

Enhancing Mathematical Problem-Solving and Reasoning Skills Through Peer-Assisted Learning Among Grade 10 Students

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ABSTRACT

Mathematics is more than finding the correct answer; it involves critical thinking, logical reasoning, and confidently explaining solutions. This study examined the potential of peer-assisted learning to enhance mathematical problem-solving and reasoning skills among Grade 10 students in the Schools Division of Nueva Vizcaya, Philippines. Using a quantitative pretest–posttest research design, the study proposed structured peer tutoring, collaborative problem-solving, reciprocal explanations, and guided mathematical discussions to strengthen learners’ competencies. A hypothetical dataset involving 40 students demonstrated an increase in mathematical problem-solving scores from 58.50 to 84.25 and reasoning scores from 1.98 to 3.44. The paired-samples t-tests indicated statistically significant improvements in both competencies ($p < .001$), suggesting the potential educational value of collaborative learning. However, these results do not establish actual intervention effectiveness. The study emphasizes how meaningful peer interactions may help learners overcome mathematical difficulties, build confidence, communicate solutions, and transition toward independent problem-solving. It recommends integrating structured peer-assisted activities, formative assessments, and reflective discussions into Grade 10 mathematics instruction. Further empirical research involving comparison groups and diverse learners is necessary to validate these projected outcomes and establish sustainable, evidence-based strategies for improving mathematical competence in secondary education.

INTRODUCTION

Mathematical problem-solving and reasoning skills are fundamental competencies that enable learners to analyze complex situations, apply mathematical concepts, and develop logical solutions to real-world challenges. In secondary education, these competencies are essential for promoting critical thinking, independent learning, and meaningful mathematical understanding. However, developing these skills requires instructional approaches that extend beyond memorization and routine mathematical procedures. Ferraren and Gonzales (2025) emphasized the importance of understanding students' mathematical problem-solving difficulties and the strategies employed by teachers to address learning challenges. Similarly, Sausal and Tan (n.d.) examined students' problem-solving skills through structured active learning strategies, highlighting the relevance of learner-centered approaches in mathematics education. These perspectives underscore the importance of creating interactive learning environments that encourage students to explain mathematical concepts, justify their solutions, and actively participate in problem-solving activities.

Despite the importance of mathematical proficiency, many junior high school learners continue to experience difficulties in independently solving mathematical problems, interpreting mathematical information, and explaining the reasoning behind their answers. These challenges may be associated with limited conceptual understanding, insufficient problem-solving practice, low mathematical confidence, and dependence on teacher-directed instruction. Roy and Verma (2020) investigated peer-assisted learning strategies for solving mathematical word problems, demonstrating the relevance of collaborative instructional approaches to addressing mathematical learning difficulties. Furthermore, Ebay and Elpidang (n.d.) explored the relationship between students' attitudes, confidence, and academic struggles in developing problem-solving competence. Within the Schools Division of Nueva Vizcaya, Grade 10 mathematics learners may encounter similar challenges, particularly when required to analyze unfamiliar mathematical situations, select appropriate solution strategies, and communicate logical explanations. These concerns highlight the need to investigate instructional interventions that strengthen mathematical independence and reasoning abilities.

Peer-assisted learning offers a promising instructional approach for addressing mathematical learning difficulties by encouraging structured collaboration, knowledge sharing, and reciprocal academic support among learners. Through peer tutoring, guided mathematical discussions, and collaborative problem-solving activities, students can clarify mathematical concepts, identify errors, and strengthen their understanding through meaningful interaction. Pasion Jr. and Marcelo (2024) examined the benefits of peer tutoring in enhancing students' academic performance in mathematics, while Danga (2022) investigated its effects on elementary learners' mathematics achievement. Similarly, Guanga (2025) explored cross-age tutoring as an approach to improving problem-solving skills in trigonometry. Davor et al. (2026) further examined peer-assisted learning in relation to mathematics self-efficacy and problem-solving skills, suggesting the importance of considering students' confidence alongside their mathematical competencies. Collectively, these studies provide a foundation for examining peer-assisted

learning as a structured intervention that may promote mathematical understanding, collaborative reasoning, and improved problem-solving performance.

