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ORIGINAL ARTICLE

The Impact of Teacher Support and Mathematics Learning Strategies on the Problem- solving Skills among Mathematics Education Students

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ABSTRACT

This study investigated the impact of teacher support and mathematics learning strategies on the problem-solving skills of mathematics education students at a local college in Davao del Norte, Philippines. Using a descriptive-correlational research design, the study gathered data from 130 students selected through stratified random sampling. Three validated instruments measured teacher support, mathematics learning strategies, and problem-solving skills. Results indicated that students reported high levels of teacher support and mathematics learning strategies, while their problem-solving skills were rated as very good. Pearson correlation analysis revealed significant positive relationships between both teacher support and learning strategies with students' problem-solving performance. However, multiple regression analyses showed that none of the specific domains within these variables significantly predicted problem-solving skills. These findings suggest that while general support and strategy use correlate with performance, other unexamined factors may exert greater influence. The study recommends further exploration of additional variables to better understand the predictors of mathematical problem-solving abilities among preservice teachers.

Keywords: *Teacher Support, Mathematics Learning Strategies, Problem-Solving Skills, Education, Philippines*

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INTRODUCTION

Problem-solving is a vital skill in mathematics education, serving as a foundation for students to develop innovation and logical thinking. By participating in problem-solving tasks, learners are encouraged to think critically, reason independently, and assess mathematical problems with greater depth. These approaches help deepen students' understanding of mathematical ideas and contribute to their overall proficiency. Despite this, many students find it challenging to link different mathematical concepts, which affects their capacity to solve more demanding problems. Their ability to integrate these varied ideas plays a significant role in how effectively they approach mathematical challenges (Pambudi et al., 2020).

In countries such as Malaysia, cultivating students' problem-solving abilities remains a major focus within the mathematics curriculum. Learners are expected to synthesize concepts, apply various strategies, and make sound judgments. Yet, many continue to encounter difficulties. During the Covid-19 pandemic, for instance, 71% of 195 surveyed college students reported increased stress and anxiety, which negatively impacted their academic success. Similarly, in Trinidad and Tobago, students frequently express discontent toward mathematics. Results from the Caribbean Examinations Council (CXC) have shown a persistent trend of underachievement; from 2004 to 2009, only 41% of students passed. While they may perform reasonably on multiple-choice questions, they tend to falter in more demanding written tasks—pointing to a deeper issue of conceptual misunderstanding.

In the Philippines, students face serious challenges in problem-solving skills in mathematics. According to the Trends in International Mathematics and Science Study (TIMSS), only 19% of Filipino students demonstrated the basic standard in understanding math, while a striking 81% perform below the expected level. This research indicate that 40% of students particularly struggle with word problems, frequently making errors, miscalculating numbers, misreading questions or get confuse by unfamiliar terminology (TIMSS, 2019). Moreover, a study in Bohol Island State University, found that out of 425 college students, the majority of them experienced difficulties in problem-solving, most of them struggle to transform problem into a mathematical equation and difficulty in systematically and accurately showing the problem-solving process, leading to poor problem-solving skills of the students.

In the realm of research, while several studies have explored how different learning strategies improve problem-solving skills—such as Problem-Based Learning (Ratnasari et al., 2022) or role-playing (Pratiwi et al., 2022)—these were primarily conducted in elementary or general education settings, not in the context of future mathematics educators. Moreover, most existing research examines teacher support or learning strategies separately, without considering how both might jointly influence problem-solving outcomes.

This study addresses that gap by investigating the combined impact of teacher support and mathematics learning strategies on the problem-solving skills of college-level mathematics education students. Unlike prior studies, it examines specific domains within these variables using a validated framework. Thus, this research contributes new insights by contextualizing the problem within a preservice teacher education environment—an area where problem-solving competency is critical but underexamined.

Finally, this study aims to generate valuable insights that will benefit not only the institution but also a broader audience. Its findings will be shared at research conferences and with relevant agencies to

promote scholarly discussion and the practical application of our research discoveries. Through this dissemination, the study's significance will be recognized by the wider community, leading to concrete actions, informed solutions to the issues addressed, and thoughtful consideration of the recommendations presented. Furthermore, the study's goal is to be published so that future researchers can use it as a reference and also to be archived in the local college's library, maximizing its accessibility and impact.

