despite its importance, many learners find mathematics to be one of the most difficult subjects, often experiencing stress and fear related to it. In many classrooms, tension, fear, and worry are common emotions of learners in the presence of mathematical tasks. This response, termed "mathematics anxiety," is known to reduce the quality of students' learning experience and achievement in mathematics (Carey et al., 2023).

Studies show that mathematics anxiety is linked to negative classroom experiences, fear of embarrassment, teacher-related pressure, and lack of confidence in solving problems (Namkung et al., 2022; Ramirez et al., 2022). Test and quiz situations further increase anxiety due to time pressure and cognitive load, affecting learners' working memory and performance (Luttenberger et al., 2023). Classroom environment and teacher–learner interactions also influence learners' attitudes toward mathematics, especially when perceived as stressful or intimidating (Putwain & Symes, 2021).

To address this, de-stressing interventions such as collaborative activities, reflective journaling, and student-centered strategies have been introduced to create supportive learning environments. These approaches help reduce anxiety and improve engagement and self-efficacy, as supported by studies showing positive effects on learners' attitudes and emotional regulation in mathematics (Henschel & Roick, 2022; Putwain & Wood, 2021).

In the Philippine context, mathematics anxiety remains prevalent among students, including those enrolled in Mathematics in the Modern World. At Abra State Institute of Sciences and Technology, learners are observed to experience anxiety during recitations, problem-solving tasks, and examinations, which affects participation and performance.

Thus, this study examines the effectiveness of de-stressing interventions in reducing mathematics anxiety and improving academic performance, contributing to the development of supportive instructional strategies aligned with SDG 4 (Quality Education).

Review of related literature

Mathematics anxiety is commonly defined as tension, fear, and worry that interfere with mathematical performance and learning (Carey et al., 2023). It is often linked to negative classroom experiences, fear of making mistakes, and pressure during assessments, which affect learners' engagement and confidence (Ramirez et al., 2022). Research shows that mathematics anxiety can disrupt cognitive processes, particularly working memory, which is essential for problem-solving and learning (Namkung et al., 2022).

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The Affective Filter Hypothesis (Krashen, 1982) suggests that emotional factors such as anxiety and low self-confidence can hinder learning by creating mental barriers that reduce information processing. In mathematics education, this implies that reducing anxiety may improve learners' ability to focus and engage with tasks. Similarly, Constructivist Learning Theory emphasizes that learners construct knowledge actively through participation, collaboration, and reflection, supporting student-centered approaches that promote meaningful learning experiences.

Cognitive Load Theory (Sweller, 1988) further explains that learners have limited working memory capacity, and anxiety consumes cognitive resources that should be used for learning tasks. Thus, reducing anxiety may help improve learners' cognitive efficiency and engagement in mathematics.

Recent studies highlight the effectiveness of de-stressing interventions in reducing anxiety and improving learner attitudes. Supportive classroom practices and reflective activities have been found to reduce anxiety and increase self-awareness and engagement (Putwain & Wood, 2021; Luttenberger et al., 2023). Likewise, non-lyrical instrumental music has been shown to support concentration and emotional regulation, while reducing distraction during learning tasks (Souza & Barbosa, 2023; Milman & Paz-Baruch, 2025).

Overall, literature suggests that mathematics anxiety affects learners' emotional and cognitive processes, while de-stressing interventions can improve learning environments and learner engagement. However, studies also indicate that reductions in anxiety do not always directly translate into improved academic performance, suggesting that emotional and cognitive outcomes may occur independently.

This study builds on these findings by examining targeted de-stressing interventions - Stationed Activity Strategy and Combined Non-Lyrical Instrumental Music with Reflective Journaling - in the context of Mathematics in the Modern World using a mixed-methods approach to better understand both anxiety reduction and academic performance outcomes.

Statement of the problem

This study aims to examine the effectiveness of strategic de-stressing interventions in reducing learners' anxiety in learning Mathematics in the Modern World among first-year Social Work students.

Specifically, it seeks to answer the following questions:

1. What is the learners' anxiety in learning Mathematics in the Modern World?
2. What strategic interventions can be implemented to reduce learners' anxiety in learning Mathematics in the Modern World?
3. What is the pretest and posttest level of the first-year Social Work students in terms of the following competencies:
    a. Display skills in the collection, presentation and interpretation of data,

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b. Judiciously apply logic in real-life arguments,

4. Is there a significant difference between pretest and posttest scores of the students after the implementation of the interventions?

5. Is there a reduction of learners' anxiety in learning Mathematics in the Modern World after the interventions?

6. Is there a significant relationship between the performance mean gain and mathematics anxiety reduction after exposure to the intervention?

Hypothesis

1. There is no significant difference between the pretest and posttest scores of the first year Social Work students in terms of displaying skills in the collection, presentation, and interpretation of data, and judiciously applying logic in real-life arguments after the implementation of the de-stressing interventions.

2. There is no significant reduction in the level of learners' anxiety in learning Mathematics in the Modern World before and after the implementation of the de-stressing interventions.

3. There is no significant relationship between the performance mean gain and mathematics anxiety reduction after exposure to the interventions.

Materials and Methods

Research Design

The study employed an exploratory sequential mixed-methods research design, in which qualitative data were first collected and analyzed, followed by quantitative data collection and analysis. According to Creswell and Plano Clark (2018), this design begins with qualitative exploration of a phenomenon, and the results of the qualitative phase are used to develop instruments or procedures for the quantitative phase.

In this study, the qualitative phase was conducted first to explore the sources of learners' anxiety in learning Mathematics in the Modern World. Semi-structured interviews were conducted with selected students, and the responses were analyzed using thematic analysis. The analysis resulted in the identification of four major themes of mathematics anxiety, namely, public performance anxiety, fear of embarrassment and judgment, teacher-related anxiety, and test and quiz anxiety. These themes served as the basis for the development of the Mathematics Anxiety Test, which was used to determine the level of learners' anxiety in the quantitative phase.

During the quantitative phase, the Mathematics Anxiety Test and the content pretest were administered prior to the implementation of the interventions. The pretest was used to determine the learners' initial competency levels in Mathematics in the Modern World, particularly in (1) displaying skills in the collection, presentation, and interpretation of data and (2) judiciously applying logic in real-life arguments.

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Following the administration of the pretest, the strategic interventions were implemented. BSSW 1A was exposed to the Stationed Activity Strategy, which focused on the development of learner competencies in data collection, presentation, and interpretation, while BSSW 1B was exposed to the Combined Non-Lyrical Instrumental Music and Reflective Journaling Strategy, which focused on the enhancement of learner competencies in applying logic in real-life arguments.

After the intervention period, the Mathematics Anxiety Test and content posttest were both administered in order to find any changes in the learners' anxiety levels and mathematics competency. These measures were used to access the effectiveness of the interventions as well as determine whether there is a significant relationship between learners' performance mean gain and reduction of mathematics anxiety.

Population and Locale of the Study

The study was conducted at the Abra State Institute of Sciences and Technology (ASIST), Main Campus–La Paz Extension, La Paz, Abra. The respondents of the study were first-year Social Work students enrolled in the course Mathematics in the Modern World during the second semester of the Academic Year 2025–2026.

The population of the study consisted of seventy-seven (77) first-year Social Work students, divided into two sections. BSSW 1A, composed of 36 students, and BSSW 1B, composed of 41 students, were selected as respondents for the study. These students were chosen because they were currently enrolled in the course Mathematics in the Modern World and were considered appropriate participants for examining learners' anxiety in mathematics.

Data Gathering Instrument

The instruments used in this study were designed to collect both qualitative and quantitative data necessary to determine the learners' anxiety in learning Mathematics in the Modern World, identify the sources of anxiety, and measure the learners' competencies before and after the implementation of the interventions. The data-gathering instruments used in this study include the semi-structured interview guide, the Mathematics Anxiety Test, and the content pretest and posttest.

Semi – Structured Interview Guide

To determine the sources of learners' anxiety in learning Mathematics in the Modern World, a semi-structured interview guide was used in the qualitative phase of the study comprising five open-ended questions on situations in which the respondents feel nervous, pressured, or uncomfortable in connection with the mathematics they have learned.

The interviews were analyzed thematically to identify recurring patterns and themes in relation to the learners' experiences. From this thematic analysis arose the four major sources of learners' anxiety, namely, public performance anxiety, fear of embarrassment and judgement,

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teacher-related anxiety, and test and quiz anxiety. These guided the development of the Mathematics Anxiety Test used in the quantitative part of the study.

The interview guide was submitted to a licensed guidance counselor for expert validation to ensure the clarity, relevance, and appropriateness of the questions in identifying learners' anxiety in mathematics.

Mathematics Anxiety Test

Based on the themes identified from the qualitative phase, a Mathematics Anxiety Test was developed to determine the level of learners' anxiety in learning Mathematics in the Modern World. The instrument consisted of twenty-eight (28) statements, with seven (7) items for each of the four (4) themes identified from the thematic analysis. The questionnaire aimed to measure the level of anxiety experienced by learners in different mathematical situations.

The questionnaire utilized a five-point Likert Scale to measure the extent to which learners experience anxiety in various mathematical-related situations.