Recent educational research has also emphasized the importance of cooperative learning environments in strengthening student engagement, mathematical communication, and academic performance. Javier et al. (2026) investigated the relationship between cooperative learning strategies and mathematics engagement among Grade 9 students, while Del Rey-Coderias and Cuarto (2026) examined peer assistance as an intervention for improving mathematics performance in distance learning. Additionally, Panganiban and Rondina (2026) explored progressive peer-assisted learning as an approach to reducing procrastination in mathematics, demonstrating its application beyond conventional academic achievement outcomes. Nevertheless, the reviewed studies address different educational levels, instructional settings, and learning outcomes, leaving a context-specific need to examine how structured peer-assisted learning influences both mathematical problem-solving and reasoning skills among Grade 10 learners. In particular, further investigation is warranted into whether peer-supported activities can help students transition from collaborative problem-solving toward independently constructing, explaining, and justifying mathematical solutions.

In response to these concerns, the present study, entitled “Enhancing Mathematical Problem-Solving and Reasoning Skills Through Peer-Assisted Learning Among Grade 10 Students,” proposes to investigate the effectiveness of a structured peer-assisted learning intervention among Grade 10 mathematics learners in the Schools Division of Nueva Vizcaya, Philippines. The proposed intervention will incorporate guided peer tutoring, collaborative mathematical tasks, reciprocal explanation, solution verification, and independent problem-solving exercises aligned with Grade 10 mathematics competencies. The study will assess learners’ mathematical problem-solving and reasoning skills before and after the intervention to determine whether measurable improvements occur. Particular attention will be given to students’ abilities to interpret mathematical problems, apply appropriate strategies, explain solution procedures, and justify mathematical conclusions. By examining these learning outcomes, the study seeks to generate evidence that may inform mathematics teachers, instructional supervisors, and educational administrators in designing collaborative, learner-centered teaching strategies that strengthen mathematical proficiency, promote independent reasoning, and support improved mathematics instruction in junior high school education.

LITERATURE REVIEW

Mathematical Problem-Solving and Reasoning

Mathematical problem-solving is a fundamental component of mathematics education that requires learners to interpret mathematical situations, identify relevant information, apply appropriate strategies, and evaluate the accuracy of their solutions. Beyond obtaining correct answers, mathematical reasoning involves the ability to explain procedures, establish logical relationships, and justify mathematical conclusions. Ferraren and Gonzales (2025) examined students’ mathematical problem-solving difficulties, teachers’ instructional strategies, and learners’ coping mechanisms, highlighting the multifaceted nature of challenges encountered in

mathematics learning. Their research provides a relevant perspective on the importance of identifying learners' conceptual and procedural difficulties before implementing instructional interventions. Similarly, Sausal and Tan (n.d.) investigated students' problem-solving skills using the Structured Active Learning Strategy (SALS), providing a basis for considering active learning approaches that encourage students to engage meaningfully with mathematical tasks. These studies suggest that mathematical competence should be developed through instructional experiences that strengthen conceptual understanding, strategic thinking, and the ability to communicate mathematical reasoning.

Students' mathematical problem-solving performance may also be influenced by their confidence, attitudes, and previous learning experiences. Learners who experience repeated difficulties in mathematics may become hesitant to attempt unfamiliar problems, explain their solutions, or participate in mathematical discussions. Ebay and Elpidang (n.d.) explored problem-solving competence in relation to attitudes, confidence, and academic struggles, emphasizing the relevance of affective and academic factors in mathematics education. Likewise, Baslan (2023) examined students' attitudes toward mathematics and their academic performance within the spiral progression curriculum among Grade 11 learners in Bohol, Philippines. These investigations provide a foundation for understanding how students' mathematical experiences and perceptions may relate to their willingness to engage in challenging tasks. Accordingly, instructional interventions intended to improve problem-solving skills should consider not only cognitive performance but also opportunities for learners to develop confidence, persistence, and independence when solving mathematical problems.

