Mathematical Learning Intervention Program for Grade 9 Learners During the Resumption of In-Person Classes

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Abstract
This study examined the pedagogical competence levels and challenges of 51 public elementary school The study investigated the math performance of 208 Grade 9 learners from Malalag National High School upon returning to in-person classes post-pandemic, revealing that learners performed at a satisfactory level during the First and Second Quarters. The challenges faced during this transition were examined using a validated researcher-made survey, which guided the development of a Mathematical Learning Intervention Program. Results indicated that home and personal problems significantly impacted learners, while social issues had moderate effects and school-related problems had the least effect. Notably, school-related problems demonstrated a significant relationship with learners' math performance, highlighting the need to address these issues comprehensively. The findings underscore the necessity of targeted interventions to support learners. Recommendations include offering remedial classes tailored to individual needs, fostering inclusive peer collaboration programs, and providing professional development for teachers to equip them with effective strategies. Strengthening parental involvement and resource allocation is crucial to addressing learners' challenges holistically. By addressing the root causes of learners' challenges, the intervention program can enhance engagement and academic outcomes, supporting the transition back to in-person learning effectively.

Keywords
problems encountered, learning intervention program, in-person classes, grade 9 learners

INTRODUCTION

The COVID-19 pandemic's disruption of mathematics education changed how students worldwide approached mathematical ideas, problem-solving techniques, and academic confidence. Long-term school closures, remote learning, and unequal access to digital resources have all been shown to widen learning gaps, especially in mathematics, a subject that heavily depends on conceptual scaffolding and guided practice (Adnan & Anwar, 2020; Akseer et al., 2021; Shin et al., 2024). Research revealed that when schools progressively returned to traditional classroom settings, students not only returned with academic deficits but also with fragmented learning experiences, weakened foundational skills, and decreased interest in math classes (Borba, 2021; Sooknanan & Seemungal, 2023). These facts highlight the necessity for deliberate learning recovery techniques that go beyond continuity and promote meaningful re-engagement with mathematics on a global scale.

The return of in-person instruction in local school settings, especially in secondary education, revealed the varied academic preparedness of Grade 9 students who had to navigate crucial learning years under emergency protocols. According to empirical research, math teachers must address cumulative learning loss while also adapting their teaching methods to accommodate students' varying levels of comprehension (Gumera & Ancog, 2023; Drijvers et al., 2021). Local studies also highlight how, when matched with learners' needs, technology-assisted interventions, remedial programs, and structured instructional designs have demonstrated promise in boosting students' mathematical performance and confidence (Azucena et al., 2022; Nitkin et al., 2022; Cariaga

et al., 2024). But as classes resumed, the focus moved from access to recovery—that is, how schools could intentionally assist students in regaining their mathematical proficiency in in-person settings.

Structured mathematical learning intervention programs explicitly deployed during the return to in-person classrooms have received little empirical attention, despite the expanding amount of research on technology-enhanced education and distance learning. Fewer studies have quantitatively investigated how targeted intervention programs affect Grade 9 students' mathematical learning during this crucial recovery phase, despite examining digital readiness, teacher competency, and instructional challenges (Alabdulaziz, 2021; Simpal & Robles, 2024; Temelo, 2023). There is a knowledge gap on how learning recovery initiatives lead to quantifiable gains in students' mathematics outcomes, due to a lack of focused evidence on intervention effectiveness in post-pandemic, face-to-face settings.

The current study addresses the knowledge gap by providing empirical evidence on the effectiveness of a Mathematical Learning Intervention Program for Grade 9 students as in-person sessions resume. Specifically, it assesses the program's impact on learner outcomes within a recovery-focused instructional setting. The findings inform evidence-based decision-making for teachers and administrators seeking to improve mathematics education after disruption. More significantly, the study fulfills the educational obligation to provide meaningful support—ensuring students regain confidence, competence, and continuity in their mathematics learning journeys, rather than simply returning to school.

Statement of the Problem

This study aimed to determine the problems encountered by the Grade 9 learners for School Year 2023-2024 of Malalag National High School in learning mathematics during the resumption of in-person classes as basis for developing contextualized mathematical learning intervention program. Specifically, this study sought answers to the following questions:

1. What is the level of learning performance in mathematics of the Grade 9 learners during the resumption of in-person classes?
2. What is the extent of the problems encountered in learning mathematics among Grade 9 learners during the resumption of in-person classes in terms of:
   2.1 home problems;
   2.2 personal problems;
   2.3 school problems; and,
   2.4 social problems?
3. Is there a significant relationship between the problems encountered in learning mathematics and their learning performance in mathematics?
4. Based on the results, what mathematical learning intervention program can be developed?
5. What is the level of validity of the developed mathematical learning intervention program in terms of:
   5.1 acceptability;
   5.2 appropriateness;
   5.3 content; and,
   5.4 usability?

MATERIALS AND METHODS

Research Design

This study employed a descriptive-correlational design where the researcher aims to explain a correlation between variables without attempting to determine a causal relationship (Devi et al., 2022). It identifies and examines the challenges that learners have when learning mathematics, as well as any potential connections between them. The descriptive aspect concentrates on obtaining information about the particular issues that learners face, such as problems in home, personal, school or social. These difficulties were evaluated and their prevalence among learners ascertained by the prepared survey questionnaire.

Locale

This study was conducted at Malalag National High School, one of the schools in the Division of Sarangani located at the Municipality of Maitum, Sarangani Province. The school was established in 1969 and is the only public high school in the heart of the municipality offering Junior and Senior High School Program. It has a total population of 2,606 learners with total personnel of 93 both teaching and non-teaching for the School Year 2023-2024 making it to a Large School Category. Of the total population, the school is a home of the 450 Grade 9 learners distributed into nine (9) sections. These ninth-grade learners were chosen to participate in the collection of pertinent study data. The general performance average of Grade 9 learners in mathematics in this school increased slightly from 82.40 in SY 2022–2023 to 83.47 in SY 2023–2024, indicating both moderate growth and continued difficulties in grasping mathematical ideas. Learning gaps, trouble solving problems, problems with retention, and different degrees of involvement could all be the cause of this slow growth. Although the development is encouraging, it also emphasizes the necessity of focused interventions, improved instructional techniques, and more robust support networks to guarantee a more significant and steady increase in mathematical competency. Through this, methods can be investigated that may successfully address these enduring difficulties in mathematics learning experienced by the respondents from this locale.