Research Questions

The purpose of this study was to examine the impact of teacher support and mathematics learning strategies on the problem-solving skills of mathematics education students.
Specifically, the study sought to answer the following objectives:

1. To determine the level of teacher support of mathematics education students in terms of:
   1.1. emotional;
   1.2. informational;
   1.3. appraisal; and
   1.4. instrumental.
2. To determine the level of mathematics learning strategies of mathematics education students in terms of:
   2.1. cognitive strategies;
   2.2. metacognitive strategies;
   2.3. non-informational resources management; and
   2.4. informational resources management.
3. To determine the level of student's problem-solving skills.
4. To determine the significant relationship between:
   4.1. teacher support and problem-solving skills; and
   4.2. mathematics learning strategies and problem-solving skills.
5. To determine which domain/s of teacher support and mathematics learning strategies predicts the problem-solving skills of mathematics education students.

METHODS

Study Design

This study employed a quantitative descriptive-correlational design to explore how teacher support and mathematics learning strategies impact studens' problem-solving skills. A quantitative method was selected as it allows for the structured gathering and evaluation of numerical data, enabling the investigation of measurable variables and their relationships (Seerem, 2019).

The descriptive-correlational method was utilized, this enabled the researchers to investigate the connections among variables without direct manipulation. This design is particularly suitable for educational contexts as it facilitates the identification of naturally occurring associations, such as how teacher support and mathematics learning strategies might be linked to the problem-solving skills of mathematics education students (Creswell, 2022).

In addition, the study applied multiple regression analysis to assess how much the independent variables—teacher support and mathematics learning strategies—predict the dependent variable, which is problem-solving skills. This method also helped show which parts of each factor really affect

students' academic results, as well as how these factors work together to explain how well students do in their studies (Fein et al., 2022).

Population and Sample

These students were purposefully selected as the study's participants, as the research aimed to examine how teacher support and mathematics learning strategies influence the development of problem-solving skills among future mathematics educators. This focus is particularly important because mathematics education students are expected not only to master mathematical content but also to model and teach problem-solving strategies effectively in their future classrooms. Their ability to apply and internalize these skills during their own training can significantly influence the quality of math instruction they provide later on. Therefore, understanding the factors that enhance their problem-solving abilities is essential for improving both teacher preparation programs and student outcomes in mathematics education.

The study employed stratified random sampling to ensure proportional representation of students across academic year levels (1st to 4th year) within the Bachelor of Secondary Education major in Mathematics program. This method was chosen to reduce sampling bias and ensure that insights reflect the full developmental range of preservice teachers. The strata were defined based on year level, and participants were randomly selected within each stratum to preserve generalizability within the target population. The final sample size of 130 was deemed adequate based on standard effect size estimations for correlational studies ($\alpha = 0.05$, power = 0.80).

Instrumentation

This research utilized three pre-validated tools to collect relevant data. The first, a Teacher Support Questionnaire, was adapted from the work of Tennant et al. (2014), which examined how students perceive teacher support in relation to their academic and socio-emotional well-being. It included four domains: emotional, informational, appraisal, and instrumental support.

The second tool was the Mathematics Learning Strategies Questionnaire, based on the instrument developed by Liu and Lin (2010) in their study on the Mathematics Motivated Strategies for Learning Questionnaire (MMLSQ). It measured four strategic areas: cognitive, metacognitive, non-informational resource management, and informational resource management. The instrument demonstrated acceptable internal consistency, with a reported Cronbach's alpha of 0.690.

The third instrument used was a 25-item Problem-Solving Skills Test, which was drawn from Asoy and Dagohoy's (2023) study on mathematical achievement using structural equation modeling. Items were selected for their alignment with the local school's mathematics curriculum and subjected to expert review. The validation process showed a high level of content appropriateness, with validator feedback averaging a rating of 4.7 out of 5.

All instruments underwent a two-step validation procedure. Experts in mathematics education and research methodology evaluated the tools for clarity, relevance, and curriculum alignment. The Teacher Support and Learning Strategies instruments retained the structure and reliability of their original sources, while the problem-solving tool was contextualized based on the school curriculum and prior validation. Internal consistency was assessed using Cronbach's alpha, with all tools achieving reliability scores above 0.690, meeting accepted standards in educational research.

Data Analysis

To interpret the collected data, both descriptive and inferential statistical techniques were employed. