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Website: https://etcor.org
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P - ISSN 2984-7567
E - ISSN 2945-3577
The Exigency
P - ISSN 2984-7842
E - ISSN 1908-3181

MathTuto: Bridging the Gap in the Mathematical Milestones of Grade 7 Learners

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Received: 19 July 2025 **Revised**: 12 September 2025 **Accepted**: 27 September 2025

Available Online: 30 September 2025

Volume IV (2025), Issue 3, P-ISSN – 2984-7567; E-ISSN - 2945-3577

https://doi.org/10.63498/etcor468

Abstract
Aim: Learners often encounter difficulties in acquiring mathematical knowledge, particularly during the transition from elementary to secondary education. This study evaluates the effectiveness of the MathTuto Program (Mathematics Tutorial to Unlock Numeracy Skills), an intervention designed to address learning gaps and enhance the mathematical performance of Grade 7 learners. The program seeks to support students in achieving proficiency and to provide insights for improving mathematics instruction during this critical stage.
Methodology: A one-group pretest-posttest quasi-experimental action research design was employed. Fifty Grade 7 learners participated, with ten students engaged in Focus Group Discussions. A pre-test was conducted prior to the three-week implementation of the MathTuto Program, followed by a post-test administered to the same learners.
Results: Findings revealed significant improvement in learners' performance, with mean scores increasing from 72.54 (pre-test) to 87.98 (post-test). The MathTuto Program effectively enhanced students' understanding of mathematics concepts and built a stronger foundation for continued learning.
Conclusion: The implementation of the MathTuto Program has demonstrated its potential in addressing the performance gaps of Grade 7 students. It is recommended that the program be sustained, expanded to other grade levels, and adapted for different subjects to support overall academic achievement.
Keywords: *MathTuto Program, Grade 7 mathematics, learning intervention, numeracy skills*

INTRODUCTION

Mathematics remains one of the most challenging subjects for learners, according to international assessments such as PISA. The 2018 PISA results showed that Filipino students scored an average of 353 points in Math, which is significantly lower than the OECD average of 489. This indicates that they did not perform as well as Level 1 (OECD, 2019). It also reflects that many learners struggle with mathematics in real-life applications, not only with abstract concepts, formulas, and symbols. Despite its lifelong importance, mathematics continues to be one of the least favored subjects among students (Ariyanti & Santoso, 2020).

In the Philippines, several factors contribute to poor mathematics performance, including socioeconomic status, parental involvement, inadequate resources, language barriers, limited technological integration, and a shortage of qualified teachers. Studies conducted in Cebu Province by Guinocor et al. (2020) highlight that students' study habits and attitudes, together with teachers' instructional strategies, significantly influence learning outcomes. Duque and Tan (2018) further emphasize that teachers' methods and perceptions of mathematics affect how learners view mathematical concepts, especially during the transition from elementary to secondary level, where the focus is more on content mastery and assessments. Similarly, Pangilinan (2025) noted that teachers' challenges in resource-constrained contexts strongly affect the consistency of instructional delivery, which can hinder students' mathematics achievement.

At Malalag National High School, ongoing issues with Grade 7 mathematics performance remain evident. During SY 2021–2022, the General Performance Average (GPA) for Grade 7 Mathematics was 83.68%. It slightly improved to 84.10% in SY 2022–2023 and 84.62% in SY 2023–2024. While these data reflect gradual progress, they

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also reveal the lingering effects of the pandemic and the continuing difficulties learners face in adapting to secondary-level demands. To address these challenges, the school introduced the MathTuto (Mathematics Tutorial to Unlock Numeracy Skills) program in August 2022, a three-week targeted intervention designed to strengthen Grade 7 students' numeracy and mathematical skills prior to the start of the academic year.

Thus, the Mathematics Department of Malalag National High School officially designed and implemented MathTuto as a pre-entry program for Grade 7 students. Conducted before the opening of SY 2023–2024, it involved 50 learners who voluntarily enrolled. Anchored in the National Mathematics Program of the Department of Education, MathTuto aims to enhance learners' numeracy and mathematics competencies across grade levels. Specifically, it fosters a "shared understanding of numeracy and its critical connections with mathematics and the real world," while increasing the availability of reliable data on students' numeracy progress and achievement. Similar to other intervention-based programs, its goal is to bridge achievement gaps and prepare students for the more demanding requirements of secondary mathematics (Amihan & Sanchez, 2023; Bontuyan, 2025).