Respondents

The respondents of the study were the 208 learners of the 450 Grade 9 learners of Malalag National High School determined through Cochran's Formula. The researchers used stratified random sampling, which allowed for proportionate representation of learners from various Grade 9 classrooms, to accomplish a fair and impartial selection process. Out of the 46 learners in Arrhenius, 21 was chosen as responders. In a similar vein, 19 respondents in Gibbs from 43 learners, 25 respondents from a pool of 53 learners were chosen in Boyle, and 24 respondents in Cornforth from 51 learners were chosen. Of the 52 learners in Mendeleev, 24 were selected as respondents; of the 53 learners in Murphy, 25 were selected as respondents. Twenty-five (25) out of the 55 learners in Rutherford and 24 out of the 46 learners in Ziegler were selected as respondents. Lastly, 21 out of the 54 learners in SPA-Democritus were selected as respondents. All class sections were fairly represented as a result.

Instrument

The first and second quarter grades of the learners during the school year 2023-2024 were obtained to evaluate their level of learning performance. The definition of their mastery level is shown below:

Grading Scale	Description	Verbal Interpretation
90 – 100	Outstanding	The learning performance of the learner is very high.
85 – 89	Very Satisfactory	The learning performance of the learner is high.
80 – 84	Satisfactory	The learning performance of the learner is moderately high.
75 – 79	Fairly Satisfactory	The learning performance of the learner is low
75 Below	Did Not Meet Expectations	The learning performance of the learner is very low.

The legend stated above was adapted based on the grading system of the Department of Education as stipulated in the Department Order No. 8, s. 2015, *Policy Guidelines on Classroom Assessment for the K to 12 Basic Education Program.* It served as a guide for interpreting the performance scores of the learners. In the conduct of this study, a contextualized survey questionnaire made by the researcher was used. This was validated by the experts in the field in order to assess the content of the questionnaire. This researcher-made survey questionnaire was consisted of 20 items and was utilized to determine the problems encountered in learning Mathematics among Grade nine (9) learners of Malalag National High School. The questions were answered by the learners using the 5 point Likert scale:

Mean Interval	Description	Verbal Interpretation
4.50 – 5.00	Always	The learner is very highly affected by the problem encountered.
3.50 – 4.49	Often	The learner is highly affected by the problem encountered.
2.50 – 3.49	Sometimes	The learner is moderately affected by the problem encountered.
1.50 – 2.49	Seldom	The learner is less affected by the problem encountered.
1.00 – 1.49	Never	The learner is least affected by the problem encountered.

To make sure it fulfilled what it intended to measure for this study, the questionnaire undergone a pilot test to evaluate its validity and reliability before the actual research is conducted. Cronbach's Alpha reliability was used to measure internal consistency for the pilot test. It was generally agreed upon that an instrument's internal consistency should be +.75 or higher. Additionally, construct validity was tested through the known-group methodology, whereby the instrument was used to see if it accurately represents the construct of a ninth-grade math learner (American Institute for Research, 2021). The outcomes validated the validity and reliability of the tool. Meanwhile, the developed mathematical learning intervention program was also validated by the experts to determine its level of validity in terms of acceptability, appropriateness, content and usability using the 5 point Likert scale:

Mean Interval	Description	Verbal Interpretation
4.50–5.00	Very High	The intervention program demonstrates an exceptional level of validity, indicating that its content, design, and implementation strategies are excellently aligned with the intended objectives and are highly acceptable to stakeholders.
3.50–4.49	High	The intervention program exhibits an appropriate level of validity, suggesting that it is well-structured and appropriate, with strong alignment to educational goals and minor areas for enhancement.
2.50–3.49	Moderately High	The intervention program partially meets the criteria of validity, indicating general effectiveness, although several components may require improvement for optimal implementation.
1.50–2.49	Low	The intervention program has significant gaps and needs major revisions to enhance its alignment, structure, and overall effectiveness.
1.00–1.49	Very Low	The intervention program does not meet the necessary criteria indicating significant weaknesses in its design or relevance, thus requiring substantial modifications.

Data Gathering Procedure

Prior to data collection, the researcher's questionnaire underwent expert validation and a Cronbach's alpha pilot test to determine its reliability. The principal of Malalag National High School granted permission to conduct the study, and the Learner Information System (LIS) coordinator was then contacted to obtain the list of Grade 9 classes for the 2023–2024 school year. Parental consent was obtained prior to participation, and respondents were selected via stratified random sampling within each class. The surveys were distributed and collected individually by the researcher, who also provided instructions and allowed 30 minutes for completion. Data collection took place between January and March of 2024. After statistical analysis, a mathematics learning intervention program was developed based on the data acquired. Experts then verified the program's acceptability, appropriateness, content, and usability.

Ethical Considerations

This research study followed ethical guidelines. Informed consent was obtained from the participants. They gave consent and granted permission to be the source of information about the subject of this research by letting their parents signed the Participants' consent form. The researcher considered the participants' voluntary participation by giving the detailed explanation of the objectives of the study and that he made sure that they were free to stop participating at any time without facing any repercussions and the whole process was entirely voluntary. To safeguard the privacy of the individuals, the researcher employed coding techniques. Responses from the learners were treated with extreme care and confidentiality. Moreover, the researcher ensured that sensitivity to the gender preference and orientation were observed and that they were always respected in the entire duration of the study. Learners regardless of gender and orientations were considered respondents of the study. Lastly, the researcher was sensitive to the cultures of the participants as they might have different cultural backgrounds. The researcher respected their ideas, beliefs and traditions. The language used in the survey questionnaire was respectful of the participants' religion, customs and traditions.

RESULTS AND DISCUSSION

Level of Learning Performance in Mathematics of the Grade 9 Learners During the Resumption of In-Person Classes

This study determined the level of learning performance in Mathematics of the respondents during the resumption of in-person classes. The table 1 shows the mean grades of the respondents in Mathematics for the First and Second Quarters of the School Year 2023-2024.