Scale of Rating

Scale	Descriptive Rating
5	Strongly Agree
4	Agree
3	Neutral
2	Disagree
1	Strongly Disagree

Norm of Interpretation

Mean Range	Interpretation
4.21 – 5.00	Very High Anxiety
3.41 – 4.20	High Anxiety
2.61 – 3.40	Moderate Anxiety
1.81 – 2.60	Low Anxiety
1.01 – 1.80	Very Low Anxiety

The mean scores obtained from the responses were interpreted using the above scale and norm to determine the level of learners' anxiety in mathematics.

To ensure the reliability of the instrument, the Mathematics Anxiety Test was pilot-tested among 60 Criminology students who had already completed the subject Mathematics in the Modern World. The responses were analyzed using Cronbach's Alpha, which yielded a reliability coefficient of 0.77, indicating acceptable internal consistency of the questionnaire items. Therefore, all items in the questionnaire were retained and used in the actual conduct of the study.

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Content Pretest and Posttest

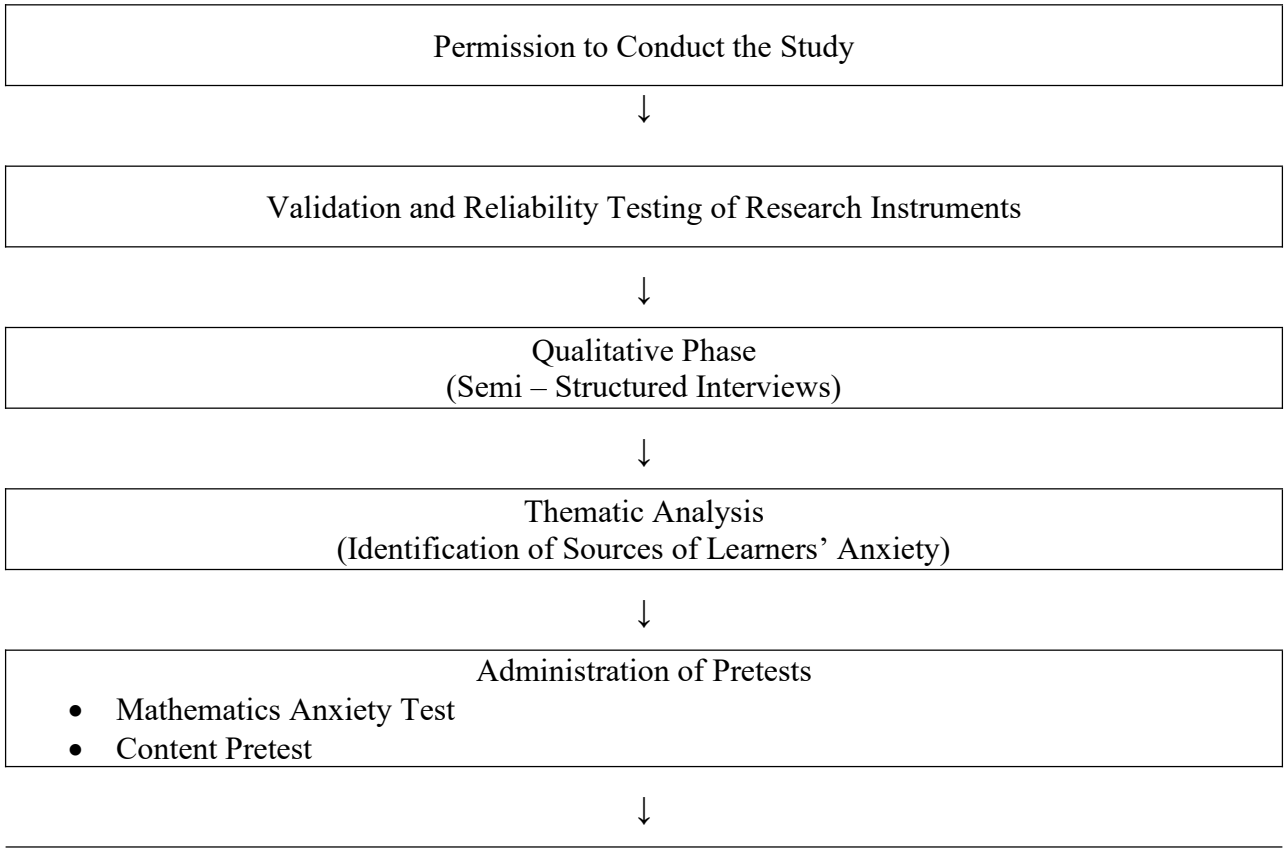
To measure the learners' competencies in Mathematics in the Modern World, a content pretest and posttest were administered. The test consisted of 25 items for each competency, which assessed the learners' ability to:

1. Display skills in the collection, presentation, and interpretation of data, and
2. Judiciously apply logic in real-life arguments.

The pretest was administered before the implementation of the interventions to determine the learners' initial level of competencies, while the posttest was administered after the implementation of the interventions to determine whether there was improvement in the learners' performance. The content pretest and posttest were validated by four instructors teaching Mathematics in the Modern World from Abra State Institute of Sciences and Technology. Their comments and suggestions were incorporated to improve the clarity, relevance, and alignment of the test items with the course competencies. In addition, the instrument underwent reliability testing using Cronbach's alpha to ensure the internal consistency of the test items.

Data Gathering Procedure

To ensure a systematic and organized conduct of the study, the researcher followed a structured data gathering procedure. The process is presented in Figure 2.



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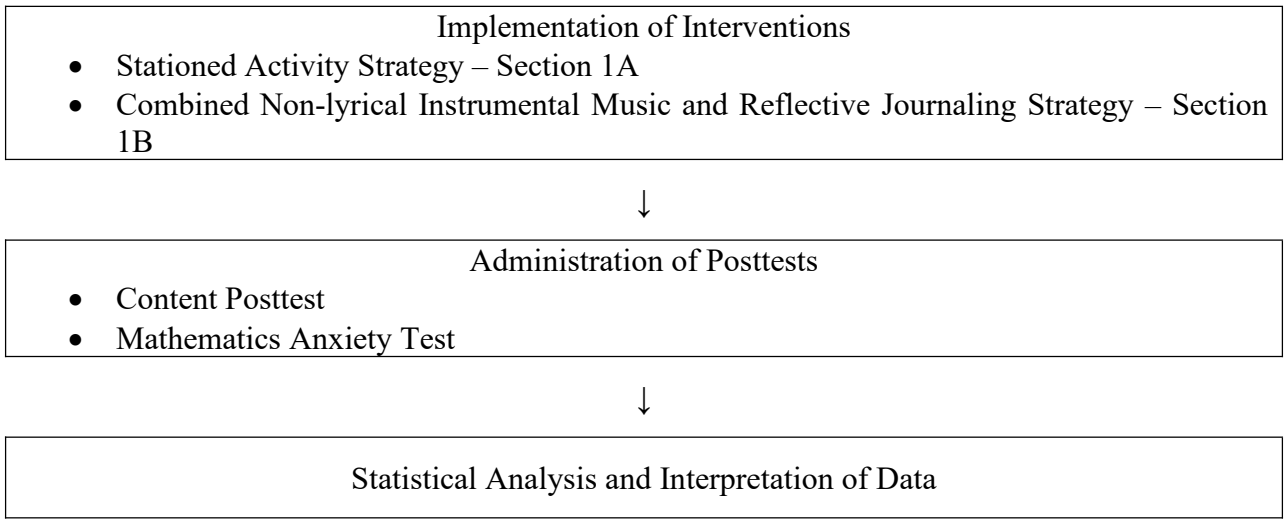

Figure 1. Data Gathering Procedure Paradigm

The data gathering procedure of the study strictly followed a predetermined arrangement to ensure its validity, reliability and accuracy. Permission to conduct the study was first secured from the proper authorities of Abra State Institute of Sciences and Technology. After approval of the request, the research instruments consisting of semi-structured interview guide, Mathematics Anxiety Test, and content pretests and posttests were subjected to validation by experts and to a reliability test.

The study then took place the qualitative part with semi-structured interviews with learners regarding their experiences and sources of anxiety learning Mathematics in the Modern World. Responses were analyzed to gather key themes of learners' anxiety that later grounded the production and refinement of the Mathematics Anxiety Test used in the quantitative phase.

After this, the pretests were administered, that is, the Mathematics Anxiety Test to determine the anxiety state of learners and the content pretest to assess their competencies at the start of the study. After the pretests were administered, the intervention was implemented. The Stationed Activity Strategy was applied to BSSW 1A while the Combined Non-lyrical Instrumental Music and Reflective Journaling Strategy was administered in BSSW 1B.

At the end of the intervention, posttests were given to both groups using the Mathematics Anxiety Test and content posttest to determine if there was any change in learners' anxiety level and competencies. All data gathered were organized, coded, and analyzed section with the use of statistical software before they were interpreted to see if it has significant difference and in order to draw meaningful conclusion on learners Anxiety in Mathematics in the Modern World.

Statistical Treatment of the Data

The data collected in this study were analyzed using appropriate tools in order to answer the problems of the study.

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1. The **mean** was used to describe the level of anxiety for each indicator, theme, and overall dimension. The results were interpreted using the following scale:

Mean Range	*Descriptive Rating*
4.21 – 5.00	Very High Anxiety
3.41 – 4.20	High Anxiety
2.61 – 3.40	Moderate Anxiety
1.81 – 2.60	Low Anxiety
1.01 – 1.80	Very Low Anxiety

2. **Thematic analysis** was used to analyze the qualitative data obtained from the semi-structured interviews. This involved coding responses, identifying patterns, and grouping them into themes representing the sources of learners' anxiety.

3. The **mean and Mean Percentage Score** (MPS) were used to determine the pretest and posttest level of learners' competencies. These were interpreted using the following scale:

Mean Range	*Descriptive Rating*
94.76 – 100.00	Excellent (E)
87.51 – 93.75	Very Good (VG)
81.26 – 87.50	Good (G)
75.00 – 81.25	Fair (F)
70.00 – 74.99	Poor (P)

4. The **paired sample t-test** was used to determine whether there is a significant difference between the pretest and posttest scores of the students. This test examined whether the difference in the mean scores before and after the intervention is statistically significant at the 0.05 and 0.01 levels of significance.

5. The **paired sample t-test** was used to determine whether there is a significant reduction in learners' anxiety in Mathematics in the Modern World as measured by the Mathematics Anxiety Test before and after the implementation of the intervention.

6. **Pearson Product-Moment Correlation** was used to determine the relationship between learners' performance mean gain and mathematics anxiety reduction after the intervention.

Results

Problem 1. What is the learners' anxiety in learning Mathematics in the Modern World?

Table 1 summarizes the major sources of learners' anxiety in Mathematics in the Modern World, identified through qualitative interviews and analyzed using axial coding. Four primary

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themes emerged: Public Performance Anxiety, Fear of Embarrassment and Judgment, Teacher-Related Anxiety, and Test and Quiz Anxiety.

Table 1. Axial Codes on the Learners' Sources of Anxiety in Mathematics in the Modern World

Theme	Axial Codes	Actual Participant Responses
Public Performance Anxiety (Board Work and Recitation)	Fear of being called to solve on the board	"I feel anxious every time I am called to answer on the board. I am not confident about my answer."
	Anxiety during recitation	"I feel nervous when the teacher calls my name to answer."
	Lack of confidence in explaining solutions	"When I was asked to solve on the board, I was not sure of my answer and I felt nervous."
	Pressure of public performance	"When I stood in front of the class, I felt all eyes were on me and I became anxious."
Fear of Embarrassment and Judgment	Fear of making mistakes publicly	"I was afraid to answer because I might get the wrong answer in front of my classmates."
	Fear of being laughed at	"My answer was wrong and my classmates laughed at me."
	Fear of peer judgment	"What if they judge me or laugh at me?"
	Feeling embarrassed after mistakes	"I felt embarrassed when I got the wrong answer in front of the class."
	Avoidance of participation	"After that experience, I became afraid to answer and avoided participation."
Teacher-related Anxiety	Sensitivity to classmates' reactions	"I felt anxious because I could hear my classmates whispering and laughing."
	Fear of strict or intimidating teachers	"Our teacher was very strict and I became afraid to answer."
	Anxiety due to harsh feedback	"My teacher scolded me when my answer was wrong."
	Negative teacher behavior affecting confidence	"My teacher insulted us over small mistakes and it made me anxious."
	Fear of being humiliated by teacher	"My teacher shouted at me when I could not answer."
	Pressure from teacher expectations	"I felt pressured because the teacher expected us to answer correctly."
Test and Quiz Anxiety	Nervousness during quizzes	"Every time there is a quiz, I feel anxious because I don't fully understand the lesson."

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Fear of failing or low scores	"I am afraid of getting low scores in math tests."
Difficulty concentrating during exams	"During exams, I cannot focus because I feel nervous."
Uncertainty in solving problems	"I freeze when I don't know how to start solving the problem."
Worry after the test	"After the test, I keep thinking about my mistakes."

Public Performance Anxiety reflects students' tension when solving problems or explaining answers in front of peers, highlighting the pressure of being observed. Fear of Embarrassment and Judgment indicates learners' concern about negative peer evaluation, laughter, or criticism, which may lead to avoidance of participation. Teacher-Related Anxiety shows that strict teaching styles, harsh feedback, and intimidating behaviors contribute to learners' stress and reduce confidence. Test and Quiz Anxiety captures the stress learners feel during assessments, including difficulty concentrating, fear of low scores, and lingering worry about mistakes.

The table presents the axial codes and illustrative participant responses, providing concrete evidence of the emotional and social factors that influence learners' experiences in mathematics. These findings guided the development of the Mathematics Anxiety Test used in the quantitative phase of the study.

The themes identified from the qualitative interview through thematic analysis were used to develop a Mathematics Anxiety Test questionnaire. This survey questionnaire was used to measure learners' anxiety when learning Mathematics in the Modern World. The results were analyzed and are presented in the following tables.

Table 1a presents the level of learners' anxiety in learning Mathematics in the Modern World along public performance.

Table 1a. Learners' Anxiety in Learning Mathematics in the Modern World along Public Performance

Indicators	BSSW 1A		BSSW 1B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. Being called to answer math questions in front of the class makes me anxious.	3.94	HA	4.17	HA	4.06	HA
2. I feel nervous when I am asked to solve a math problem on the board.	3.83	HA	4.39	VHA	4.13	HA
3. I feel pressured when my classmates are watching me solve math problems.	3.83	HA	3.95	HA	3.90	HA
4. I become tense when math activities require public explanation of my solution.	4.06	HA	4.44	VHA	4.26	VHA

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5. I feel uncomfortable participating in math discussions that involve public sharing of answers.	3.75	HA	4.22	VHA	4.00	HA
6. I worry about committing mistakes when solving math problems in front of others.	4.08	HA	4.37	VHA	4.23	VHA
7. My anxiety increases when I am required to explain my math solution aloud.	4.17	HA	4.46	VHA	4.32	VHA
Composite Mean	**3.95**	**HA**	**4.29**	**VHA**	**4.13**	**HA**

Mean Range	*Descriptive Rating*
4.21 – 5.00	Very High Anxiety (VHA)
3.41 – 4.20	High Anxiety (HA)
2.61 – 3.40	Moderate Anxiety (MA)
1.81 – 2.60	Low Anxiety (LA)
1.01 – 1.80	Very Low Anxiety (VLA)

Table 1a presents the learners' anxiety in Mathematics in the Modern World in terms of public performance. The results show that learners experienced high to very high levels of anxiety when engaged in classroom activities that require public participation.

The composite mean of 4.13 (HA) indicates that, overall, learners have a high level of anxiety in public performance situations. Between the two groups, BSSW 1B (M = 4.29, VHA) reported higher anxiety compared to BSSW 1A (M = 3.95, HA), suggesting variation in classroom experience or learner confidence levels.

Across indicators, the highest anxiety was observed in explaining mathematical solutions aloud (M = 4.32, VHA), followed by fear of making mistakes in front of others (M = 4.23, VHA) and public explanation of solutions (M = 4.26, VHA). These results indicate that learners are most anxious when mathematics tasks require verbal explanation and public demonstration of understanding.

The findings suggest that learners experience greater anxiety in situations where they are observed, evaluated, and required to explain their mathematical thinking publicly, which may affect participation and classroom engagement.

Table 1b presents the learners' anxiety in learning Mathematics in the Modern World along fear of embarrassment and judgment.

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Table 1b. Learners' Anxiety in Learning Mathematics in the Modern World along Fear of Embarrassment and Judgment

Indicators	BSSW 1A		BSSW 1B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. I feel anxious when I think others may judge my math ability.	4.22	VHA	4.39	VHA	4.31	VHA
2. I worry that my classmates will think I am not good at math.	3.92	HA	4.17	HA	4.05	HA
3. I am afraid of being laughed at when I make mistakes in math.	4.31	VHA	4.41	VHA	4.36	VHA
4. I feel embarrassed when I give an incorrect answer in math class.	4.14	HA	4.32	VHA	4.23	VHA
5. Making mistakes in math lowers my confidence in class.	4.06	HA	4.15	HA	4.10	HA
6. I avoid answering math questions because I fear negative reactions from my classmates	3.81	HA	4.12	HA	3.97	HA
7. Fear of embarrassment prevents me from participating actively in math activities.	4.03	HA	4.27	VHA	4.16	HA
Composite Mean	**4.07**	**HA**	**4.26**	**VHA**	**4.17**	**HA**

Mean Range	*Descriptive Rating*
4.21 – 5.00	Very High Anxiety (VHA)
3.41 – 4.20	High Anxiety (HA)
2.61 – 3.40	Moderate Anxiety (MA)
1.81 – 2.60	Low Anxiety (LA)
1.01 – 1.80	Very Low Anxiety (VLA)

Table 1b shows that learners experienced a high to very high level of anxiety in terms of fear of embarrassment and judgment in Mathematics in the Modern World.

The composite mean of 4.17 (HA) indicates that, overall, learners have a high level of anxiety, with BSSW 1B (M = 4.26, VHA) showing higher anxiety compared to BSSW 1A (M = 4.07, HA). This suggests that learners' experiences and classroom context may influence the intensity of their anxiety.

Across all indicators, the highest anxiety was observed in fear of being laughed at when making mistakes (M = 4.36, VHA), followed by anxiety when thinking others may judge their math ability (M = 4.31, VHA) and embarrassment when giving incorrect answers (M = 4.23, VHA). These results indicate that social evaluation and peer reactions strongly affect learners' emotional responses in mathematics.

