**THE EFFECT OF THE MATHAGUYOD REMEDIATION PROGRAM ON THE ACADEMIC PERFORMANCE OF JUNIOR HIGH SCHOOL STUDENTS IN MATHEMATICS**

Abstract

This study investigates the impact of the Mathaguyod Program, a structured remediation initiative, on the mathematical performance of Junior High School students in Grades 7–10 at Federico Yap National High School. The study employed a quasi-experimental pretest-posttest design, involving 50 at-risk students selected based on their poor academic achievement. Grounded in Constructivist Learning Theory, participants received six hours of targeted instruction using learning modules specifically developed for the Mathaguyod Program over two weeks. A 40-item pre- and post-test was used to collect data. Statistical analysis via paired samples t-test revealed a significant increase in post-test scores (M = 22.70, SD = 7.45) compared to pre-test scores (M = 13.72, SD = 4.21), with a t-value of 10.86 and a p-value = .000. The findings suggest that the Mathaguyod Program can significantly improve the mathematical proficiency of struggling students. These results support the broader implementation of evidence-based remediation strategies in junior high school mathematics, highlighting the effectiveness of constructivist approaches in addressing academic challenges.

***Keywords:*** *remediation program, academic performance, junior high school, quasi-experimental design, mathematics*

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**Introduction**

There are issues with mathematics education worldwide, with many students finding it difficult to master the subject. To address such problems, remedial programs have been implemented all over the world (Duflo, Kiessel, Lucas, & Sabarwal, 2019). These programs aim to support struggling learners by providing targeted instruction that helps bridge foundational gaps and improve academic outcomes. Du and Lipscomb (2023) examined the impact of a remedial mathematics program on first-year math majors at the University of Southern Mississippi. According to the study, students who participated in the Jack Leaps Summer (JLS) Mathematics remediation program had significantly higher post-test scores than their peers who did not participate, which used a regression discontinuity methodology. This suggests that underprepared students' arithmetic performance can be significantly raised by well-designed remedial programs. Focused remediation greatly enhanced middle school students' mathematical skills, according to a study conducted in Switzerland by Moser Opitz et al. (2017). Similar gains in junior secondary school students' performance in mathematics were observed by Ajogbeje and Alonge (2012) because of feedback and interventions.

In the Philippines, many students continue to face challenges in mathematics comprehension, as evidenced by numerous studies on academic performance in the subject. Dela Cruz (2024) started the "Math-Saya ang Bakasyon" program at Galvan High School in Nueva Ecija to help incoming Grade 10 students who struggled with math. Through online tutorials delivered via Google Meet, the program significantly raised students' competency levels from "Developing" to "Approaching Proficiency." This community-focused project serves as an example of how structured remedial programs can improve junior high school students' mathematical proficiency.

To help students in the Davao Region perform better academically, especially in mathematics, the Department of Education has launched several remediation programs. In a quasi-experimental study conducted in Digos City, Davao del Sur, Dumigsi and Cabrella (2019) used strategic intervention materials (SIM) to address the problems Grade 9 students were having with quadratic functions. Their results, which showed a significant rise in the students' post-test scores, demonstrated the efficacy of SIM in mathematics remediation. This regional initiative is a component of a larger educational movement that seeks to enhance learning outcomes and offer targeted assistance in the area. These projects' local execution and assessment could produce important proof of their efficacy and guide upcoming regional educational initiatives.

Given the global and local success of remedial initiatives in mathematics education, there is a clear need to further examine how such programs can be adapted and applied within specific educational contexts. In line with these efforts, this study seeks to determine the effectiveness of a structured Mathaguyod program in improving the mathematical performance of Junior High School students in Grades 7–10 at Federico Yap National High School. The Mathaguyod program leverages the Constructivist Learning Theory by providing scaffolded instruction that aligns with students' developmental levels, thereby guiding them from their current level of understanding to higher proficiency in mathematics. If found effective, the results of this study can contribute valuable evidence supporting the use of structured, theory-based remediation programs as a viable strategy for enhancing academic achievement in mathematics, especially among at-risk learners in the Philippine public school system.

**Statement of the Problem**

This study aimed to assess the effect of a Mathaguyod program on the academic performance of junior high school students.

**Hypothesis**

Ho₁: There is no significant difference in the academic performance of junior high school students before and after participation in the Mathaguyod program.

**Theoretical/Conceptual Framework**

This study is anchored in the Constructivist Learning Theory, which posits that learners actively construct knowledge based on prior experiences and through meaningful interaction with their environment. In this framework, learning occurs when students engage with content in ways that are personally relevant and cognitively challenging, often requiring guidance from teachers or more knowledgeable peers. The theory emphasizes the importance of scaffolding, temporary support structures that help students progress toward independent mastery of concepts. Constructivist principles have been effectively applied in mathematics education, where students who participate in inquiry-based, collaborative learning environments demonstrate significantly improved conceptual understanding and problem-solving skills (Boaler, 2016). Recent research by Angraini, Kania, and Gürbüz (2024) further supports this perspective, showing that constructivist-based instruction enhances students' computational thinking by enabling them to meaningfully engage with mathematical problems, draw on prior knowledge, and apply logical reasoning in diverse contexts. In this study, the structured *Mathaguyod* program embodies these principles by fostering an active, student-centered learning process grounded in exploration, reflection, and meaningful engagement with mathematical content.