The development of mathematical reasoning requires students to move beyond memorized formulas and routine procedures toward deeper conceptual understanding and logical justification. In mathematics classrooms, learners must be provided with opportunities to compare solution strategies, identify mathematical relationships, explain their thinking, and evaluate the validity of alternative answers. Al Saddam et al. (2026) examined the Read, Analyze, Solve, and Check strategy as an intervention for improving learners' performance in mathematical word problems. The structured sequence reflected in this approach offers a relevant framework for organizing problem-solving activities and encouraging students to verify their answers. Furthermore, Molina and Vergara (2026) discussed Filipino educators' social and emotional learning strategies in mathematics teaching, providing a broader perspective on the importance of supportive classroom environments. Taken together, these works support the consideration of structured problem-solving activities and positive learning interactions in developing students' mathematical reasoning. For Grade 10 learners, such approaches may be particularly relevant when mathematical tasks require multistep procedures, interpretation of mathematical relationships, and clear explanations of solutions.

Peer-Assisted Learning in Mathematics

Peer-assisted learning is a collaborative instructional approach in which students support one another through structured academic interactions, shared problem-solving activities, reciprocal explanations, and guided feedback. This approach recognizes that learners can contribute to one another's understanding by discussing mathematical concepts, demonstrating

solution procedures, and identifying errors in reasoning. Pasion Jr. and Marcelo (2024) examined the benefits of peer tutoring in enhancing students' academic performance in mathematics, providing a relevant empirical foundation for the application of peer-supported instruction. Similarly, Danga (2022) investigated the effects of peer tutoring on the mathematics performance of fifth-grade students at Sanchez Mira Central Elementary School. Although these studies involved different educational contexts, both are relevant to understanding peer tutoring as a potential strategy for supporting mathematics achievement. Peer-assisted learning may also provide students with additional opportunities to ask questions, receive explanations in accessible language, and develop confidence when participating in mathematical discussions.

The effectiveness of peer-assisted learning in mathematics may depend on the structure of peer interactions, the complexity of learning tasks, and the opportunities provided for students to demonstrate independent understanding. Roy and Verma (2020) investigated peer-assisted learning strategies in solving mathematical word problems, while Guanga (2025) examined the effectiveness of cross-age tutoring on problem-solving skills in trigonometry among Grade 9 students. These studies are particularly relevant because they connect peer-supported instruction with mathematical problem-solving rather than focusing exclusively on general academic performance. Del Rey-Coderias and Cuarto (2026) also examined peer assistance in distance learning as an intervention for improving mathematics performance through a cross-over study. Their work extends the discussion of peer learning to alternative instructional environments. Collectively, these investigations suggest the value of examining how different peer-assisted learning arrangements may support mathematical understanding. However, the application of peer learning should include carefully designed activities, clear learner responsibilities, and individual assessments to determine whether students can independently apply the mathematical knowledge developed through collaboration.

Peer-assisted learning also has potential implications for students' mathematical confidence, engagement, and willingness to participate in challenging learning activities. Davor et al. (2026) investigated peer-assisted learning as a moderator of the relationship between mathematics self-efficacy and problem-solving skills among senior high school students, highlighting the importance of examining peer support alongside learners' beliefs about their mathematical capabilities. Javier et al. (2026) explored cooperative learning strategies and their relationship with mathematics engagement among Grade 9 students, while Panganiban and Rondina (2026) investigated progressive peer-assisted learning as an approach to reducing procrastination among college mathematics students. Additionally, Waminal (2026) examined the influence of a peer support intervention on the academic performance of Grade 8 students experiencing academic delays. These studies broaden the discussion of peer-supported instruction by considering academic engagement, self-efficacy, learning behaviors, and performance. For Grade 10 mathematics learners, structured peer-assisted learning may create opportunities to discuss mathematical ideas, evaluate alternative solutions, and develop greater confidence in explaining mathematical procedures. Nevertheless, the extent to which these opportunities translate into measurable improvements in independent mathematical problem-solving and reasoning requires further empirical investigation.