The findings suggest that learners are highly sensitive to peer judgment and negative social evaluation, which may lead to avoidance of participation and reduced confidence in mathematics activities.

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Table 1c presents the learners' anxiety in learning Mathematics in the Modern World along teacher-related anxiety.

Table 1c. Learners' Anxiety in Learning Mathematics in the Modern World along Teacher-Related Anxiety

Indicators	BSSW 1A		BSSW 1B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
1. Strict teaching styles make me feel more stressed during math class.	4.00	HA	4.41	VHA	4.22	VHA
2. I feel more anxious in math class when the teacher is intimidating.	3.97	HA	4.41	VHA	4.21	VHA
3. I feel anxious when my math teacher corrects mistakes in a strict or harsh manner.	4.22	VHA	4.49	VHA	4.36	VHA
4. I feel tense when my teacher focuses more on correct answers than understanding the process.	4.11	HA	4.27	VHA	4.19	HA
5. I am afraid of making mistakes when my teacher reacts strongly to errors.	4.14	HA	4.44	VHA	4.30	VHA
6. I feel anxious when I cannot freely ask questions during math class.	4.00	HA	4.29	VHA	4.16	HA
7. Negative feedback from my teacher discourages me from trying math problems.	4.14	HA	4.15	HA	4.14	HA
Composite Mean	**4.08**	**HA**	**4.35**	**VHA**	**4.23**	**VHA**

Mean Range	*Descriptive Rating*
4.21 – 5.00	Very High Anxiety (VHA)
3.41 – 4.20	High Anxiety (HA)
2.61 – 3.40	Moderate Anxiety (MA)
1.81 – 2.60	Low Anxiety (LA)
1.01 – 1.80	Very Low Anxiety (VLA)

Table 1c shows that learners experienced a high to very high level of anxiety in terms of teacher-related factors in Mathematics in the Modern World.

The composite mean of 4.23 (VHA) indicates an overall very high level of anxiety, with BSSW 1B (M = 4.35, VHA) reporting higher anxiety than BSSW 1A (M = 4.08, HA). This suggests that teacher behavior and classroom interaction styles significantly influence learners' emotional experiences in mathematics.

Across all indicators, the highest anxiety was observed in feeling anxious when the teacher corrects mistakes in a strict or harsh manner (M = 4.36, VHA), followed by fear of making mistakes when teachers react strongly to errors (M = 4.30, VHA) and stress caused by strict teaching styles (M = 4.22, VHA). These results indicate that learners are highly sensitive to how teachers respond to errors and manage classroom interactions.

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The findings suggest that teacher behavior, feedback style, and classroom environment play a major role in shaping learners' anxiety, which may affect their willingness to participate and engage in mathematics activities.

Table 1d presents the learners' anxiety in learning Mathematics in the Modern World along test and quiz anxiety.

Table 1d. Learners' Anxiety in Learning Mathematics in the Modern World along Test and Quiz

Indicators	BSSW 1A		BSSW 1B		As a Whole	
	Mean	**DR**	**Mean**	**DR**	**Mean**	**DR**
1. The thought of taking a test makes me nervous. I can't help but worry about failing and not being prepared.	4.17	HA	4.24	VHA	4.21	VHA
2. Fear of low scores increases my anxiety during math tests.	4.08	HA	4.37	VHA	4.23	VHA
3. I feel stressed during math quizzes when I am not sure if I understood the lesson well.	4.00	HA	4.37	VHA	4.19	HA
4. I feel stressed when I am unsure how to start solving a test problem.	4.14	HA	4.29	VHA	4.22	VHA
5. Math tests make me feel nervous as I always think the possibility of answering questions incorrectly.	3.97	HA	4.34	VHA	4.17	HA
6. I feel stressed during math tests when I struggle to find solutions to the questions.	4.17	HA	4.44	VHA	4.31	VHA
7. After a math test, I keep thinking about the mistakes I might have made.	4.28	VHA	4.29	VHA	4.29	VHA
Composite Mean	**4.12**	**HA**	**4.33**	**VHA**	**4.23**	**VHA**

Mean Range	*Descriptive Rating*
4.21 – 5.00	Very High Anxiety (VHA)
3.41 – 4.20	High Anxiety (HA)
2.61 – 3.40	Moderate Anxiety (MA)
1.81 – 2.60	Low Anxiety (LA)
1.01 – 1.80	Very Low Anxiety (VLA)

Table 1d shows that learners experienced a high to very high level of anxiety in terms of test and quiz situations in Mathematics in the Modern World.

The composite mean of 4.23 (VHA) indicates an overall very high level of anxiety, with BSSW 1B (M = 4.33, VHA) reporting higher anxiety than BSSW 1A (M = 4.12, HA). This suggests that learners' assessment experiences and confidence levels influence their test-related anxiety.

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Across all indicators, the highest anxiety was observed in thinking about mistakes after the test (M = 4.29, VHA), followed by difficulty finding solutions during tests (M = 4.31, VHA) and fear of low scores (M = 4.23, VHA). These results indicate that learners experience anxiety not only during examinations but also before and after assessment activities.

The findings suggest that test and quiz situations are major sources of mathematics anxiety, affecting learners' concentration, confidence, and problem-solving performance during assessments.

Table 1e presents the summary of learners' anxiety in learning Mathematics in the Modern World across the different dimensions and as a whole.

Table 1e. Summary on the Learners' Anxiety in Learning Mathematics in the Modern World

Learner's Anxiety in Learning Mathematics	BSSW 1A		BSSW 1B		As a Whole	
	Mean	DR	Mean	DR	Mean	DR
Public Performance Anxiety	3.95	HA	4.29	VHA	4.13	HA
Fear of Embarrassment and Judgment	4.07	HA	4.26	VHA	4.17	HA
Teacher-Related Anxiety	4.08	HA	4.35	VHA	4.23	VHA
Test and Quiz Anxiety	4.12	HA	4.33	VHA	4.23	VHA
Overall Mean	**4.06**	**HA**	**4.31**	**VHA**	**4.19**	**HA**

Mean Range	*Descriptive Rating*
4.21 – 5.00	Very High Anxiety (VHA)
3.41 – 4.20	High Anxiety (HA)
2.61 – 3.40	Moderate Anxiety (MA)
1.81 – 2.60	Low Anxiety (LA)
1.01 – 1.80	Very Low Anxiety (VLA)

Table 1e presents the summary of learners' anxiety in Mathematics in the Modern World across four dimensions: public performance anxiety, fear of embarrassment and judgment, teacher-related anxiety, and test and quiz anxiety.

The overall mean of 4.19 (HA) indicates that learners experienced a high level of mathematics anxiety. In terms of group comparison, BSSW 1B (M = 4.31, VHA) showed higher anxiety than BSSW 1A (M = 4.06, HA), suggesting variation in learners' experiences across sections.

Across all dimensions, teacher-related anxiety (M = 4.23, VHA) and test and quiz anxiety (M = 4.23, VHA) obtained the highest means, indicating that instructional interaction and assessment situations are the most significant sources of anxiety. Meanwhile, public performance anxiety (M = 4.13, HA) and fear of embarrassment and judgment (M = 4.17, HA) also indicate consistently high anxiety levels.

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The results suggest that mathematics anxiety is multidimensional and consistently present across classroom contexts, affecting learners' confidence, participation, and performance in Mathematics in the Modern World.

Problem 2. What strategic interventions can be implemented to reduce learners' anxiety in learning Mathematics in the Modern World?

Table 2 presents the strategic interventions implemented for each identified source of learners' anxiety, together with their corresponding descriptions.

Table 2. Strategic Interventions Implemented Based on the Identified Sources of Learners' Anxiety.

Identified Anxiety Theme	Strategic Intervention	Description
Public Performance Anxiety	Stationed Activity Strategy	Learners were organized into groups that rotated through groups of activity stations at which they worked together on mathematics problems that involved collecting, presenting, and interpreting data. This arrangement avoided the pressure of public performance on any one individual and ensured that all learners were involved.
Fear of Embarrassment and Judgment	Stationed Activity Strategy	Small-group engagement provided a less threatening environment to talk about and problem-solve with peers as it caused less fear of embarrassment and peer ridicule.
Teacher-Related Anxiety	Supportive Teacher Facilitation integrated within the Stationed Activity Strategy	During the station-based activity, the teacher acted in the role of a facilitator, giving guidance to the students and providing constructive feedback for the students to be more comfortable in doing the assigned tasks.
Test and Quiz Anxiety	Combined Music and Journaling Strategy	To foster a pleasant, relaxed learning atmosphere during math activities, non-lyrical instrumental music was played. Following the assigned tasks, learners had the opportunity to journal about their thoughts and experiences. These combined approaches helped learners process their emotions and reflect on the activity that may have stressed them and create more positive learning experiences in doing the tasks.

The strategic interventions identified in Table 2 were directly derived from the sources of learners' anxiety. Anxieties relating to public performance, embarrassment and judgment,

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teacher, and tests and quizzes were identified in the qualitative phase of the research, leading to the implementation of the Stationed Activity Strategy for BSSW 1A, and the Combined Non-Lyrical Instrumental Music and Reflective Journaling Strategy for BSSW 1B.