Statement of the Problem

The transition from elementary to secondary education is often accompanied by academic challenges, particularly in mathematics, where learners are expected to demonstrate stronger numeracy and problem-solving skills. At Malalag National High School, many Grade 7 learners struggle to meet expected performance standards due to learning gaps carried over from their elementary education. These gaps hinder their ability to grasp higher-level mathematical concepts, leading to poor academic performance and low confidence in the subject.

To address this concern, the MathTuto Program (Mathematics Tutorial to Unlock Numeracy Skills) was introduced as an intervention strategy aimed at bridging these mathematical learning gaps. While intervention programs are widely recommended to improve performance in critical subjects such as mathematics, there is limited research that evaluates the effectiveness of school-based initiatives like MathTuto in improving student outcomes during the early stages of secondary schooling.

This study is therefore necessary to determine the impact of the MathTuto Program on the mathematics performance of Grade 7 learners, as well as to examine their experiences in the program. By assessing the effectiveness of MathTuto, this research contributes to addressing urgent academic challenges, providing evidence-based recommendations for educators, and ensuring that learners are better prepared to meet curriculum standards and improve overall academic achievement.

Research Objectives

This study aimed to determine the effect of the MathTuto Program as a mathematics intervention of Malalag National High School toward the improvement of Grade 7 learners' mathematics performance for School Year 2023–2024.

Specifically, it sought:

1. To assess the level of performance of Grade 7 learners before the implementation of the MathTuto Program.
2. To determine the level of performance of Grade 7 learners after the implementation of the MathTuto Program.
3. To test whether there is a significant difference between the pretest and posttest performance of Grade 7 learners who participated in the MathTuto Program.
4. To explore the experiences of Grade 7 learners who participated in the MathTuto Program.
5. To propose an intervention/enhancement program based on the results of the study.

Research Questions

1. What is the level of performance of Grade 7 learners before the conduct of the MathTuto Program?
2. What is the level of performance of Grade 7 learners after the conduct of the MathTuto Program?
3. Is there a significant difference between the pretest and posttest performance of the Grade 7 learners who participated in the MathTuto Program?
4. What are the experiences of Grade 7 learners who participated in the MathTuto Program?
5. What intervention/enhancement program can be proposed based on the results of the study?

Hypothesis

Given the stated research problems, the following hypotheses were tested at 0.05 level of significance:

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H_0: There is no significant difference between the level of performance of the Grade 7 learners who participated in the Mathtuto Program.
H_a: There is a significant difference between the level of performance of the Grade 7 learners who participated in the Mathtuto Program.

METHODS

Research Design

The researchers utilized a one-group pretest-posttest quasi-experimental design embedded within an action research framework to assess interventions and establish coherence between the intervention and the outcome of the study (Capili & Anastasi, 2024). Quantitative data were gathered to evaluate the effectiveness of the MathTuto Program through pretest and posttest adaptive questionnaires. In addition, interviews were conducted to gain deeper insights into students' experiences and perceptions regarding the intervention. Similar approaches of integrating both quantitative measures and qualitative narratives have been emphasized in educational action research to ensure comprehensive findings (Bontuyan, 2025).

MathTuto Participants: T1 X T2

where;

T1: Pre-Test Administration to the MathTuto Participants
T2: Post-Test Administration to the MathTuto Participants
X: Intervention Program (MathTuto Program)

Population and Sampling

The respondents of this study were 50 Grade 7 students of Malalag National High School who participated in the MathTuto Program. For the Focus Group Discussion (FGD), 10 learners were selected and interviewed about their experiences with the MathTuto Program. This purposeful sampling ensured that both performance outcomes and personal reflections were adequately represented, an approach consistent with inclusive and learner-responsive educational studies (Punzalan et al., 2025).

Instrument

The pretest was administered to Grade 7 learners prior to the MathTuto Program. A refined questionnaire adapted from the Department of Education's self-learning modules was used. The instrument was validated by master teachers and reviewed according to the learners' level, covering fundamental topics in Grade 7 mathematics such as integers, basic operations on fractions, sets, lines and shapes, and basic statistics.

An interview guide was also employed to capture learners' experiences during their participation in the MathTuto Program. After the intervention, the same students completed the posttest. All scores were subjected to statistical analysis and interpretation. The use of both validated quantitative tools and structured interviews strengthens the reliability of the study, aligning with recommended practices in contemporary educational research (Carvajal et al., 2025).

Data Collection

The data-gathering process began with a formal request to the participating schools for permission to conduct the study. After receiving approval from the Schools Division Superintendent and the school principal, the researchers explained the study's purpose and procedures to the participants.