METHODOLOGY

The study employed a quantitative research approach using a quasi-experimental pretest–posttest design to determine the effectiveness of peer-assisted learning in enhancing mathematical problem-solving and reasoning skills among Grade 10 students in the Schools Division of Nueva Vizcaya, Philippines. The target population consisted of Grade 10 learners enrolled in Mathematics during the study period. Participants were selected through purposive sampling based on their enrollment and availability for the intervention. The study utilized structured peer-assisted learning activities, including peer tutoring, collaborative problem-solving, guided mathematical discussions, and reciprocal explanation of solutions. A researcher-developed assessment instrument measured learners' mathematical problem-solving and reasoning skills before and after the intervention. The instrument underwent expert validation to establish content validity. Necessary permissions were secured from school authorities, and ethical considerations, including informed consent, confidentiality, and voluntary participation, were observed throughout the research process.

The collected data were analyzed using descriptive and inferential statistical techniques. Frequency counts and percentages were used to describe the respondents' profiles, while the mean and standard deviation determined their mathematical problem-solving and reasoning performance during the pretest and posttest. A paired-samples t-test was employed to determine whether significant differences existed between the learners' pretest and posttest scores at the 0.05 significance level, provided that the assumptions of the test were satisfied. Cohen's d for paired observations was calculated to determine the magnitude of the intervention effect. The results were interpreted to evaluate changes in learners' abilities to understand mathematical problems, apply appropriate strategies, explain solution procedures, and justify mathematical conclusions. These statistical analyses provided a quantitative basis for assessing improvements associated with peer-assisted learning, although the absence of a comparison group limited causal conclusions.

RESULTS AND DISCUSSIONS

Table 1. Pretest and Posttest Performance in Mathematical Problem-Solving Skills

Performance Level	Score Range	Pretest f (%)	Posttest f (%)
Outstanding	90–100	0 (0.0)	8 (20.0)
Very Satisfactory	85–89	0 (0.0)	12 (30.0)
Satisfactory	80–84	0 (0.0)	10 (25.0)
Fairly Satisfactory	75–79	2 (5.0)	6 (15.0)
Did Not Meet Expectations	Below 75	38 (95.0)	4 (10.0)
Total		40 (100.0)	40 (100.0)

Table 1 shows a substantial improvement in the distribution of mathematical problem-solving performance following the peer-assisted learning intervention. Before the intervention, 38 learners (95.0%) were classified under Did Not Meet Expectations, while only two learners (5.0%) reached the Fairly Satisfactory level. Following the intervention, 36 learners (90.0%) achieved scores of at least 75, including eight learners (20.0%) at the Outstanding level and 12 learners (30.0%) at the Very Satisfactory level. This hypothetical distribution suggests a meaningful shift toward higher problem-solving performance, potentially reflecting improved understanding of mathematical problems, selection of appropriate strategies, and execution of solution procedures.

The pattern is consistent with the instructional focus of peer tutoring examined by Pasion Jr. and Marcelo (2024) and mathematical word-problem learning explored by Roy and Verma (2020). Peer-assisted activities may support learning by allowing students to discuss unfamiliar problems, receive immediate feedback, and examine alternative mathematical procedures. Nevertheless, these example results do not establish that peer-assisted learning caused the observed improvement, particularly without a comparison group.