With the Stationed Activity Strategy, students who were concerned about performing in public and fearful of embarrassment and judgment can complete activity stations in small groups. In this strategy, the students are assigned to small groups and circulate between stations, performing math problems having to do with gathering, presenting, and interpreting data. Rather than making the students carry out things independently in front of the whole class, they work cooperatively at this strategy in small togetherness, making for a comfortable classroom participation of activities.

Additionally, the station-based format also reduced the fear of the teacher's presence by using facilitative support. As students worked on the activities, the teacher acted in a facilitative role, giving guidance and feedback. This created a more supportive environment where the learner had a place to ask questions, make guesses and try.

The Combined Non-Lyrical Instrumental Music and Reflective Journaling Strategy was used to alleviate exam and quiz anxiety. Non-lyrical instrumental music was played while completing math activities to promote a peaceful and focused mindset. After completing the exercises, they partook of reflective journaling on their feelings and experiences concerning the activity. This provided students an opportunity to reflect on their feelings and evaluate the learning experience.

These interventions demonstrate that strategically designed instructional methods can be implemented to reduce sources of math-related anxiety. The Stationed Activity Strategy was designed to reduce anxiety feelings about public involvement, evaluation by peers, and interaction with teacher whereas the Combined Non-Lyrical Instrumental Music and Reflection Journaling Strategy was designed to reduce anxiety associated with evaluative situations.

Strategy 1. Stationed Activity Strategy

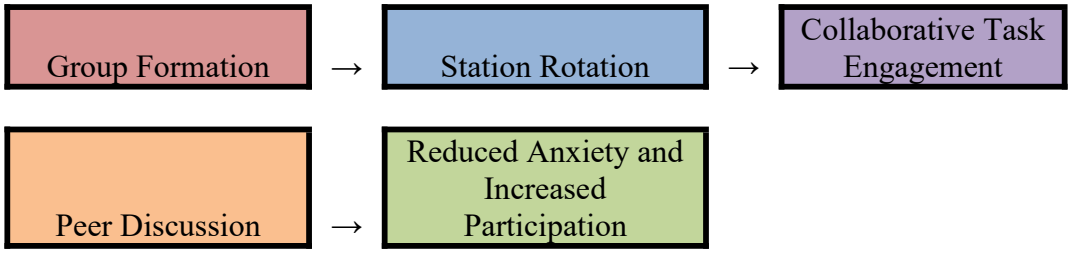

Figure 2. Implementation of Stationed Activity Strategy

Figure 1 illustrates the process flow of the Stationed Activity Strategy implemented in BSSW 1A as a de-stressing intervention in Mathematics in the Modern World. The strategy begins with group formation, where learners are organized into small collaborative groups. This

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is followed by station rotation, where each group moves through different learning stations designed to target specific mathematical tasks.

At each station, learners engage in collaborative task engagement, such as data collection, computation, analysis, and interpretation. Through structured peer interaction and guided activities, learners are able to work on manageable tasks instead of performing individually in front of the class.

The process continues with peer discussion, allowing learners to exchange ideas, compare solutions, and clarify understanding. This collaborative cycle leads to reduced anxiety and increased participation, as learners become more confident and less pressured by public performance.

Overall, the figure shows that the Stationed Activity Strategy promotes a structured and supportive learning environment that reduces mathematics anxiety while enhancing learner engagement and participation.

Strategy 2. Combined Non-lyrical Instrumental Music and Reflective Journaling Strategy

The Combined Non-Lyrical Instrumental Music and Reflective Journaling Strategy was used in BSSW 1B to lower learners' anxieties with math by encouraging emotional control and reflective thinking whilst, and after, doing each activity. The strategy consists of non-lyrical instrumental music to listen to while doing math assessments or quizzes, and reflective journaling which should immediately follow the completion of every task.

During implementation, non-lyrical instrumental music played while students engaged with math activities involving logic statements and quantifiers, logical connectives, truth tables and tautologies, conditional and biconditional statements and symbolic arguments. The aim of using low level non-lyrical instrumental music is to create a calm, non-threatening learning environment, allow students to keep working with minimal distraction to cognitive load for solving problems.

After completing the math activity, learners recorded their reflections in a totally open-ended diary, so that they had the freedom to express their thoughts, feelings and experiences about the task. The reflective writing task allowed learners to shape their emotional analyses, identify their challenges and reflect on their experiences.

Non-lyrical instrumental music, as well as reflective journaling, was intended to enhance the affective, as well as the cognitive, aspects of learning. Non-lyrical instrumental music helped students to concentrate and create a calm atmosphere as they worked with the math task. The reflective journaling component gave students an opportunity to express their impressions about their experience after the task was completed.

Furthermore, the strategy created a space for students to do math problems while processing their feelings. The combination of non-lyrical instrumental music and reflective

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journaling allowed learners to participate in less charged activities with a lower level of stress and a clearer idea of what they were doing.

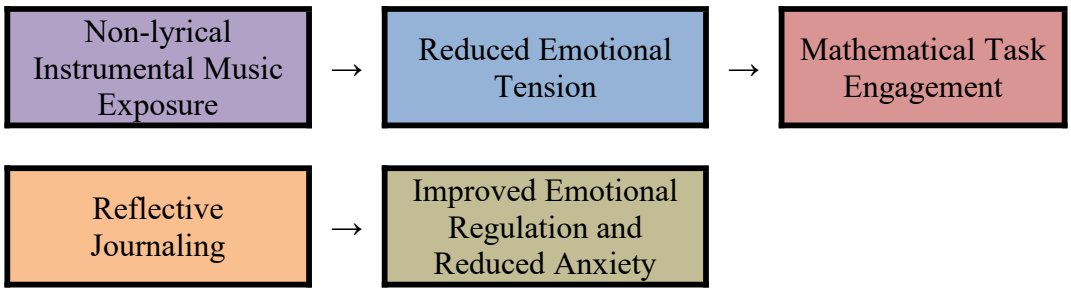

Figure 3. Implementation of Combined Non-Lyrical Instrumental Music and Journaling Strategy

Problem 3. What is the pretest and posttest level of the first-year sections 1A and 1B social work students in terms of the following competencies:

a. Display skills in the collection, presentation and interpretation of data
b. Judiciously apply logic in real life argument?

Table 3 presents the pretest and posttest level of social work students section A in terms of the competency display skills in collection, presentation and interpretation of data and section B in terms of the competency judiciously apply logic in real life argument.

Table 3. Pretest and Post-test Scores of the First Year Social Work Students along Mathematics in the Modern World Competencies

COMPETENCIES	PRETEST SCORE	DR	POST TEST SCORE	DR	MEAN GAIN
Display skills in the collection, presentation and interpretation of data	80.93	Fair	88.40	Very Good	7.47
Judiciously apply logic in real life argument	80.64	Fair	89.07	Very Good	8.43
Overall	**80.78**	**Fair**	**88.76**	**Very Good**	**7.98**

Mean Range	Descriptive Rating
94.76 – 100.00	Excellent (E)
87.51 – 93.75	Very Good (VG)
81.26 – 87.50	Good (G)
75.00 – 81.25	Fair (F)
70.00 – 74.99	Poor (P)

As presented in Table 3, the pretest and posttest performance of the first-year Social Work students in Mathematics in the Modern World shows an improvement in both identified

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competencies after the implementation of the interventions. The overall pretest mean score is 80.78, interpreted as Fair, while the overall posttest mean score increased to 88.76, interpreted as Very Good, with a corresponding mean gain of 7.98. This indicates that learners obtained higher scores after exposure to the implemented strategies.

Problem 4. Is there a significant difference between pretest and posttest scores of the students after the implementation of the intervention?

Table 4 presents the results of the paired sample t-test used to determine whether there is a significant difference between the pretest and posttest scores of the students after the implementation of the intervention.

Table 4. Significant Difference Between the Pretest and Posttest Scores of the First-Year Social Work Students in Mathematics in the Modern World Competencies

	Posttest Mean Score	Pretest Mean Score	Mean Gain	t_{comp}	t_{prob}
BSSW 1A	88.40	80.93	7.47	7.88**	$p < .01$
BSSW 1B	89.07	80.64	8.43	12.12**	$p < .01$
As a Whole	**88.76**	**80.78**	**7.98**	**13.85****	$p < .01$

Legend:
*** - significant at .01*
** - significant at .05*

The results show a clear improvement in learners' performance after the intervention. As a whole, the pretest mean score of 80.78 increased to a posttest mean score of 88.76, resulting in a mean gain of 7.98 points.

By section, BSSW 1A improved from 80.93 to 88.40 (mean gain = 7.47), while BSSW 1B increased from 80.64 to 89.07 (mean gain = 8.43). This indicates that both groups demonstrated noticeable improvement in mathematics competencies after the intervention, with BSSW 1B showing a slightly higher gain.

Overall, the results suggest that learners performed better in the posttest compared to the pretest, indicating improved understanding and mastery of the competencies after the implementation of the intervention.

The results also revealed significant differences between pretest and posttest scores for all groups: for BSSW 1A: $t = 7.88$, $p < .01$ and for BSSW 1B: $t = 12.12$, $p < .01$ with an Overall: $t = 13.85$, $p < .01$

Since all computed p-values are less than 0.01, the results indicate that there is a highly significant difference between pretest and posttest scores.

Problem 5. Is there a reduction of learners' anxiety in learning Mathematics in the Modern World after the intervention?