The pretest was administered in paper-and-pencil format, with ample time provided to ensure complete retrieval. Following the three-week implementation of the MathTuto Program, the posttest was administered to the same group of learners. A Focus Group Discussion was then conducted to explore their experiences during the program. Collected data were carefully reviewed for accuracy and completeness, with follow-up communication as needed. Throughout the process, ethical standards were observed to ensure validity, reliability, and respect for participants' rights. This systematic process reflects the rigor demanded by quality-assured educational research frameworks (Amihan et al., 2023).

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Treatment of Data

The gathered data were tabulated and analyzed using appropriate statistical tools. The level of performance among Grade 7 learners was interpreted based on the Department of Education Grading System outlined in DO No. 08, s. 2015.

Descriptor	Grading Scale	Remarks
Outstanding	90 – 100	Passed
Very Satisfactory	85 – 89	Passed
Satisfactory	80 – 84	Passed
Fairly Satisfactory	75 – 79	Passed
Did Not Meet Expectations	Below 75	Failed

Table 1. Adapted Grading System Based on DO No. 08 s.2015

The researchers used the mean to determine the level of performance of Grade 7 learners in terms of numeracy skills and paired t-test to identify significant differences between pretest and posttest scores. All tests were conducted at a 0.05 level of significance. For the Focus Group Discussion, data were analyzed using R-Studio to interpret responses and develop emerging themes.

Ethical Considerations

Ethical concerns and considerations were strictly followed throughout the study. Approval was obtained from the school principal and the division office. The guidelines encompassed aspects such as data privacy, voluntary involvement, and health and safety protocols.

Participants' rights and welfare were prioritized by ensuring voluntary participation, confidentiality, data privacy, and avoidance of harm or deception. Respondents' genuine identities were concealed using a coding method. All information was gathered and stored securely, solely for the purposes of the study. The researchers upheld the ethical responsibility of ensuring respect and protection of participants, a cornerstone of academic integrity in educational research (Sanchez, 2025).

RESULTS and DISCUSSION

The level of Performance of Grade 7 Learners Before the Conduct of Mathtuto Program

Table 2 shows that 41 out of 50 grade 7 students have a grading scale below 75, indicating that 82% of the learners Did not Meet expectations. Additionally, 9 out of 50 students, which account for 18% of the total, fall between 75-79, indicating Fairly Satisfactory performance. The average grade of the learners is 72.54 which means that learners Did Not Meet Expectations.

Abalde and Oco (2023) surveyed 231 Grade 10 students at Agusan National High School during SY 2022–2023. Results showed that students had a high mean score (M = 3.94) in study habits related to mastering Mathematics, reflecting agreement that consistent practice improves performance. focused on the importance of mathematics in various aspects of life and the challenges that students face in learning the subject. It highlights the negative attitudes towards mathematics among students and the need to improve their performance in the subject. The study also emphasizes the role of teachers in shaping students' attitudes and the impact of factors such as instructional practices and school environment on students' learning and performance in mathematics. It aims to gather data and provide explanations for the challenges faced in learning mathematics and to find strategies to improve students' attitudes and performance in the subject.

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Table 2. Level of Performance of the Grade 7 Learners Before the Conduct of MathTuto Program

Grading Scale	F	Percentage	Description
90-100	0	0	Outstanding
85-89	0	0	Very Satisfactory
80-84	0	0	Satisfactory
75-79	9	18	Fairly Satisfactory
BELOW 75	41	82	Did Not Meet Expectations
TOTAL	50		
Average Grade		**72.54**	**Did Not Meet Expectations**

The level of performance of Grade 7 learners after the conduct of Mathtuto Program

The findings from the study of of Aguhayon et al. (2023) show that prior to the intervention, the control group had a mean pretest score of 6.47 (SD = 2.17)**,** while the differentiated-instruction (experimental) group started similarly low. After the intervention, the differentiated group achieved a mean posttest score of 17.00 (SD = 2.78) compared to the control group's 7.33 (SD = 2.69)**,** a statistically significant difference ($t = -8.87$, $p < .01$). Indicate that the COVID-19 pandemic has worsened the learning gap in mathematics among young students. Schools and teachers are implementing strategies such as differentiated instruction and leveraging technology to address this issue. Mathematics tutorial and other differentiated instruction, when successfully implemented, can improve student achievement in mathematics. It is important to ensure that students have a strong foundation in fundamental skills before moving on to more advanced concepts. Mathematics also plays a role in developing students' logical thinking skills, and teachers should consider factors such as students' confidence in mathematics. However, accurately capturing students' confidence in mathematics can be challenging. Efforts should be made to prioritize closing the learning gap in mathematics to ensure students have the necessary knowledge for their academic and future careers.