Table 1. Learning Performance in Mathematics of the Grade 9 Learners

Grading Scale	Frequency	Percentage	Description
90 – 100	26	12.50	Outstanding
85 – 89	70	36.06	Very Satisfactory
80 – 84	75	33.65	Satisfactory
75 – 79	37	17.79	Fairly Satisfactory
75 below	0	0.00	Did Not Meet Expectations
Total	208	100.00	
Overall Mean Percentage	84.46		Satisfactory

According to the results, when in-person lessons resumed, Grade 9 students showed a generally satisfactory to high level of learning proficiency in mathematics. The results indicate a promising trend in academic recovery following extended pandemic-related disruptions, with the majority of learners receiving Satisfactory to Outstanding ratings and none falling below the minimum competency level. This pattern is consistent with research showing that returning to in-person instruction helps students regain fundamental skills, especially in cognitively demanding courses like arithmetic (Borba, 2021; Drijvers et al., 2021). The aggregate mean percentage score of 84.46 indicates that students were able to successfully adjust to the reintroduced classroom setting, reflecting moderate to good mathematical proficiency. In order to strengthen procedural fluency and conceptual understanding in mathematics, previous research has highlighted the importance of in-person learning, which provides for immediate feedback, structured instructional routines, and sustained learner–teacher interaction (Sooknanan & Seemungal, 2023; Shin et al., 2024). It's possible that these teaching circumstances helped students perform better and be more engaged when they returned to traditional classroom settings. Remedial programs, diagnostic tests, and focused instructional interventions were successful during the shift from remote to in-person learning, as seen by the notable lack of students in the Did Not Meet Expectations category. Studies emphasizing the value of teacher-led academic support and post-pandemic catch-up techniques in reducing learning loss brought on by school closures have noted similar findings (Akseer et al., 2021). According to research, many students formed adaptation mechanisms that allowed them to react favorably once typical classroom arrangements were restored, even though emergency remote learning presented difficulties (Adnan & Anwar, 2020; Borba, 2021). The encouraging trend among Grade 9 students lends credence to the larger body of research showing that in-person instruction is still crucial for closing the learning gaps made worse by the epidemic and maintaining math proficiency (Akseer et al., 2021; Shin et al., 2024; UNESCO, 2021). This study determined the extent of the problems encountered in learning mathematics among Grade 9 learners of Malalag National High School during the resumption of in-person classes based on the four aspects, namely: home problems, personal problems, school problems and social problems. In doing so, mean was used. These findings shed light on the particular problems influencing learners' experiences learning mathematics. Table 2.1 to 2.5 shows the results. Table 2.1 shows the extent of home-related problems encountered by Grade 9 learners in learning Mathematics during the return to in-person classes. The overall mean score is 2.46, which is interpreted as Seldom. This means that learners are generally less affected by problems in their home environment when it comes to their Mathematics studies. Although there are difficulties, they usually do not prevent students from learning the material efficiently.

Table 2.1. Extent of the Problems Encountered in Learning Mathematics among Grade 9 Learners in terms of Home Problems

Items	Mean	Description
My family members, including parents and siblings, are not concerned with my academic grades, especially in mathematics.	2.75	Sometimes
My parents have not been supportive and encouraging me when it comes to nurturing my academic interests especially in learning mathematics lessons.	2.90	Sometimes
My parents face challenges in maintaining a stable job or consistent income affecting our household's financial stability that they cannot help me in my mathematics assignment.	1.84	Seldom
Our home feels overcrowded due to the number of people living together which can sometimes create a hectic atmosphere and feel uncomfortable to do my math assignments.	2.47	Seldom
Our home lacks proper ventilation and sufficient lighting that I cannot study my mathematics lessons comfortably.	2.36	Seldom

Overall Mean	2.46	Seldom

Among the listed home-related factors, the item with the highest mean pertains to the lack of parental support and encouragement in developing learners' academic interests, particularly in mathematics, with a mean score of 2.90, interpreted as *Sometimes*. This finding suggests that learners are moderately affected by inconsistent parental motivation. Parental involvement is widely recognized as a critical factor in shaping learners' academic confidence, attitudes toward learning, and persistence in challenging subjects such as mathematics. Studies have shown that learners who perceive encouragement and academic monitoring from parents tend to demonstrate higher engagement and achievement, while limited parental involvement may weaken motivation and sustained effort (Wentzel et al., 2021; Bongabong & Doronio, 2025). The moderate frequency of perceived parental disengagement observed in this study may therefore negatively influence learners' interest and perseverance in mathematics if left unaddressed. Recent evidence highlights that parental support does not solely depend on academic expertise but also on emotional encouragement, communication with schools, and reinforcement of learning routines at home, all of which contribute to learners' academic and social-emotional outcomes (Geduld, 2024; Cariaga et al., 2025). The findings suggest that strengthening school–family partnerships may help mitigate this concern and foster a more supportive learning environment for learners.In contrast, the lowest mean score of 1.84 was associated with financial difficulties experienced by parents that limit their ability to assist with mathematics assignments, categorized as *Seldom*. This indicates that learners in this context are less frequently affected by household financial constraints in relation to mathematics learning. While socioeconomic factors are often linked to academic performance, the results imply that their direct impact on learners' engagement with mathematics tasks may be buffered by school-based interventions, remediation programs, or learners' adaptive coping strategies during the post-pandemic period (Akseer et al., 2021; Shin et al., 2024). Other home-related conditions, including family members' lack of concern for academic performance, overcrowded living environments, and inadequate lighting or ventilation, yielded mean scores ranging from *Seldom* to *Sometimes*. These results indicate that although such challenges are present, they are not consistently experienced at a level that severely disrupts learners' ability to participate in mathematics learning. Similar findings suggest that when instructional support and structured learning opportunities are provided at school, the negative effects of less-than-ideal home environments may be partially mitigated (Borba, 2021; Drijvers et al., 2021). Strengthening parental involvement through communication, guidance, and inclusive school initiatives may enhance learner motivation, resilience, and sustained academic engagement (Cariaga et al., 2025; Bongabong & Doronio, 2025).