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Table 5a presents the t-test results indicating the difference in learners' public performance anxiety before and after the implementation of the intervention.

Table 5a. T-test showing the Differences in Public Performance Anxiety Means Before and After the Exposure to the Intervention

Public Performance Anxiety	Anxiety Before	Anxiety After	Anxiety Reduction	t_{com}	t_{prob}
1. Being called to answer math questions in front of the class makes me anxious.	4.06	2.94	1.12	9.87**	p < .01
2. I feel nervous when I am asked to solve a math problem on the board.	4.13	2.88	1.25	11.37**	p < .01
3. I feel pressured when my classmates are watching me solve math problems.	3.90	2.78	1.12	9.80**	p < .01
4. I become tense when math activities require public explanation of my solution.	4.26	2.78	1.48	13.81**	p < .01
5. I feel uncomfortable participating in math discussions that involve public sharing of answers.	4.00	2.53	1.47	13.31**	p < .01
6. I worry about committing mistakes when solving math problems in front of others.	4.23	2.64	1.59	13.79**	p < .01
7. My anxiety increases when I am required to explain my math solution aloud.	4.32	2.66	1.66	15.99**	p < .01
Composite Mean	**4.13**	**2.74**	**1.39**	**18.83****	**p < .01**

Legend:
*** - significant at .01*
** - significant at .05*

As presented in Table 5a, there is a notable reduction in learners' public performance anxiety after the implementation of the intervention. The composite mean decreased from 4.13 before the intervention, interpreted as High Anxiety, to 2.74 after the intervention, interpreted as Moderate Anxiety, with an anxiety reduction of 1.39. This suggests that learners experienced a reduction in anxiety in settings with public mathematical tasks after the implementation of the strategies.

At the indicator level, all items indicated a reduction in anxiety scores between 1.12 and 1.66, with the most significant reductions occurring for those tasks that required learners to explain their solutions and presented to the class, indicating individuals became less apprehensive to engage in public mathematical task. This shows that the reduction in anxiety was consistent across different aspects of public performance.

The computed t-values for each of the above indicators, as well as for the composite mean ($t = 18.83$, $p < .01$) show that the differences in anxiety obtained before and after the implementation of the strategic intervention are statistically significant. As all of the probability values are lower than the .01 level of significance, the hypothesis that no significant difference in

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public performance anxiety before and after the intervention is rejected. This confirms that the observed reduction in anxiety is statistically significant.

The results indicate that less public performance anxiety may correlate with learners' engagement in structured and supportive learning environments utilized in both sections of the study. In BSSW 1A, the Stationed Activity Strategy enabled collaborative interaction, and in BSSW 1B, the Combined Non-Lyrical Instrumental Music and Reflective Journaling Strategy provided a systematic and reflective learning environment, thus enhancing learners' engagement of mathematical problems in less stressful situations.

Table 5b presents the paired-samples t-test results showing the differences in learners' fear of embarrassment and judgment anxiety before and after the implementation of the interventions.

Table 5b. T-test showing the Differences in the Fear of Embarrassment and Judgment Anxiety Means Before and After the Exposure to the Intervention

Fear of Embarrassment and Judgement	Anxiety Before	Anxiety After	Anxiety Reduction	t_{com}	t_{prob}
1. I feel anxious when I think others may judge my math ability.	4.31	2.99	1.32	12.39**	p < .01
2. I worry that my classmates will think I am not good at math.	4.05	2.75	1.30	11.24**	p < .01
3. I am afraid of being laughed at when I make mistakes in math.	4.36	2.82	1.54	13.13**	p < .01
4. I feel embarrassed when I give an incorrect answer in math class.	4.23	2.86	1.37	12.40**	p < .01
5. Making mistakes in math lowers my confidence in class.	4.10	2.61	1.49	13.54**	p < .01
6. I avoid answering math questions because I fear negative reactions from my classmates	3.97	2.48	1.49	12.68**	p < .01
7. Fear of embarrassment prevents me from participating actively in math activities.	4.16	2.65	1.51	15.33**	p < .01
Composite Mean	**4.17**	**2.74**	**1.43**	**20.41****	**p < .01**

Legend:
*** - significant at .01*
** - significant at .05*

As presented in Table 5b, there is a reduction in learners' anxiety related to fear of embarrassment and judgment after the implementation of the intervention. The composite mean decreased from 4.17 before the intervention, interpreted as High Anxiety, to 2.74 after the intervention, interpreted as Moderate Anxiety, with an anxiety reduction of 1.43. This indicates that learners became less anxious about being judged or embarrassed during mathematics activities after exposure to the implemented strategies.

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At the indicator level, all items showed a decrease in anxiety scores, with reductions ranging from 1.30 to 1.54. The highest reductions were observed in indicators related to fear of being laughed at and feeling embarrassed when making mistakes. This suggests that learners became more comfortable expressing their ideas and participating in mathematical tasks without fear of negative reactions from others. This pattern of reduction across all indicators denotes that the reduction of anxiety took place across various aspects of peer-related situations.

The computed t-values for all indicators and for the composite mean ($t = 20.41$, $p < .01$) indicate that the differences between anxiety levels before and after the intervention are statistically significant. Since all probability values are less than the 0.01 level of significance, the null hypothesis stating that there is no significant difference in fear of embarrassment and judgment before and after the intervention is rejected. This confirms that the reduction in anxiety is statistically significant.

Table 5c presents the paired-samples t-test results showing the differences in learners' teacher-related anxiety before and after the implementation of the interventions.

Table 5c. T-test showing the Differences in Teacher-Related Anxiety Means Before and After the Exposure to the Intervention

Teacher-Related Anxiety	Anxiety Before	Anxiety After	Anxiety Reduction	t_{com}	t_{prob}
1. Strict teaching styles make me feel more stressed during math class.	4.22	2.99	1.23	9.96**	$p < .01$
2. I feel more anxious in math class when the teacher is intimidating.	4.21	2.73	1.48	13.81**	$p < .01$
3. I feel anxious when my math teacher corrects mistakes in a strict or harsh manner.	4.36	2.65	1.71	15.27**	$p < .01$
4. I feel tense when my teacher focuses more on correct answers than understanding the process.	4.19	2.57	1.62	12.80**	$p < .01$
5. I am afraid of making mistakes when my teacher reacts strongly to errors.	4.30	2.48	1.82	15.41**	$p < .01$
6. I feel anxious when I cannot freely ask questions during math class.	4.16	2.32	1.84	18.27**	$p < .01$
7. Negative feedback from my teacher discourages me from trying math problems.	4.14	2.36	1.78	14.92**	$p < .01$
Composite Mean	**4.23**	**2.59**	**1.64**	**20.34****	**$p < .01$**

Legend:
*** - significant at .01*
** - significant at .05*

As presented in Table 5c, there is a reduction in learners' teacher-related anxiety after the implementation of the intervention. The composite mean decreased from 4.23 before the intervention, interpreted as High Anxiety, to 2.59 after the intervention, interpreted as Moderate

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Anxiety, with an anxiety reduction of 1.64. This indicates that learners experienced lower levels of anxiety related to teacher interactions after exposure to the implemented strategies.

At the indicator level, all items showed a decrease in anxiety scores, with reductions ranging from 1.23 to 1.84. The highest reductions were observed in indicators related to fear of teachers' reactions and responses to mistakes. This suggests that learners became more comfortable interacting with the teacher and participating during mathematics activities. The consistent decrease across all indicators indicates that the reduction in anxiety was experienced across different aspects of teacher-related situations.

The computed t-values for all indicators and for the composite mean ($t = 20.34$, $p < .01$) indicate that the differences between anxiety levels before and after the intervention are statistically significant. Since all probability values are less than the 0.01 level of significance, the null hypothesis stating that there is no significant difference in teacher-related anxiety before and after the intervention is rejected. This confirms that the reduction in anxiety is statistically significant.

Table 5d presents the paired-samples t-test results showing the differences in learners' test and quiz anxiety before and after the implementation of the interventions.

Table 5d. T-test showing the Differences in Test and Quiz Anxiety Means Before and After the Exposure to the Intervention

Test and Quiz Anxiety	Anxiety Before	Anxiety After	Anxiety Reduction	t_{com}	t_{prob}
1. The thought of taking a test makes me nervous. I can't help but worry about failing and not being prepared.	4.21	3.14	1.07	8.46**	p < .01
2. Fear of low scores increases my anxiety during math tests.	4.23	2.79	1.44	12.41**	p < .01
3. I feel stressed during math quizzes when I am not sure if I understood the lesson well.	4.19	2.91	1.28	13.18**	p < .01
4. I feel stressed when I am unsure how to start solving a test problem.	4.22	2.87	1.35	14.12**	p < .01
5. Math tests make me feel nervous as I always think the possibility of answering questions incorrectly.	4.17	2.64	1.53	14.99**	p < .01
6. I feel stressed during math tests when I struggle to find solutions to the questions.	4.31	2.88	1.43	14.75**	p < .01
7. After a math test, I keep thinking about the mistakes I might have made.	4.29	2.79	1.50	12.37**	p < .01
Composite Mean	**4.23**	**2.86**	**1.37**	**22.25****	**p < .01**

Legend:
*** - significant at .01*
** - significant at .05*

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As presented in Table 5d, there is a reduction in learners' test and quiz anxiety after the implementation of the intervention. The composite mean decreased from 4.23 before the intervention, interpreted as High Anxiety, to 2.86 after the intervention, interpreted as Moderate Anxiety, with an anxiety reduction of 1.37. This indicates that learners experienced lower levels of anxiety during tests and quizzes after exposure to the implemented strategies.