The study of Ferrer et al. (2024) found that tutors expressed a strong desire for active involvement in the teaching process, pre-test to post-test across all grade levels is evident, with Grade 6 students achieving the highest mean gain of 21.60 points. The program also received excellent reviews, with average scores of 4.53 for implementation and 4.55 for tutors' behavior, indicating that most people agreed it worked well, as it had a positive impact on enhancing learners' understanding of numeracy and facilitating knowledge acquisition.

Table 3. Level of Performance of the Grade 7 Learners After the Conduct of MathTuto Program

Grading Scale	F	Percentage	Description
90-100	26	52	Outstanding
85-89	4	8	Very Satisfactory
80-84	10	20	Satisfactory
75-79	7	14	Fairly Satisfactory
BELOW 75	3	6	Did Not Meet Expectations
TOTAL	50		
Average Grade		**87.98**	**Very Satisfactory**

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Table 3 shows the post test results of the experimental group indicate that out of 50 learners, 26 fall within the grading scale of 90-100, representing 52% of the learners who are Outstanding. Additionally, 4 learners fall within the grading scale of 85-89, indicating 8% of the learners who are Very Satisfactory. Furthermore, 10 learners fall within the grading scale of 80-84, representing 20% of the learners who performed Satisfactory. Lastly, 3 learners fall below 75, indicating 6% of the learners who Did Not Meet Expectations. The average grade of the learners is 87.98 shows that there is an increase in the learning performance to Very Satisfactory. The tutors also recognized the potential learning barriers children face in mathematics and developed a program that addressed both social and academic aspects. The program included targeted modifications to mitigate difficulties children encounter in traditional classroom environments. Math tutoring program had a beneficial impact on tutors, giving them a sense of competence and the ability to positively impact others' lives.

Table 4. Summary Result on the Level of Performance of the Grade 7 Learners

Grading Scale	Grade 7 MathTuto Learners				Description
	Before	%	After	%	
90-100	0	0	26	52	Outstanding
85-89	0	0	4	8	Very Satisfactory
80-84	0	0	10	20	Satisfactory
75-79	9	18	7	14	Fairly Satisfactory
Below 75	41	82	3	6	Did Not Meet Expectations
TOTAL	50		50		
Average Grade	**72.54**		**87.98**		

Table 4 presents the comparative outcome of the performance level of grade 7 students before and after the implementation of the MathTuto Program. Significantly, the performance level of learners who participated in the MathTuto program increased from their general average of 72.54 to 87.98 compared to those who did not participate.

The study of Arpilleda (2021) indicated that the strategic intervention materials had a beneficial effect on the students' proficiency in the least-learned skill, as seen by the differences in post-test scores between both groups. These findings indicate that the utilization of Strategic Intervention Material (SIM) can be a very efficient instrument in facilitating students' comprehension and application of mathematical principles. Given these results, it is advisable for the school to organize training sessions, programs, and activities aimed at improving the abilities of instructors in developing systematic intervention materials. This intervention will effectively cater to the individual requirements of students, namely in acquiring proficiency in the least acquired skills in Mathematics. By equipping teachers with the essential resources and expertise, they may more effectively facilitate students in their educational process.

The study of Vacalares et al. (2024) shows that tutors and peer education are crucial for learning mathematical concepts, especially in the Philippines, where PISA scores indicate ongoing challenges. Peer-assisted strategies enable students who are struggling to understand concepts to feel more confident and stay motivated by creating a more supportive learning environment. Structured peer education and tutoring programs, in addition to regular classroom instruction, can help students better understand mathematical concepts and achieve better academic outcomes. Tutors expressed a desire to help their peers and recognized the social and academic benefits of the program. The study concludes that the math tutoring program positively impacted tutors and allowed them to feel confident and capable of making a difference in the lives of others.