Table 2.2. Extent of the Problems Encountered in Learning Mathematics among Grade 9 Learners in terms of Personal Problems

Items	Mean	Description
My school expenses have been challenging and burdensome that I cannot focus in studying my math lessons.	2.19	Seldom
I have difficulty in maintaining a positive attitude towards learning mathematics subject.	2.48	Seldom
My study habit in Mathematics is very poor.	2.66	Sometimes
My learning in mathematics is affected by the relationship status of my parents and siblings.	2.43	Seldom
I need to enhance my mathematical skills recognizing room for improvement in this area.	2.67	Sometimes
Overall Mean	2.49	Seldom

The degree of personal difficulties Grade 9 students faced when learning mathematics when in-person lessons resumed is seen in Table 2.2. The total mean score of 2.49, which corresponds to Seldom, indicates that students are less often affected by personal difficulties in their mathematical education. Even though there are some personal challenges, they are neither widespread nor chronic enough to materially impair students' academic performance in mathematics. This shows that after the pandemic, the majority of students were able to cope with personal challenges and adapt to the demands of in-person instruction. Among the markers, learners' perception of the need to develop their mathematics skills has the highest mean score ($\bar{x}$ = 2.67), which is categorized as Sometimes. This result illustrates how learners are aware of their competency gaps and the need for more skill development. Although necessary for academic development, this awareness can also lead to feelings of insecurity or pressure to perform well, especially in mathematics, which is frequently seen as a difficult subject. According to earlier studies, students' self-perceived competency has a significant impact on their motivation, engagement, and perseverance when learning mathematics (Borba, 2021; Sooknanan & Seemungal, 2023). This identification of ability gaps may impede confidence and ongoing participation in the absence of sufficient instructional support. The lowest mean score ($\bar{x}$ = 2.19), which is interpreted as Seldom, relates to

financial challenges at school that impede students' ability to study mathematics. This implies that while financial worries can occasionally lead to stress, they do not always impede students' ability to concentrate on learning mathematics. Similar results show that although socioeconomic limitations might affect academic performance, school-based interventions, structured instruction, and focused learner support programs may lessen their direct effects (Akseer et al., 2021; Shin et al., 2024). In the current situation, these mitigating factors seem to have helped lessen the impact of financial difficulties. Other individual factors were also interpreted as seldom, including the impact of family relationship dynamics on learning ($\bar{x}$ = 2.43) and the challenge of sustaining a good attitude toward learning mathematics ($\bar{x}$ = 2.48). This suggests that while students may occasionally experience emotional or motivational difficulties, these problems are not common enough to pose a significant obstacle to learning mathematics. Research indicates that students' attitudes and emotional health can change, especially during educational transitions. However, encouraging classroom interactions and supportive school environments helps maintain students' academic confidence and engagement (Wentzel et al., 2021; Geduld, 2024). When combined, these results suggest that although there are some personal difficulties, they are not always serious. Learners may benefit from improved academic scaffolding, formative feedback, and motivational support, as evidenced by the moderate difficulty in identifying the need for skill improvement. Providing students with effective study techniques, opportunities for supervised practice, and support could reduce stress and increase mathematical confidence. It has been demonstrated that fostering a responsive and encouraging learning environment improves students' attitudes toward difficult subjects and encourages long-term academic engagement (Borba, 2021; UNESCO, 2021). The level of school-related issues Grade 9 students experienced when learning mathematics upon the resumption of in-person lessons is shown in Table 2.3. The overall mean score of 3.80, which translates to "often," indicates that problems with instructional delivery and teaching methods have a significant impact on students. Even though these difficulties may not be overwhelming, their frequent occurrence suggests a significant impact on students' overall mathematical learning experiences. Research conducted both during and after the COVID-19 pandemic shows that teacher readiness, feedback, pacing, and instructional clarity have a major impact on students' engagement and mathematical achievement, especially during educational transitions (Drijvers et al., 2021; Shin et al., 2024).The findings highlight the importance of improving teacher support, strengthening instructional strategies, and ensuring pedagogical responsiveness in mathematics classes following the pandemic. Learning outcomes in mathematics may be improved, and the incidence of school-related problems may be reduced by addressing them through learner-centered instruction, professional development, and continuous academic support.

Table 2.3. Extent of the Problems Encountered in Learning Mathematics among Grade 9 Learners in terms of School Problems

Items	Mean	Description
My teacher needs improvement in providing clear directions and coherent explanations during our math lesson.	4.18	Often
My teacher struggles with fostering an environment that encourages critical thinking and nurtures creativity among learners during math lessons.	3.68	Often
My teacher lacks utilization of visual aids and diverse examples to effectively illustrate lessons and engage learners during math sessions.	3.61	Often
My teacher does not recognize the importance of employing various approaches, methods and strategies in teaching to accommodate diverse learning styles and preferences in our math class.	3.84	Often
My teacher has difficulty in connecting lessons to practical, real-life situations to make the learning experience more relevant and applicable for learners.	3.70	Often
Overall Mean	3.80	Often

With a mean score of 4.18, or "often," the item with the highest mean score concerns the need to improve teachers' capacity to give students clear instructions and logical explanations throughout arithmetic assignments. This research shows that instructional consistency and clarity in how math is taught commonly affect students. Since mathematics necessitates sequential reasoning, conceptual clarity, and instant feedback, learning the subject requires clear explanations and disciplined instruction. Lack of clarity in instruction can seriously impair students' comprehension and participation, especially during educational transitions, according to studies conducted during and after the COVID-19 pandemic (Drijvers et al., 2021; Borba, 2021). Although still classified as often, the lowest mean score ($\bar{x}$ = 3.61) relates to teachers' infrequent use of visual aids and a variety of examples to demonstrate mathematical concepts and actively involve students. This implies that although the absence of visual aids is an issue, people view it as being marginally less troublesome than other teaching

problems. However, it is generally acknowledged that a crucial tactic for improving the accessibility of abstract mathematical concepts, particularly for students with diverse learning styles, is the use of visual representations, concrete examples, and contextualized assignments (Sooknanan & Seemungal, 2023; Alabdulaziz, 2021). The Often category also includes other school-related issues, such as the inability to develop critical thinking and creativity, the lack of diversity in teaching strategies to accommodate different learning types, and the difficulty in relating mathematics problems to real-world scenarios. These results imply that, even if these problems might not arise in every class, they occur frequently enough to affect the overall quality of the learning environment. Particularly in post-pandemic classrooms, research highlights the value of learner-centered instruction, real-world applications, and cognitively stimulating tasks in improving mathematics proficiency and learner motivation (Borba, 2021; Thornhill-Miller et al., 2023). Long-term professional learning opportunities greatly enhance teaching quality and learner engagement, according to studies on teacher competency and instructional readiness (Temelo, 2023; Bayo Jr. & Doronio, 2025; Galaura & Simpal, 2025). The degree of social issues Grade 9 students faced when learning mathematics upon the resumption of in-person lessons is shown in Table 2.4. Students are substantially affected by social issues in their math classes, as indicated by an overall mean score of 3.34, corresponding to 'Sometimes'. Although social factors such as classroom connections, peer interactions, and acceptability affect learning, they do not significantly detract from students' academic attention. Research indicates that while negative social experiences can impede participation and confidence, especially in academically demanding subjects like mathematics, positive peer relationships and a supportive classroom social climate can boost students' motivation and achievement (Wentzel et al., 2021). Overall, Tables 2.3 and 2.4 show that social problems in mathematics learning are less common than school-related instructional issues. In the post-pandemic period, improved teaching strategies, teacher professional development, and supportive classroom environments may significantly boost students' engagement and math performance.