Across all indicators, anxiety levels decreased, with reductions ranging from 1.07 to 1.53. The largest reductions were observed in items related to worrying about incorrect answers and feeling stressed during tests. This indicates that students were less worried about making mistakes and more comfortable answering math questions on tests. The consistent decrease across all indicators indicates that anxiety reduction was experienced across different test-related situations, including preparation, problem-solving, and post-test reflection.

The computed t-values for all indicators and for the composite mean ($t = 22.25$, $p < .01$) indicate that the differences between anxiety levels before and after the intervention are statistically significant. Since all probability values are less than the 0.01 level of significance, the null hypothesis stating that there is no significant difference in test and quiz anxiety before and after the intervention is rejected. This confirms that the reduction in anxiety is statistically significant.

Table 5e shows the paired-samples t-test results showing the differences in learners' mathematics anxiety before and after exposure to the intervention.

Table 5e. T-test showing the Differences in Mathematics Anxiety Means Before and After the Exposure to the Intervention

Mathematics Anxiety	Anxiety Before	Anxiety After	Anxiety Reduction	t_{com}	t_{prob}
Public Performance Anxiety	4.13	2.74	1.39	18.83**	$p < .01$
Fear of Embarrassment and Judgment	4.17	2.74	1.43	20.41**	$p < .01$
Teacher-Related Anxiety	4.23	2.59	1.64	20.34**	$p < .01$
Test and Quiz Anxiety	4.23	2.86	1.37	22.25**	$p < .01$
Overall	**4.19**	**2.73**	**1.46**	**28.89****	**$p < .01$**

Legend:
*** - significant at .01*
** - significant at .05*

As presented in Table 5e, there is an overall reduction in learners' mathematics anxiety after the implementation of the interventions. The overall mean decreased from 4.19 before the intervention, interpreted as High Anxiety, to 2.73 after the intervention, interpreted as Moderate Anxiety, with an overall anxiety reduction of 1.46. This indicates that learners' anxiety in learning Mathematics in the Modern World decreased after exposure to the implemented strategies.

For the different anxiety themes all areas decreased in anxiety levels. Teacher related anxiety had the largest drop (1.64), followed by fear of embarrassment and judgment (1.43), then

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public performance (1.39) and test and quiz anxiety (1.37). The decreases across all themes indicate that these changes were observed across dimensions.

The calculated t-values for each theme and for the overall mean t=28.89, p<.01, such that the difference in anxiety scores before and after the intervention is statistically significant. Since all probability values are lower than the 0.01 level of significance, the null hypothesis that there is no difference in the level of anxiety before the intervention and after the intervention is rejected, thereby confirming that the reduction in learners' anxiety is statistically significant.

Problem 6. Is there a significant relationship between the performance mean gain and mathematics anxiety reduction after exposure to the intervention?

Table 6 presents the relationship between learners' performance mean gain and mathematics anxiety reduction after exposure to the intervention.

Table 6. Relationship between the Performance Mean Gain and Mathematics Anxiety Reduction after Exposure to the Intervention

Mathematics Anxiety	*Correlation Coefficient*	*Sig.*	*Prob*
Public Performance Anxiety	*.144*	*.211 NS*	*p > .05*
Fear of Embarrassment and Judgment Anxiety	*.077*	*.505 NS*	*p > .05*
Teacher-Related Anxiety	*-.064*	*.578 NS*	*p > .05*
Test and Quiz Anxiety	*.039*	*.736 NS*	*p > .05*
Overall	***.066***	***.570 NS***	*p > .05*

Legend:
*** - significant at .01*
** - significant at .05*
NS – not significant

As presented in table 6, all correlation coefficients are very low, ranging from r = −.064 to r = .144, indicating only weak relationships between the variables. Public performance anxiety (r = .144), fear of embarrassment and judgment (r = .077), test and quiz anxiety (r = .039), and overall anxiety (r = .066) show slight positive relationships, while teacher-related anxiety (r = −.064) shows a very weak negative relationship. However, all the corresponding probability values are greater than 0.05, which means that none of these relationships are statistically significant. This indicates that there is no sufficient evidence to conclude that learners' improvement in performance is directly associated with a reduction in their mathematics anxiety.

Discussion

SOP 1: Level of Learners' Mathematics Anxiety

The findings of the study revealed that learners experienced a high to very high level of mathematics anxiety across four dimensions: public performance anxiety, fear of embarrassment

and judgment, teacher-related anxiety, and test and quiz anxiety. This indicates that mathematics anxiety is multidimensional, influenced by classroom interactions, social evaluation, and assessment situations. Among these, teacher-related anxiety and test and quiz anxiety obtained the highest mean scores, suggesting that learners are most affected in situations involving evaluation, authority figures, and academic pressure.

In comparison with existing studies, these findings align with Khasawneh et al. (2021) and Aaviste (2025), who emphasized that mathematics anxiety is strongly associated with negative classroom experiences and fear of judgment. Similarly, Ramirez et al. (2022) and Namkung et al. (2022) found that anxiety increases in evaluative situations and negatively affects learners' cognitive processing and confidence. The results also support Putwain and Symes (2021), who highlighted that teacher behavior and classroom environment significantly influence learners' emotional experiences in mathematics.

The implications for practice suggest that teachers should adopt supportive, non-threatening, and learner-centered classroom strategies to reduce mathematics anxiety. Reducing excessive public performance pressure, promoting positive feedback, and encouraging collaborative learning may help improve learner confidence and participation. At the institutional level, schools may consider integrating mental health–responsive teaching approaches to support learners' emotional well-being in mathematics instruction.

The study is limited by its focus on a single institution, a specific group of learners, and reliance on self-reported data, which may affect generalizability and response accuracy. Future research may consider larger samples, multiple settings, and additional variables to further explore the complexity of mathematics anxiety among learners.

SOP 2: Strategic Interventions Implemented

The findings of the study indicate that the Stationed Activity Strategy and the Combined Non-Lyrical Instrumental Music and Reflective Journaling Strategy were effective in reducing learners' mathematics anxiety. The Stationed Activity Strategy reduced anxiety by promoting collaborative learning, structured tasks, and reduced pressure from public performance, while the Combined Strategy supported learners through emotional regulation, relaxation, and reflective expression. These interventions directly addressed the identified sources of anxiety, including public performance anxiety, fear of embarrassment and judgment, teacher-related anxiety, and test and quiz anxiety, resulting in improved comfort and engagement among learners.

In comparison with existing studies, the findings align with Horn and Staker (2015) and Tucker (2024), who emphasized that station rotation and structured collaborative learning promote engagement and reduce anxiety by minimizing individual performance pressure. Similarly, Luttenberger et al. (2023) support the use of reflective strategies in improving emotional awareness and reducing academic anxiety, while Souza and Barbosa (2023) and Milman and Paz-Baruch (2025) highlight the effectiveness of non-lyrical instrumental music in reducing emotional tension and improving focus during learning activities. These findings confirm that both structured collaboration and emotional regulation strategies are effective in addressing mathematics anxiety.

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The implications for practice suggest that mathematics teachers should adopt learner-centered and low-anxiety instructional strategies, such as station rotation, group-based activities, reflective journaling, and the use of calming background music. Schools may also consider training teachers in emotionally supportive classroom management practices to help reduce learner anxiety and improve participation. At the policy level, integrating well-being–focused pedagogical strategies into mathematics instruction supports the goals of inclusive and quality education under SDG 4.

The study is limited by its focus on a single institution, a relatively small sample size, and the use of only two intervention strategies. Additionally, learner responses were self-reported, which may introduce bias. Future research may include larger populations, multiple institutions, and additional intervention methods to further validate the effectiveness of de-stressing strategies in mathematics education.

SOP 3: Pretest and Posttest Performance of Learners

The findings of the study show that learners demonstrated a significant improvement in their mathematics performance after the implementation of the interventions. The mean score increased from 80.78 (pretest) to 88.76 (posttest), indicating a clear improvement in learners' understanding and mastery of Mathematics in the Modern World competencies. This suggests that the interventions contributed positively to learners' academic achievement.

In comparison with existing studies, the results align with research indicating that structured and supportive instructional strategies improve learner performance by enhancing engagement and conceptual understanding (Horn & Staker, 2015; Tucker, 2024). Similarly, collaborative learning and emotionally supportive environments have been shown to improve academic outcomes by increasing learner participation and reducing learning barriers (Luttenberger et al., 2023). These findings support the idea that both cognitive engagement and emotional support contribute to improved academic performance.

The implications for practice suggest that teachers should continue to use interactive, collaborative, and learner-centered strategies such as station rotation and reflective learning activities to enhance students' understanding of mathematical concepts. Schools may also encourage the integration of emotionally supportive instructional approaches to improve both engagement and academic outcomes in mathematics.

The study is limited by its use of a single group of learners from one institution and a relatively short intervention period. Additionally, external factors such as prior knowledge, motivation, and study habits were not fully controlled, which may also influence learners' performance outcomes. Future research may consider larger samples, control groups, and longer intervention periods to further validate the effectiveness of these strategies.