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Table 5. Significant difference between the level of performance of the Grade 7 Learners before and after the conduct of Mathtuto Program

Grade 7 MathTuto Learners	Mean	t-statistic	p-value	Remarks
Level of Performance Before the Conduct of Mathtuto Program	72.54	-12.8497	0.0000	Significant
Level of Performance After the Conduct of Mathtuto Program	87.98			

Table 5 presents the results of an analysis conducted to ascertain whether there was a statistically significant difference in the performance levels of grade 7 learners in the experimental group before and after the implementation of the MathTuto Program. In the event that there is no statistically significant difference in the level of performance among grade 7 learners in the experimental group, a two-sample t-test was employed. The results of the paired t-test revealed that the average performance of the learners was 72.54 before the implementation of the MathTuto program. However, following the implementation of the MathTuto Program, the average performance level increased to 87.98. The calculated t statistic indicates a value of -12.8497 and a p-value of 0.0000. Assuming the predetermined p-value is less than or equal to 0.05, the calculated value is 0.0000. Hence, there is substantial evidence indicating a difference in the academic achievement of the Grade 7 learners in the experimental group before and after the implementation of the MathTuto Program.

Experiences of Learners During the Conduct of Mathtuto Program

Figure 1 shows the experiences of learners during the conduct of MathTuto program. Learners emphasized that MathTuto program provides them opportunity to engage in interactive learning, clear and supportive instruction, variety of activities and assessments, and positive learning environment.

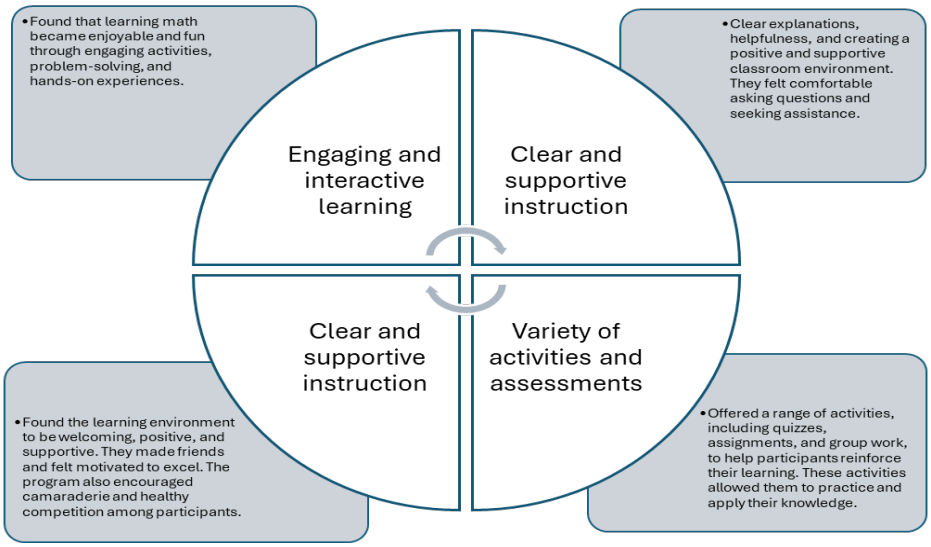

Figure 1. Learners Experiences During the Mathtuto Program

Engaging and Interactive Learning. Participants mentioned that the program made learning math enjoyable and fun. They engaged in activities, solved problems, and had handson experiences to improve their math skills.

> "My experiences at the mathtuto program was very wonderful, I had fun, I also made some friends, but most important things is I learned" (FGD, L1,L2)

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"Learning math was best experience of all, we learned of many things for the week, I learned so many things" (FGD, L9, L10)

"we have fun groupings" (FGD, L71)

The study of Hetmanenko (2024) analyzes the role of active learning in mathematics education and its impact on students' interest in the subject. The study explores various methods of active learning, such as group projects, discussions, and problem-based tasks, and examines their effectiveness in teaching mathematics. The findings suggest that active learning methods, which focus on fundamental mathematical concepts and promote critical thinking, communication skills, and independent research, are crucial for stimulating students' interest in mathematics. The study also emphasizes the importance of practical examples, interactive teaching methods, and support for independent research in fostering students' interest in mathematics. It suggests that creating a learning environment that incorporates these elements can enhance the effectiveness of mathematics education and maximize students' interest in the subject.

Clear and supportive instruction. Participants appreciated the clear explanations and helpfulness of the teachers. They felt comfortable asking questions and seeking help when needed. The teachers created a positive and supportive classroom culture.