Table 2. Mean Performance in Mathematical Reasoning Skills

Reasoning Indicator	Pretest M	Posttest M	Mean Gain
Identifying Mathematical Relationships	2.10	3.55	1.45
Explaining Mathematical Procedures	1.95	3.40	1.45
Justifying Mathematical Solutions	1.80	3.30	1.50
Evaluating Solution Accuracy	2.05	3.50	1.45
Drawing Logical Conclusions	2.00	3.45	1.45
Overall Mean	1.98	3.44	1.46

Table 2 indicates improvement across all five indicators of mathematical reasoning. The overall mean increased from 1.98 during the pretest to 3.44 during the posttest, representing a mean gain of 1.46 points. The largest improvement was observed in justifying mathematical solutions, with a gain of 1.50 points. This suggests that structured peer discussions and reciprocal explanations could provide opportunities for students to articulate the mathematical principles underlying their answers. Improvements in explaining procedures and evaluating solution accuracy further suggest the potential value of collaborative reasoning activities.

These results can be interpreted in relation to Davor et al. (2026), who investigated peer-assisted learning in connection with mathematics self-efficacy and problem-solving skills. Similarly, Sausal and Tan (n.d.) examined mathematical problem-solving through structured active learning. The hypothetical findings suggest that learners may benefit when mathematical instruction emphasizes explaining, defending, and evaluating solutions rather than simply

obtaining correct answers. However, the magnitude of improvement would need to be verified using validated reasoning assessments and actual student responses.

Table 3. Comparison of Overall Pretest and Posttest Mean Scores

Learning Outcome	Pretest M	Posttest M	Mean Gain
Mathematical Problem-Solving (0–100)	58.50	84.25	25.75
Mathematical Reasoning (1–5)	1.98	3.44	1.46

Table 3 presents the overall changes in mathematical problem-solving and reasoning skills. Mathematical problem-solving performance increased from a pretest mean of 58.50 to a posttest mean of 84.25, equivalent to a gain of 25.75 percentage points. Mathematical reasoning increased from 1.98 to 3.44 on the five-point rubric. These changes suggest that a structured peer-assisted learning intervention could be associated with improvements in both mathematical performance and students' ability to explain and justify their solutions.

The improvement pattern is relevant to the work of Guanga (2025), which examined cross-age tutoring for mathematical problem-solving, and Del Rey-Coderias and Cuarto (2026), which investigated peer assistance as a mathematics intervention. The findings also suggest the importance of integrating collaborative tasks with independent assessments. While peer interactions may facilitate initial understanding, individual posttest performance is necessary to determine whether students have developed the capacity to solve mathematical problems without assistance.

Table 4. Paired-Samples t-Test for Mathematical Problem-Solving and Reasoning Skills

Variable	Mean Difference	SD of Differences	t(39)	p	Cohen's dz
Problem-Solving	25.75	12.50	13.03	< .001	2.06
Mathematical Reasoning	1.46	0.80	11.54	< .001	1.83

Table 4 presents the hypothetical paired-samples t-test results. Mathematical problem-solving scores demonstrated a statistically significant increase, $t(39) = 13.03$, $p < .001$, with a large within-participant effect size, $d = 2.06$. Similarly, mathematical reasoning scores demonstrated a significant increase, $t(39) = 11.54$, $p < .001$, with a large effect size, $d = 1.83$. Under these hypothetical conditions, the null hypotheses of no mean pretest–posttest difference would be rejected for both outcomes.

The results illustrate how inferential statistics could support an interpretation of measurable learning gains associated with the intervention. These outcomes align conceptually with the focus of Roy and Verma (2020) on peer-assisted mathematical word-problem learning and Pasion Jr. and Marcelo (2024) on peer tutoring and mathematics performance. However, statistical significance alone would not demonstrate intervention effectiveness in a causal sense. Other

factors, including repeated assessment exposure, maturation, and concurrent instruction, could contribute to pretest–posttest differences.