Table 2.4. Extent of the Problems Encountered in Learning Mathematics among Grade 9 Learners in terms of Social Problems

Items	Mean	Description
I struggle to gain acceptance from classmates and schoolmates especially during mathematics class.	*3.69*	Often
I ineffectively manage interactions during math lessons with diverse kinds of classmates.	*3.33*	Sometimes
I have a difficulty to adapt to the life and responsibilities of a ninth-grade learner especially during Math activities.	*3.63*	Often
I am feeling insecure around classmates who are intellectually-gifted in mathematics and economically better off.	*3.60*	Often
I find it difficult to deal with a superiority complex from classmates who are more intellectually capacitated in mathematics and financially superior.	*2.46*	Seldom
Overall Mean	*3.34*	Sometimes

With a mean score of 3.69, or "often," the item with the highest mean score relates to students' challenges getting acceptance from their peers in math classes. This suggests that difficulties with social integration in the math classroom often affect students. These issues imply that the educational setting may not always be perceived as welcoming, which can lead to feelings of loneliness, decreased involvement, or disinterest. Particularly in collaborative learning contexts such as mathematics education, social acceptance has been found to be a crucial factor influencing students' academic motivation, classroom engagement, and persistence (Wentzel et al., 2021). Students may be less inclined to engage in group discussions and problem-solving exercises if they feel alienated or cut off from their peers. The Seldom category, with the lowest mean score ($\bar{x}$ = 2.46), is associated with challenges in interacting with peers who have a superiority complex due to greater economic advantage or mathematical prowess. According to this research, while social comparison can present difficulties for certain students, it is not widespread enough to be a significant obstacle to learning mathematics for the majority of participants. Research indicates that social comparison processes can affect students' academic self-concept and self-esteem, especially during adolescence. However, the effects of these comparisons may be mitigated by students' coping mechanisms, optimism, and supportive classroom environments (Liu et al., 2025). Given this, the issue's comparatively low incidence might reflect classroom norms that encourage cooperative learning and discourage intense competitiveness. Other social obstacles were characterized as sometimes, such as trouble adjusting to the roles and responsibilities of a Grade 9 student during mathematics activities ($\bar{x}$ = 3.63) and trouble managing interactions with diverse classmates ($\bar{x}$ = 3.33). According to these findings, students encounter mild social and developmental difficulties as they get used to increased

academic demands and more intricate peer relationships. These changes are common when students move up a grade level and can affect their confidence and level of involvement, especially in courses like math that require significant academic work. Positive classroom dynamics and supportive peer relationships have been demonstrated to mitigate the consequences of these transitional difficulties and foster academic engagement (Wentzel et al., 2021; Geduld, 2024). Teachers and school officials can consider implementing tactics that foster peer assistance, create inclusive learning environments, and encourage polite student interactions. In mathematics classes, structured group activities, cooperative learning techniques, and social-emotional learning programs may lessen social difficulties and improve students' feelings of community (Borba, 2021; UNESCO, 2021). In conclusion, Table 2.5 illustrates the general scope of difficulties Grade 9 students faced when they resumed in-person instruction in mathematics. The combined personal, home-related, school-related, and societal obstacles identified in the study have a moderate impact on learners, as indicated by a total mean score of 3.02, which corresponds to 'Sometimes'. Even if these issues don't always arise, they do so frequently enough to affect students' academic performance and participation in mathematics.

Table 2.5. Summary of the Extent of the Problems Encountered

Indicators	Mean	Description
Home Problem	2.46	Seldom
Personal Problem	2.49	Seldom
School Problem	3.80	Often
Social Problem	3.34	Sometimes
Overall Mean	3.02	Sometimes

School-related issues received the highest mean score ($\bar{x}$ = 3.80), corresponding to "often," among the four indicators examined. This result suggests that difficulties related to classroom management, teacher-student interaction, and instructional delivery have a significant impact on students during math classes. Lack of clarity in teaching explanations, inadequate use of engaging teaching resources, and insufficient integration of practical applications of mathematical concepts are among the frequently mentioned problems. In mathematics, which necessitates precise scaffolding, organized explanations, and ongoing student interaction, these issues are especially important. According to research done during and after the COVID-19 pandemic, adaptive pedagogy, teacher readiness, and instructional clarity are essential for maintaining student enthusiasm and mathematical achievement (Borba, 2021; Drijvers et al., 2021). Furthermore, results on teacher preparedness and instructional support align with data showing that, despite teachers' increasing awareness of cutting-edge teaching frameworks like Education 4.0, infrastructure, digital resources, and instructional support constraints may make it more difficult to implement these frameworks effectively in the classroom (Simpal & Robles, 2024). Teachers may find it difficult to provide dynamic, learner-centered math education without sufficient technology and pedagogical support, which could lead to a rise in the frequency of learning issues in schools. With a mean score of 3.34 (Sometimes), social issues ranked second as the most important indicator. This implies that problems such as peer pressure, inferiority complexes, and challenges in integrating with peers during math tasks have a moderate impact on students. Social acceptance and peer relationships are known to affect students' emotional health, classroom engagement, and academic motivation. Students may become less confident and motivated to participate in group math activities if they encounter social exclusion or negative peer comparisons (Wentzel et al., 2021). Social problems can directly affect students' engagement and learning outcomes, as mathematics learning often involves discussion, group problem-solving, and peer interaction. On the other hand, home-related concerns ($x\varepsilon$ = 2.46) and personal problems ($x\varepsilon$ = 2.49) were both interpreted as Seldom, suggesting that learners are less frequently affected by internal or family-related issues in their mathematical learning. While acknowledged, difficulties like study habits, family support, and financial worries were less common than those related to school and society. Although self-regulated learning and family participation are acknowledged as significant factors contributing to academic achievement, the results indicate that these elements were not the main obstacles in the current situation (Geduld, 2024; Cariaga et al., 2025). This suggests that, when in-person classes resumed, learners' experiences with mathematics were more shaped by classroom procedures and school-based support networks. The consequences of these results highlight the importance of the classroom setting and teaching methods in students' acquisition of mathematics. Even though students encounter a variety of difficulties, educational problems are the most prevalent and significant. This emphasizes the necessity of

ongoing professional development for teachers, enhanced instructional clarity, a variety of teaching approaches, and the establishment of inclusive and stimulating math classrooms. By addressing these issues, students' academic burden may be lessened, and their performance, confidence, and long-term interest in mathematics may be improved. To solve social difficulties, tactics that encourage peer cooperation and constructive social contact should also be reinforced. More positive learning experiences in mathematics can result from promoting students' confidence, motivation, and deeper understanding of mathematical topics through cooperative learning, peer support, and inclusive classroom practices (Wentzel et al., 2021; Borba, 2021).