"Learning environment was great, the teachers are always positive and helpful. It was great" (FGD, L59, L60)

"During mathtuto we have so many activities and quizzes that makes us learned a lot in mathematics" (FGD, L72, L73)

"Classroom is a great place to learn. The classroom is bright and welcoming. We help each other. The classroom culture is positive and supportive, and it has all the resources we need to accomplish every tasks" (FGD, L62, L63, L64)

Boaler 2022 emphasized that when students transition to secondary school, the focus typically shifts to content-heavy, exam-focused teaching. This adjustment makes it more challenging for students to conduct in-depth, problem-based exercises that help them learn how to think like mathematicians. The norms and ways of doing things in high school need to be adjusted so that the experimental, mindset-focused approaches used in earlier years can continue and improve.

Variety of activities and assessments. The program provided a variety of activities, quizzes, and assignments to reinforce learning. Participants mentioned quizzes, bring-home activities, and group work as some of the activities they engaged in. This allowed them to practice and apply their knowledge.

"solving problems, home activities, essay, and more" (FGD, L78)

"may quiz at performance task din" (FGD, L70)

"pagkatapos po ng naming ng lesson ay may activity po kami para malaman kung may natutunan po kami" (FGD, L89, L90)

To acquire advanced skills and solve problems, learners must first master the fundamentals of mathematics. When learners do not possess adequate knowledge of these concepts, they usually have difficulties moving further.

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This causes people not to understand things as well and to make worse assessments. So, learning fundamental math will help learners do well in the long run, boost learners' confidence, and get learners ready for more difficult subjects (Francisco et al., 2025).

Positive learning environment. Participants described the learning environment as welcoming, positive, and supportive. They mentioned that they made friends and felt motivated to do their best in the program. The program fostered a sense of camaraderie and competition among participants.

"we are happy and learned more" (FGD, L53)

"It has a nice and friendly but competitive environment" (FGD, L74)

"Learning math was best experience of all" (FGD, L9)

Sari et al. (2023) encouraging students to work together helps them learn from one another and fosters greater confidence in their ability to solve math problems. Adding tools that students understand and use in different cultural settings makes math concepts more significant because they connect them to students' real-life and cultural experiences.

Pokhrel (2023) shows that there are many problems with learning mathematical concepts because of gaps in the teaching and learning process, such as poor instructions, not enough support, and sticking to old methods of doing things. Math tutorials can help with these problems by providing each student with personalized assistance, clarifying complex topics, and building their confidence through regular guidance. Adding planned tutorial programs to regular classroom lessons can help students feel more involved, relaxed, and create a better learning environment for everyone.

Table 6. Summary table on the experiences of learners during the implementation of Mathtuto Program

Indicator	Code	Theme
Experiences of Learners During the Implementation of Mathtuto Program	Engaging and interactive learning	Participants mentioned that the program made learning math enjoyable and fun. They engaged in activities, solved problems, and had hands-on experiences to improve their math skills.
	Clear and supportive instruction	Participants appreciated the clear explanations and helpfulness of the teachers. They felt comfortable asking questions and seeking help when needed. The teachers created a positive and supportive classroom culture.
	Variety of activities and assessments	The program provided a variety of activities, quizzes, and assignments to reinforce learning. Participants mentioned quizzes, bring-home activities, and group work as some of the activities they engaged in. This allowed them to practice and apply their knowledge.

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	Positive learning environment	Participants described the learning environment as welcoming, positive, and supportive. They mentioned that they made friends and felt motivated to do their best in the program. The program fostered a sense of camaraderie and competition among participants.

Conclusions

The findings of the study demonstrate that the MathTuto Program significantly enhanced the mathematical performance of Grade 7 learners. The comparison between the pretest and posttest results clearly indicates that the intervention helped bridge existing learning gaps during the critical transition from elementary to secondary education. Beyond measurable academic gains, the focus group discussions revealed that learners not only improved their numeracy skills but also developed greater confidence and a more positive attitude toward mathematics. These outcomes affirm that the MathTuto Program is an effective intervention for addressing challenges in mathematics learning and can serve as a model for similar educational contexts.

Recommendations

Based on the results, it is strongly recommended that the MathTuto Program be institutionalized as a regular intervention for incoming Grade 7 learners to ensure consistent support during their early adjustment to secondary mathematics. The program may also be expanded to other grade levels and adapted to different subject areas to provide comprehensive learning assistance across the curriculum. School administrators and teachers are encouraged to refine the program by incorporating technology-driven tutorials and differentiated strategies to meet diverse learner needs. Furthermore, future researchers are advised to replicate this study with larger sample sizes, longer implementation periods, and additional variables such as learners' motivation and attitudes toward mathematics, in order to provide deeper insights into its long-term impact. By doing so, the MathTuto Program can continue to evolve as a sustainable and inclusive approach to strengthening mathematical proficiency among learners.

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