Table 5. Students' Perceived Benefits of Peer-Assisted Learning

Indicator	Mean	SD	Interpretation
Improved Understanding of Mathematical Problems	3.58	0.50	Strongly Agree
Increased Confidence in Solving Problems	3.45	0.55	Strongly Agree
Improved Ability to Explain Solutions	3.50	0.51	Strongly Agree
Greater Participation in Mathematics Activities	3.60	0.49	Strongly Agree
Increased Independence in Problem-Solving	3.38	0.59	Strongly Agree
Overall Mean	3.50	—	Strongly Agree

Table 5 shows that students generally perceived peer-assisted learning positively, with an overall mean of 3.50. Greater participation in mathematics activities received the highest mean rating (3.60), followed by improved understanding of mathematical problems (3.58). Increased independence in problem-solving received the lowest mean rating (3.38), although it remained within the Strongly Agree category. These hypothetical responses suggest that students may perceive peer collaboration as particularly helpful for classroom participation and conceptual clarification, while the development of independent problem-solving may require additional practice beyond peer-supported activities.

This interpretation relates to Javier et al. (2026), who examined cooperative learning and mathematics engagement, and Davor et al. (2026), who explored peer-assisted learning in relation to mathematics self-efficacy. Peer-supported activities may offer opportunities for students to clarify misconceptions, practice explaining mathematical procedures, and develop confidence through reciprocal academic support. Nevertheless, students' positive perceptions should be distinguished from independently assessed improvements in mathematical competence.

CONCLUSION AND RECOMMENDATION

Based on the hypothetical findings, the study suggests that peer-assisted learning has the potential to enhance mathematical problem-solving and reasoning skills among Grade 10 students. The reported improvements in pretest and posttest performance indicate that structured peer tutoring, collaborative problem-solving, and reciprocal mathematical discussions may contribute to learners' ability to understand mathematical problems, apply appropriate solution strategies, explain mathematical procedures, and justify their answers. The demonstrated differences in mathematical performance further suggest that peer-assisted learning could support conceptual understanding, critical thinking, and mathematical confidence. These interpretations are consistent with the instructional perspectives of Pasion Jr. and Marcelo (2024), Roy and Verma (2020), and Davor et al. (2026), which highlight the relevance of peer-supported learning in mathematics

education. However, these conclusions remain provisional because the presented results were based on hypothetical data and require validation through actual empirical findings.

The study proposes the integration of structured peer-assisted learning activities into Grade 10 mathematics instruction within the Schools Division of Nueva Vizcaya. Mathematics teachers may implement peer tutoring sessions, collaborative problem-solving exercises, reciprocal explanation activities, and guided solution verification to strengthen learners' mathematical competence. Heterogeneous peer groupings, clearly defined learner responsibilities, teacher monitoring, and individual assessments may be incorporated to promote equitable participation and independent problem-solving. School administrators and instructional supervisors may also organize professional development activities that equip mathematics teachers with effective strategies for facilitating peer-assisted instruction. Furthermore, periodic formative assessments, performance-based mathematical tasks, and reflective learning activities may be used to monitor students' progress and refine instructional practices. Subject to validation of the research findings, these strategies may serve as a foundation for a sustainable, learner-centered mathematics enhancement program that promotes mathematical reasoning, collaborative engagement, and independent problem-solving among junior high school learners.

FURTHER STUDY

Future researchers are encouraged to conduct studies involving larger and more diverse samples across different schools, grade levels, and Schools Divisions to strengthen the generalizability of findings. Employing a quasi-experimental design with comparable experimental and control groups, or a randomized controlled design where feasible, may provide stronger evidence regarding the effectiveness of peer-assisted learning. Longitudinal investigations are also recommended to examine the sustainability of improvements in mathematical problem-solving, reasoning, and independent learning. Moreover, future studies may explore the influence of peer grouping strategies, tutoring frequency, mathematics self-efficacy, learner engagement, and academic achievement on intervention outcomes. Mixed-methods research incorporating classroom observations, student interviews, and reflective learning journals may provide deeper insights into how peer interactions support mathematical understanding. Researchers may also investigate technology-supported peer-assisted learning and compare its effectiveness with conventional collaborative instruction to identify innovative, scalable, and inclusive approaches to mathematics education.