SOP 4: Significant Difference in Pretest and Posttest Performance

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The findings of the study revealed that there is a statistically significant difference between the pretest and posttest scores of the learners after the implementation of the interventions. Both sections showed improvement, with BSSW 1A increasing from 80.93 to 88.40 ($t = 7.88$, $p < .01$) and BSSW 1B increasing from 80.64 to 89.07 ($t = 12.12$, $p < .01$). Overall, the combined results showed a significant increase from 80.78 to 88.76 ($t = 13.85$, $p < .01$), indicating that the intervention had a strong positive effect on learners' mathematics performance.

In comparison with existing studies, these results are consistent with research showing that structured and collaborative instructional strategies significantly improve learner achievement by enhancing engagement and conceptual understanding (Horn & Staker, 2015; Tucker, 2024). Similarly, studies by Luttenberger et al. (2023) suggest that supportive and interactive learning environments contribute to better academic outcomes by reducing barriers to learning and improving learner participation.

The implications for practice suggest that teachers should continue using interactive, structured, and learner-centered strategies such as station rotation activities and reflective learning approaches. These strategies not only improve academic performance but also support learners' engagement and understanding in mathematics. At the institutional level, schools may promote instructional practices that integrate collaboration and emotional support to enhance learning outcomes.

The study is limited by its small sample size, the use of a single institution, and the absence of a control group. Additionally, external factors such as learners' prior knowledge, motivation, and study habits were not fully controlled, which may also influence performance results. Future research may consider experimental designs with control groups and larger populations to strengthen the validity of findings.

SOP 5: Reduction of Learners' Mathematics Anxiety

The findings of the study revealed a significant reduction in learners' mathematics anxiety after the implementation of the interventions. All four dimensions showed marked decreases: public performance anxiety, fear of embarrassment and judgment, teacher-related anxiety, and test and quiz anxiety. Overall, anxiety decreased from 4.19 (high anxiety) to 2.73 (low to moderate anxiety), with a significant overall reduction ($t = 28.89$, $p < .01$). This indicates that the interventions were highly effective in reducing learners' emotional barriers in mathematics learning.

In comparison with existing studies, the results align with research stating that structured, collaborative, and emotionally supportive learning environments reduce mathematics anxiety (Horn & Staker, 2015; Tucker, 2024). Similarly, Luttenberger et al. (2023) found that reflective strategies improve emotional regulation and reduce academic anxiety, while Souza and Barbosa (2023) and Milman and Paz-Baruch (2025) emphasized the effectiveness of non-lyrical instrumental music in lowering stress and improving focus. These studies support the present findings that both cognitive and emotional interventions contribute to anxiety reduction.

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The implications for practice suggest that teachers should adopt low-anxiety instructional strategies such as station rotation, group-based learning, reflective journaling, and the use of calming background music. These approaches help create a supportive classroom environment that encourages participation and reduces fear of mistakes. At the institutional level, schools should promote well-being–centered teaching practices as part of mathematics instruction to improve both emotional and academic outcomes.

The study is limited by its focus on a single institution, a small sample size, and the use of self-reported measures, which may affect the accuracy and generalizability of the findings. Additionally, the study only examined two interventions, suggesting that other possible strategies for reducing mathematics anxiety were not explored. Future research may include larger populations, multiple settings, and experimental designs for stronger validation.

SOP 6: Relationship Between Performance Gain and Anxiety Reduction

The findings of the study revealed that there is no significant relationship between learners' mathematics anxiety reduction and their performance mean gain after the implementation of the interventions. The correlation results across all dimensions were very low and not statistically significant (overall $r = 0.066$, $p > 0.05$). This indicates that although learners experienced both improved performance and reduced anxiety, these two outcomes did not directly influence each other.

In comparison with existing studies, this result aligns with Carey et al. (2023), who noted that the relationship between mathematics anxiety and academic performance is complex and not always directly proportional. Similarly, Namkung et al. (2022) explained that while anxiety can affect cognitive processing, academic performance is also influenced by other factors such as prior knowledge, engagement, and learning strategies. These findings suggest that reductions in anxiety do not automatically result in proportional increases in academic performance.

The implications for practice suggest that educators should address both emotional and cognitive aspects of learning separately. While anxiety-reducing strategies improve learners' emotional well-being, instructional strategies that strengthen understanding, practice, and engagement are also necessary to improve academic performance. Schools should therefore adopt a dual-focused approach that targets both emotional support and academic skill development.

The study is limited by its use of a single institution and a small sample size, which may affect the generalizability of the findings. Additionally, the study only considered two intervention strategies and did not account for other influencing variables such as motivation, study habits, or prior achievement, which may also affect performance outcomes.

5. Conclusion

Based on the comprehensive findings of the study, the following conclusions were drawn:

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1. Learners experience anxiety in learning Mathematics in the Modern World due to several factors, particularly public performance anxiety, fear of embarrassment and judgment, teacher-related anxiety, and test and quiz anxiety.
2. Strategic classroom interventions can be implemented to help address learners' anxiety in mathematics learning.
3. The implementation of the Stationed Activity Strategy and the Combined Non-lyrical Instrumental Music and Journaling Strategy contributed to the improvement of learners' competencies in displaying skills in the collection, presentation, and interpretation of data and in judiciously applying logic in real-life arguments.
4. The implemented interventions were effective in enhancing learners' performance in Mathematics in the Modern World, as evidenced by the significant improvement in their pretest and posttest results.
5. The implementation of de-stressing interventions resulted in a reduction in learners' anxiety in learning Mathematics in the Modern World.
6. Learners' improvement in performance was found to be independent of the reduction in mathematics anxiety, suggesting that factors other than anxiety reduction may have contributed to their academic gains.

Recommendations

Based on the findings and conclusions of the study, the following recommendations are proposed:

1. Mathematics instructors may implement de-stressing strategies such as stationed activities, reflective journaling, and the integration of music to help reduce learners' anxiety in Mathematics in the Modern World.
2. Teachers may create a supportive and encouraging classroom environment that minimizes learners' fear of embarrassment and anxiety during recitations, board work, and problem-solving activities.
3. Educational institutions may encourage the use of learner-centered instructional strategies, such as the Stationed Activity Strategy, to promote active participation and collaboration among learners.
4. Teachers may integrate reflective and relaxation activities, such as journaling and the use of Non-lyrical Instrumental Music, to create a calm and focused learning environment that supports emotional regulation without causing distraction, thereby helping learners develop more positive attitudes toward mathematics
5. Future researchers may conduct studies following a similar design using larger samples or different courses to further establish the efficacy of de-stressing interventions.
6. Future researchers may investigate additional innovative strategies that can alleviate learner anxiety so that learners are more engaged and perform better in Mathematics.
7. Future researchers may investigate variables such as motivation, learning strategy, prior knowledge and classroom engagement to provide further insight into factors that affect learners' academic achievement since in this study improvement in performance and reduction in anxiety were independent outcomes

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References

Aaviste, K. (2025). Mathematics anxiety, post-assessment worry, and learner confidence in higher education settings. Journal of Educational Psychology and Learning Sciences, 14(1), 33–49.

Carey, E., Hill, F., Devine, A., & Szűcs, D. (2023). The relationship between mathematics anxiety and mathematics performance: A meta-analysis. Educational Psychology Review, 35(1), 1–25.

Creswell, J. W., & Plano Clark, V. L. (2018). Designing and conducting mixed methods research (3rd ed.). SAGE Publications.

Henschel, S., & Roick, T. (2022). The influence of mathematics anxiety on students' performance. Learning and Instruction, 80, 101–115.

Horn, M. B., & Staker, H. (2015). Blended: Using disruptive innovation to improve schools. Jossey-Bass.

Khasawneh, M. A., Alsharari, N. M., & Khalaf, R. S. (2021). Fear of negative evaluation and mathematics anxiety among university students. International Journal of Educational Psychology, 10(2), 55–71.

Krashen, S. D. (1982). Principles and practice in second language acquisition. Pergamon Press.

Luttenberger, S., Wimmer, S., & Paechter, M. (2023). Spotlight on math anxiety. Educational Psychology Review, 35(2), 1–28.

Milman, R., & Paz-Baruch, N. (2025). The role of music in emotional regulation and student learning engagement. Journal of Educational Psychology, 41(1), 22–39.

Namkung, J. M., Peng, P., & Lin, X. (2019). The relation between mathematics anxiety and mathematics performance. Review of Educational Research, 92(3), 1–38.

Putwain, D. W., & Symes, W. (2021). The effects of test anxiety interventions on student performance. Educational Psychology, 41(6), 1–18.

Putwain, D. W., & Wood, P. (2021). Classroom-based interventions to reduce academic anxiety. British Journal of Educational Psychology, 91(2), 1–18.

Ramirez, G., Shaw, S. T., & Maloney, E. A. (2022). Math anxiety: Past research and future directions. Educational Psychologist, 57(3), 145–164.

Souza, A. B., & Barbosa, M. R. (2023). Effects of non-lyrical instrumental music on concentration during academic tasks. Journal of Educational Psychology, 18(2), 55–69.

Sweller, J. (1988). Cognitive load during problem solving: Effects on learning. Cognitive Science, 12(2), 257–285.

Tucker, C. (2024). Station rotation model in mathematics instruction. Catlin Tucker Educational Consulting.

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