Significant Relationship between the Problems Encountered in Learning Mathematics and their Learning Performance in Mathematics

This study determined the existence of significant relationship among the problems encountered and the learners' learning performance in Mathematics. Upon undergoing the Shapiro-Wilk normality test, the data was found out not normal because the p-value of 0.001 is less than 0.05. Thus, Spearman Rho was used.

Table 3. Relationship between the Extent of the Problems Encountered and the Level of Learning Performance

Variables	Extent of the Problems Encountered		
	Correlation Coefficient (r_s)	p-value	Remarks
Level of Learning Performance in Mathematics	0.0591	0.3967	Not Significant

The statistical association between the degree of difficulties Grade 9 students face and their proficiency in mathematics is shown in Table 3. The two variables show a very weak positive association, as indicated by the calculated Spearman correlation coefficient (r_s = 0.0591). This implies a small correlation between an increase in the complexity of problems faced and a slight improvement in mathematical competence. Additionally, the resulting p-value of 0.3967 is greater than the significance level of 0.05, suggesting that there is no statistically significant correlation between the severity of problems faced and learners' performance in mathematics. Therefore, based on the collected data, it is not possible to conclude that learners' problems—whether personal, home-related, social, or school-related—have a substantial impact on their mathematical achievement. The non-significant result in the remarks column suggests that, while students face a variety of obstacles, these obstacles do not result in a discernible drop in their mathematical proficiency. According to this result, students may have compensation mechanisms or adaptive capacities that enable them to maintain academic performance in the face of difficulties. This outcome aligns with research showing that internal factors such as resilience, motivation, and learning strategies influence students' academic performance alongside external challenges. Yang and Wang (2022), for example, emphasized the importance of academic resilience and motivational intensity in helping students continue to perform despite challenging circumstances. Likewise, research indicates that structured learning environments and effective instructional support can mitigate the effects of external factors on academic achievement, especially in mathematics (Borba, 2021; Drijvers et al., 2021).

Program for Mathematical Learning Intervention

A fundamental subject, mathematics fosters logical thinking, problem-solving skills, and readiness for a wide range of academic and career paths. Since grade 9 solidifies the fundamental skills needed for advanced mathematics, it marks a turning point in students' mathematical development. The results of the current study show that school-related issues, especially those related to instructional clarity and teaching techniques, continue to be the most significant obstacles to mathematics learning, even though students maintain satisfactory performance. A Mathematical Learning Intervention Program was created in response to these findings to improve the quality of mathematics instruction and overcome obstacles in schools. The program's objectives are to support learner-centered pedagogical approaches, improve instructors' instructional competency, and create a stimulating and welcoming mathematics learning environment. The Malalag National High School Gymnasium in Maitum, Sarangani Province, is the suggested location for the program; precise dates will be determined based on the Department of Education's schedule of events. Five (5) school administrators or administrative support personnel, six (6) math instructors, and invited resource speakers are among the target

participants. The program will be conducted in person. The three-day intervention sessions will be held once every three months and incorporated into the School Learning Action Cell (SLAC) sessions. Meals and refreshments, honoraria or tokens for resource speakers, tarpaulin and decorations, educational materials, and other essential supplies are all included in the expected Php 50,000.00 program cost. Donations, Maintenance and Other Operating Expenses (MOOE), and the School Education Fund (SEF) are some of the funding sources.

Implementation of the Program

Orientation, registration, and the opening program are the main topics of day 1. Enhancing instructional coherence and clarity in mathematics training, encouraging creativity and critical thinking, and effectively using examples and visual aids are the main goals of core sessions. A workshop on differentiated instruction, which aims to support inclusive mathematics instruction and accommodate diverse learning styles, rounds off the day. The second day focuses on applying the principles learned through group workshops and output creation. Participants take part in hands-on group exercises and seminars on applying mathematics to everyday situations. Through contextualized teaching, these activities seek to increase instructional relevance and foster student participation. On the third day, the results created during the workshops are presented, assessed, and improved. Teachers engage in reflective activities, give constructive criticism, and present their educational outcomes. To synthesize learning and support professional development, the program concludes with a self-assessment session and a closing program. These initiatives align with research showing that ongoing teacher development is crucial to increasing student interest and achieving better academic results in mathematics (Temelo, 2023; Bayo Jr. & Doronio, 2025).

The developed mathematical learning intervention program's degree of validity

Using a modified validation technique, the created Mathematical Learning Intervention Program was validated by experts. Acceptability, appropriateness, content, and usability were considered when assessing validity. The degree to which teachers and students, the program's intended users, believe the intervention is useful, applicable, and intelligible in real classroom settings is known as program acceptability. Stakeholder opinions on the program's appropriateness, applicability, and execution viability are reflected in this dimension. The program received an overall mean score of 4.60, which is considered Very High and indicates a high level of acceptability, as indicated in Table 4.1. Notably, the application improved teachers' capacity to deliver arithmetic lessons in a methodical and understandable way, earning a perfect mean grade of 5.00. This outcome demonstrates the program's strong alignment with instructional needs and its potential efficacy in enhancing mathematics teaching techniques.