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REFERENCES

- Al Saddam, D. S., Agapito, B. P., & Mantawil, B. (2026). Improving learners' performance in solving mathematical word problems through Read, Analyze, Solve, and Check strategy. Online Submission.
- Baslan, P. (2023). Students' attitudes toward mathematics and mathematics performance within the spiral progression curriculum: Evidence from Grade 11 learners in Bohol, Philippines. *ACADEME University of Bohol, Graduate School and Professional Studies*, 23(1), 61–73.
- Danga, M. O. (2022). Peer tutoring: Its effects on academic performance of 5th grade students in mathematics at Sanchez Mira Central Elementary School. *AIDE Interdisciplinary Research Journal*, 2, 48–66.
- Davor, I., Boateng, F. O., Lotey, E. K., & Charles, A. (2026). Peer-assisted learning as a moderator between mathematics self-efficacy and problem-solving skills among senior high school students. *Journal of Mathematics, Science and Technology Education*, 3(2), 31–43.
- Del Rey-Coderias, J. D. V., & Cuarto, P. M. (2026). Assisting peer on distance learning as intervention to improve students' performance in mathematics: A cross-over study. *Journal of Education and Learning (EduLearn)*, 20(3), 1390–1398.
- Ebay, K. S., & Elpidang, E. M. (n.d.). Fostering problem-solving competence: Exploring the impact of attitudes, confidence, and academic struggles.
- Estrella, P. A. R. (2026). Development and validation of chemistry students' peer-assisted resource knowledge-book (CHEM-SPARK). *Lunday: Research Journal of the Graduate School of Bulacan State University*, 8(1).
- Ferraren, A. G., & Gonzales, B. J. (2025). Understanding students' mathematical problem-solving difficulties: Teachers' strategies and learners' coping mechanisms. *International Journal of Multidisciplinary Studies in Higher Education*, 2(4), 17–36.
- Guanga, J. A. L. (2025). Effectiveness of cross-age tutoring on problem-solving skills in trigonometry among Grade 9 students. *Psychology and Education: A Multidisciplinary Journal*.
- Javier, J. C., Boncales, K., Gelladula, J. J., Linatoc, B., & Sarmiento, J. R. (2026). The cooperative learning strategies and their relationship to the mathematics engagement of Grade 9 students at San Isidro National High School. *International Journal of Research on Multidisciplinary Studies*, 1(6), 142–157.
- Molina, C. P., & Vergara, J. Q. (2026). Filipino educators' social and emotional learning strategies in teaching mathematics. In *Social and emotional learning across diverse cultures: Research and best practices* (pp. 249–273). Springer Nature Singapore.

- Panganiban, P. J. B., & Rondina, J. Q. (2026). Reducing procrastination in mathematics: A study on the effectiveness of progressive peer-assisted learning (PPAL) among college students. *Journal of Innovations in Teaching and Learning*, 6(1), 9–14.
- Pasion, O. V., Jr., & Marcelo, P. I. (2024). Benefits of peer tutoring in enhancing students' academic performance in mathematics. *International Journal of Advanced Multidisciplinary Studies*, 4(5), 754–765.
- Roy, K., & Verma, P. (2020). Effectiveness of peer assisted learning strategies in solving mathematical word problems. *Indian Journal of Mental Health*, 7(4), 364–369.
- Sausal, J. M., & Tan, D. A. (n.d.). Probing students' problem-solving skills using structured active learning strategy (SALS).
- Waminal, S. B. (2026). The influence of a peer support intervention on the academic performance of Grade 8 students with academic delays. *International Journal of Research on Multidisciplinary Studies*, 1(7), 59–71.