Post-remediation students’ scores

Remediation Program

Pre-remediation students’ scores

*Figure 1. Conceptual Framework of the Effect of a Mathaguyod Program on the Academic Performance in Mathematics of Junior High School Students*

**Methodology**

This study explores the impact of a Mathaguyod program on the mathematical performance of junior high school students through a quasi-experimental methodology. Quasi-experimental methods are commonly used in educational research to evaluate the effects of interventions when random assignment is not feasible, enabling comparisons between naturally occurring groups, such as intact class sections (Fraenkel, Wallen, & Hyun, 2023). The Mathaguyod program aimed to address learning weaknesses and enhance student performance through tailored instructional strategies and resources, consistent with previous research emphasizing the efficacy of structured interventions in mitigating academic shortcomings (Allanigue, 1989; Dimatacot & Parangat, 2023). Pretests and posttests were conducted on the selected experimental groups to assess performance variations and evaluate the program's efficacy in improving mathematical competency among participants.

Fifty Grade 7–10 students, identified through purposeful sampling based on low academic performance in mathematics, participated in the study. Due to their elevated absenteeism, insufficient final scores on tests, and consistently poor performance on written and practical assessments, these students have been classified as at risk of failing. Parental consent was obtained before they participated in the study. The two-week remedial program consisted of six hours of targeted instruction using learning modules developed to address key mathematical gaps. The sessions were conducted by an educator in mathematics utilizing structured learning modules designed specifically to target the students' academic deficiencies and learning difficulties.

The 40-item teacher-created test was used before and after the remediation session. The test covered the key mathematical competencies targeted by the intervention. The final analysis primarily comprised students who completed the whole Mathaguyod program and finished both the pre-test and post-test assessments.

The Data were collected using pre- and post-test results. A paired sample t-test was utilized to assess whether a statistically significant difference occurred in the students' performance before and during the intervention, to evaluate the efficacy of the Mathaguyod program.

Throughout the research procedure, ethical considerations were carefully observed. Both parents, guardians, and students granted their informed consent. All activities were executed in compliance with the institutional requirements and the ethical standards set out by the Department of Education (DepEd), ensuring the confidentiality of student academic data.

**Results**

**Table 1. Test of Difference**

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **Tests** | **Mean** | **SD** | **t-value** | **p-value** | **Decision on Ho** |
| Pre-Test | 13.72 | 4.21 | 10.86 | .000 | Rejected |
| Post-Test | 22.70 | 7.45 |

Table 1 shows the results of the paired samples t-test comparing students' pre-test and post-test scores before and after the implementation of the Mathaguyod program. The mean score significantly increased from 13.72 (pre-test) to 22.70 (post-test), resulting in a mean difference of 8.98. The standard deviations also show increased variability in student responses post-intervention (SD = 7.45) compared to pre-intervention (SD = 4.21), suggesting a broader range of performance outcomes. The t-value of 10.86 and p-value of .000 (p < .05) indicate that the improvement in scores is statistically significant, leading to the rejection of the null hypothesis. This suggests that the mathaguyod program had a significant positive effect on students' academic performance in mathematics, with the post-test demonstrating its effectiveness in enhancing students' learning outcomes.

**Discussion**

The statistically significant increase in post-test scores supports the effectiveness of the Mathaguyod program in improving students' mathematical performance. This outcome is particularly notable considering the students' initial academic challenges and the targeted, scaffolded nature of the program. This finding aligns with the principles of Constructivist Learning Theory (Piaget, 1972; Vygotsky, 1978), which highlights the importance of active learning, scaffolding, and reflective thinking in promoting cognitive development. The program’s use of targeted practice, conceptual reinforcement, and timely feedback aligns with these principles and reflects best practices in instructional design. Recent research by Winget and Persky (2022) supports this approach, demonstrating that mastery learning models, which incorporate formative assessments and corrective feedback, lead to improved academic performance and reduced variability in student outcomes. Slavin’s (2018) emphasis on the value of structured, evidence-based interventions for struggling students further reinforces the value of such programs. The increase in post-test score variability suggests differing levels of progress, likely influenced by individual differences in prior knowledge, motivation, and engagement. From a constructivist perspective, students construct understanding at different rates depending on how effectively they connect new content to existing cognitive frameworks, which explains the variation in learning gains. Overall, both the quantitative results and theoretical foundation affirm that a structured remediation program can effectively address diverse learning needs and significantly enhance mathematics achievement.

**Conclusion**

This study's findings affirm that a structured Mathaguyod program can markedly enhance the mathematics ability of junior high school students. The significant increase in post-test scores indicates the program's efficacy in mitigating existing learning deficiencies. These findings correspond with the tenets of Constructivist Learning Theory, which emphasizes the significance of active, reflective, and scaffolded training in fostering profound conceptual comprehension and academic success.

**Recommendation**

Based on the findings of this study, it is recommended that schools implement a structured Mathaguyod program to support students who are struggling in mathematics. Even short-term interventions, such as the two-week program used in this research, can significantly improve learners’ academic performance. Teachers should be equipped with well-designed learning modules that are grounded in educational theories like Constructivist Learning Theory, which emphasizes active engagement, meaningful learning experiences, and instructional strategies that build on students’ prior knowledge. Early identification of at-risk students is essential so that timely interventions can be provided. Training teachers in effective remedial strategies and incorporating collaborative activities such as peer tutoring can further enhance the impact of these programs. Further research is encouraged to explore the long-term effects of remediation and its application in other subjects and educational settings.

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