Table 4.1. Level of Validity of the Developed Mathematical Learning Intervention Program in terms of Acceptability

Items	Mean	Description
The program enhances teachers' ability to provide clear explanations and structured lesson delivery in Mathematics.	5.00	Very High
The program effectively fosters an environment that encourages critical thinking, creativity, and active learner participation in Math lessons.	4.80	Very High
The program integrates various instructional tools, such as visual aids and real-life examples, to cater to different learning styles and improve concept retention.	4.40	High
The program helps teachers connect Math lessons to real-world applications, making learning more meaningful and engaging for learners.	4.40	High
The program is practical, well-structured, and feasible for implementation in the current educational setting.	4.40	High
Overall Mean	4.60	Very High

It was also rated as Very High, with a mean score of 4.80, for creating an atmosphere that encourages critical thinking, creativity, and active learner participation. With a mean score of 4.40, the integration of real-world applications, instructional tools, and the program's overall viability were all rated as High, indicating that they all meet the requirements. These findings indicate that the intervention programs is a good fit for deployment because it helps mathematics teachers produce engaging learning surroundings and deliver well-structured courses. According to the Very High rating, the program needs little changes, making it a reliable resource for perfecting tutoring styles and encouraging learner involvement. Although the program is salutary, minor

adaptations could maximize its effectiveness, according to the High evaluations for integrating real-world operations, educational accouterments, and program practicality. All effects considered, these results demonstrate that the program may greatly enhance mathematics instruction, guaranteeing that both teachers and learners gain from a systematized and intriguing educational process.

Table 4.2. Level of Validity of the Developed Mathematical Learning Intervention Program in terms of Appropriateness

Items	Mean	Description
The duration of the intervention program is appropriate for covering the program content effectively.	4.40	High
The program is designed with the specific needs faced by the secondary math teachers.	4.80	Very High
The learning objectives are clear and relevant to the participants' roles.	4.80	Very High
The program's format (workshops, discussions, etc.) is suitable for adult learners.	4.80	Very High
The intervention program helps in the enhancement and development of teachers' skills and competence in the teaching-learning process.	4.80	Very High
Overall Mean	4.72	Very High

Meanwhile, the data in Table 4.2 reveal that with a mean of 4.72 for overall appropriateness, the intervention program was classified as Very High, meaning it is highly appropriate, well-structured, and successfully satisfies the required requirements. The program received a mean of 4.80 in areas like being specifically designed to meet the needs of secondary math teachers, having learning objectives that are obvious and pertinent, having an appropriate format for adult learners, and helping to improve teachers' abilities. According to these assessments, these elements are quite successful and need little modification. Furthermore, the program's duration obtained a mean of 4.40, suggesting that it is Highly Valid and satisfies the requirements; however, minor adjustments could be helpful for future optimization. These findings indicate that the intervention program is very effective and well-designed and can be modified to fit the unique demands of secondary math teachers. The program is designed to ameliorate teachers' capacities and learning issues, with the utmost of its factors being extremely successful, as seen by its Very High rating for overall appropriateness. The program's pretensions, structure, and fit with teachers' requirements are well appreciated, and only minor variations are demanded, with the utmost of its factors being extremely successful. Although the program mainly meets the different demands of learners and contemporary educational norms, its duration mean of 4.40 indicates enhancing its impact further for minor advancements. Also, the data in Table 4.3 reveal that the intervention program's content achieved an overall mean of 4.48, which is mainly considered valid and generally successfully satisfies the necessary conditions. With a mean of 4.40, the class supports education and aligns with current demands. With a mean of 4.80, the offered educational accouterments were Very High, indicating their efficacity in advancing the program's pretensions. The mean of 4.40 supported the program's overall applicability and efficacity for the addition of contemporary tutoring ways and its capacity to promote party participation.

Table 4.3. Level of Validity of the Developed Mathematical Learning Intervention Program in terms of Content

Items	Mean	Description
The intervention program content aligns well with the current teaching needs of the secondary math teachers.	4.40	High
The topics covered in the program are relevant and beneficial for enhancing classroom practices.	4.40	High
The instructional materials provided during the training are informative and valuable.	4.80	Very High
The program includes up-to-date teaching strategies and methodologies.	4.40	High
The content encourages participant engagement and active participation.	4.40	High
Overall Mean	4.48	High

The overall mean of 4.48, distributed as High, implies that the content of the intervention program is highly applicable and well-structured. This means that the program successfully satisfies the condition in most cases, taking only minor adaptations to be further enhanced. The program's efficacy, as stressed by the 4.80 mean for educational accoutrements, shows their substantial contribution to achieving the program's goals, and the 4.40 mean for both party engagement creation and alignment with tutoring prospects. All effects considered, the class is relatively material and ideal for perfecting secondary math teachers' educational strategies; it needs few changes to remain effective.

Table 4.4. Level of Validity of the Developed Mathematical Learning Intervention Program in terms of Usability

Items	Mean	Description
The skills and knowledge gained from the program can be easily applied in the classroom.	4.80	Very High
The resources provided are accessible and practical for everyday teaching use.	4.80	Very High
The training environment is conducive to learning and collaboration.	4.40	High
Participants feel confident implementing what they learned in their teaching practice.	5.00	Very High

The program offers opportunities for ongoing support and follow-up after training.	5.00	Very High
Overall Mean	4.80	Very High

Conversely, the data in Table 4.4 show that the intervention program was regarded as Very High, with an overall mean of 4.80, in terms of usability. A mean of 4.80 indicates that the program's knowledge and skills are readily adaptable in the classroom, and a mean of 4.80 indicates that the resources offered are regarded as valuable and accessible for regular instruction. With a mean of 4.40, the training terrain is characterized as probative of literacy and cooperation, emphasizing a good literacy terrain. With a mean of 5.00, participants expressed confidence in applying what they had learned, and the program provides possibilities for follow-up and further assistance, which also achieved a mean of 5.00. These outcomes demonstrate how well the program supports teachers and how easy it is to use. With an overall mean of 4.80, the results indicate that the intervention program is broadly applicable and well-structured, and it's largely successful and well-received in terms of usability. A mean of 4.80 indicates that the program's knowledge and skills are readily applicable in the classroom, and a mean of 4.80 indicates that the coffers offered are practical and fluently accessible. Although encouraging, the training terrain's mean was 4.40, suggesting that little adaptations could indeed strengthen its cooperative aspects further. Furthermore, Table 4.5 summarizes the level of validity of the developed mathematical learning intervention plan in terms of acceptability, appropriateness, content, and usefulness. According to the results, the program is Very High in terms of appropriateness (4.72) and acceptability (4.60), which means it is highly appropriate, well-structured, and satisfies all requirements with little to no revision. With a mean of 4.48, the program's content is categorized as High, which would mean that it satisfies the necessary requirements but might use some minor improvement. With a mean of 4.80, the program's usability has the loftiest mean, indicating that it's convenient and doable. The program had an average overall mean of 4.65, placing it in the Very High rating and demonstrating its effectiveness as a well-allowed-out intervention to ameliorate mathematics instruction.

