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Teachers' Strategies and Students' Mathematics Anxiety Among Junior High Schools in SDO Batangas City

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Abstract

This study assessed the manifestation of Mathematics anxiety among junior high school students and the extent of utilization of teacher-led strategies in the Schools Division Office (SDO) of Batangas City. Using a mixed-methods descriptive-causal design, data were collected from 97 public junior high school Mathematics teachers through a validated questionnaire and semi-structured interviews. Results revealed that students manifested a moderate extent of Mathematics anxiety, with the cognitive component (e.g., difficulty analyzing problems) being most prominent. Teachers utilized student-centered, problem-based, creative and discovery, and differentiated instructional approaches to a great extent. A significant moderate positive relationship was found between the cognitive component of anxiety and all teaching strategies, but no significant relationships were found for psychomotor or affective components. Key challenges encountered by teachers included students' fear of making mistakes, lack of confidence, and rigid curriculum time constraints. The study concludes that while teachers actively employ modern strategies, more structured interventions are needed to reduce cognitive anxiety. Proposed activities include tiered practice and collaborative peer tutoring to foster a low-anxiety learning environment.

Keywords: *Mathematics anxiety, teacher-led strategies, cognitive component, student-centered teaching, problem-based approach, differentiated instruction, junior high school, mixed-methods research, SDO Batangas City, instructional challenges*

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Introduction

Mathematics is essential for developing critical thinking and problem-solving skills necessary for various professions. However, its complexity often leads to Mathematics anxiety—a feeling of panic or worry when performing calculations—which impairs student performance and causes them to avoid math-related tasks. Despite Department of Education interventions like the National Learning Recovery Program (NLRP), PISA 2022 results show the Philippines still ranks significantly low in Mathematics performance.

This study aims to assess how teacher-led strategies can reduce this anxiety among Junior High School students in SDO Batangas City. Specifically, it answers:

1. How may the manifestation of students' Mathematics anxiety be assessed in terms of cognitive, psychomotor, and affective components?
2. What is the extent of utilization of student-centered teaching method, problem-based teaching approach, creative and discovery approach, and differentiated instructional approach?
3. Is there a significant relationship between these assessments and the strategies used?
4. What challenges do teachers encounter, and what activities can be proposed?

Methodology

Research Design

This study utilized a mixed-methods descriptive-causal design to assess the manifestation of students' Mathematics anxiety and evaluate the impact of various teaching strategies within SDO Batangas City. The integration of qualitative interview data served to triangulate quantitative findings, providing a comprehensive understanding of the challenges encountered by teachers and the contextual factors influencing instructional delivery.

Participants

The study involved 97 public junior high school Mathematics teachers from SDO Batangas City. The sample size was determined through Raosoft sampling at a 95% confidence level to ensure a representative cross-section of the educator population.

Research Instrument

Data were collected using a validated researcher-made questionnaire designed to measure three components of anxiety (cognitive, psychomotor, and affective) and the utilization frequency of four specific teaching strategies. Follow-up semi-structured interviews were conducted to gather qualitative insights into instructional barriers.

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Data Collection Procedure

The researcher first secured formal approval from the Schools Division Office of Batangas City and coordinated with school heads to identify the 97 teacher-respondents through Raosoft sampling. Following ethical protocols, the researcher administered validated questionnaires and conducted semi-structured interviews to gather comprehensive data on student anxiety and instructional strategies.

Data Analysis

Quantitative data were processed using weighted means to assess anxiety levels and Pearson's *r* to determine the correlation between teaching strategies and student manifestations. Qualitative insights from interviews were analyzed through thematic coding to identify the specific curriculum and behavioral challenges faced by Mathematics educators.

Results

Section 1: Manifestation of Students' Mathematics Anxiety

Students manifested a **moderate extent** of anxiety. The cognitive component showed the highest manifestations in students expressing difficulty analyzing problems (WM: 3.46) and understanding concepts during lessons (WM: 3.44).

Section 2: Extent of Utilization of Student-centered Teaching Method, Problem-based Teaching Approach, Creative and Discovery Approach, and Differentiated Instructional Approach

Teachers utilized all assessed strategies to a **Great Extent**:

- **Student-Centered:** WM 3.88 for encouraging active participation.
- **Problem-Based:** WM 3.74 for assessing reasoning over final answers.
- **Creative and Discovery:** WM 3.74 for promoting curiosity beyond the textbook.
- **Differentiated Instruction:** WM 3.72 for using open-ended questions matched to skill levels.

Section 3: Relationship Between Assessment and Strategies

A significant moderate positive relationship was identified between the cognitive component of anxiety and all teaching strategies. However, no significant relationships were found for the psychomotor or affective components.

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Section 4: Challenges Teachers Encounter and Proposed Activities

Teachers in SDO Batangas City encounter significant instructional hurdles characterized by students' deep-seated fear of making mistakes and a pervasive lack of confidence, issues that are further compounded by rigid curriculum time constraints. To address these barriers, the study proposes a structured set of "Mathematics Teaching Activities" that utilize tiered practice and collaborative peer-tutoring to foster a low-anxiety environment and build student resilience.

Discussion

The findings reveal that while teachers are highly active in using modern, learner-centered strategies, students still experience moderate levels of anxiety, particularly in cognitive tasks like problem analysis. This aligns with literature suggesting that math anxiety often takes up cognitive resources, preventing students from accessing the skills they already possess. The high utilization of differentiated and creative approaches demonstrates teachers' commitment to the NLRP and ARAL programs. However, the persistence of anxiety suggests a need for more targeted, structured activities—such as tiered practice tasks and flexible grouping—to help students build confidence in low-pressure environments.

Conclusion

Although teachers in SDO Batangas City effectively apply diverse instructional strategies, students continue to exhibit moderate Mathematics anxiety. The study concludes that sustained and more structured instructional practices are essential to bridge the gap between teaching effort and students' emotional engagement, ultimately aiming to improve learners' performance and engagement in Mathematics.