Table 4.5. Summary Result on the Level of Validity of the Developed Mathematical Learning Intervention Program

Indicators	Mean	Description
Acceptability	4.60	Very High
Appropriateness	4.72	Very High
Content	4.48	High
Usability	4.80	Very High
Overall Mean	4.65	Very High

The findings show that the created Mathematical Learning Intervention Program is well-structured, widely adaptable, and meets all implementation requirements. The program demonstrates strong acceptance and appropriateness, necessitating little to no change in these areas. Although the teaching materials and instructional themes are successful and relevant, the results indicate that a few adjustments could increase their educational effectiveness. Additionally, the program's high usability grade indicates that it is viable, realistic, and useful in the classroom. All of these results support the program's great potential to enhance math education, and only minor adjustments are required to maximize its efficacy (Temelo, 2023; Bayo Jr. & Doronio, 2025; Cariaga et al., 2025). These findings align with empirical data indicating that learner engagement and the quality of mathematics instruction are enhanced by organized, student-centered, and contextually grounded instructional programs. Specifically, Sutarni et al. (2024) highlighted the impact of Realistic Mathematics Education (RME)-based instructional materials on the development of higher-order thinking skills and reported high levels of validity, practicality, and efficacy. The significance of well-designed instructional frameworks was further highlighted by Azucena et al. (2022) and Nitkin et al. (2022), who discovered that learners' arithmetic performance and confidence were greatly enhanced by technology-supported and blended instructional interventions. The strong evaluations for usability ($\bar{x}$ = 4.80), content ($\bar{x}$ = 4.48), appropriateness ($\bar{x}$ = 4.72), and acceptability ($\bar{x}$ = 4.60) further support the significance of systematic intervention programs in enhancing the quality of training. Clarity, coherence, guided practice, and opportunities for interaction and feedback are all characteristics of effective mathematics instruction, according to research (Borba, 2021; Drijvers et al., 2021; Sooknanan & Seemugal, 2023). These elements all support deeper conceptual understanding and sustained engagement. Such structured instructional support has been demonstrated to reduce learning loss and strengthen fundamental mathematics skills in post-pandemic environments (Akseer et al., 2021; Shin et al., 2024;

Chin, 2025). In addition to the direct impact on instruction, the results are consistent with research highlighting the importance of pedagogical preparedness, professional development, and teacher competency in enhancing student outcomes. According to research on Education 4.0 and digital competency, instructors who possess the necessary pedagogical, technological, and content expertise are more effective in the classroom (Simpal & Robles, 2024; Temelo, 2023; Bayo Jr. & Doronio, 2025). In alignment with these findings, research on instructional competence and teaching quality shows that teachers who receive adequate support are better able to create inclusive, stimulating learning environments that encourage student motivation and participation (Villocino & Villocino, 2025; Bacus et al., 2024; Cariaga et al., 2024; Galaura & Simpal, 2025). The program may be regularly improved to better meet the varied demands and differing levels of mathematical readiness of learners, as seen by the need for small content enhancements. This aligns with research showing that inclusive classroom practices, differentiated education, and adaptive instruction promote student engagement and academic resilience (Geduld, 2024; Guzman & Doronio, 2025; Lazaga, 2025). Additionally, research on home-school collaboration and parental involvement highlights that supportive learning settings outside of the classroom are crucial for the effectiveness of instructional interventions (Bongabong & Doronio, 2025; Cariaga et al., 2025). From a psychosocial standpoint, peer interactions, motivation, and self-regulation all affect students' capacity to benefit from instructional interventions. According to research, students' academic engagement and success in mathematics are greatly influenced by their emotional health, academic resilience, and positive peer acceptance (Wentzel et al., 2021; Yang & Wang, 2022; Liu et al., 2025; Fudolin & Dioso, 2025). By creating a welcoming and inclusive learning environment, the current intervention's focus on guided practice and collaborative learning supports these elements. All things considered, the Mathematical Learning Intervention Program represents an approach to mathematics instruction that is theoretically anchored, responsive, and supported by evidence. The curriculum incorporates guided instruction, group projects, practical applications, and ongoing professional development, all aligned with current research on successful teaching and learning in mathematics. The program offers a sustainable framework for enhancing instructional quality, addressing post-pandemic learning challenges, and bolstering learners' mathematical competence and confidence in a variety of educational contexts.

Conclusion and Recommendations

The study suggests that upon the return to in-person instruction, Grade 9 students generally showed a satisfactory level of learning performance in mathematics based on the summary of findings. Learners demonstrated sustained effort and skill in meeting academic standards, even in the face of adjustment pressures. Even though they occasionally had trouble learning math, school-related issues were the most common, followed by social-related issues, while home and personal issues were the least common. Interestingly, the severity of these issues had no discernible impact on students' overall academic achievement, indicating the existence of resilience and other helpful elements in the classroom. A Mathematical Learning Intervention Program was created in response to the most urgent issues, especially those that stemmed from the educational environment. The program's strong potential for successful deployment was demonstrated by the validation findings, which showed that it was highly acceptable, appropriate, content-relevant, and useable.

Several suggestions are made in light of these findings. In addition to bolstering ongoing professional development for math teachers, the Department of Education may encourage the implementation and expansion of proven intervention programs. The results of the study may be incorporated into teacher education programs in higher education establishments like Holy Trinity College of General Santos City in order to better educate aspiring math teachers. While school administrators may support teacher development programs and a supportive, cooperative school culture, schools such as Malalag National High School may implement and routinely assess the suggested intervention program to improve teaching practices and student outcomes. Parents are urged to help their children academically and emotionally at home in order to actively participate in their education. By asking for help, working with peers, and cultivating a growth mindset, students can actively participate in enhancing their mathematical abilities, and math teachers can use the intervention program in

conjunction with learner-centered and differentiated tactics. Lastly, to further demonstrate the efficacy and generalizability of the intervention program in many contexts and subject areas, future researchers might carry out experimental and context-expanded investigations.

Conflict of Interest

The authors declared no conflict of interest, whether financial, professional, or personal, that influenced the conduct, findings, or reporting of this study.

Funding

The authors funded this study.

Author Contribution

All authors contributed to the overall conduct and writing of this study.

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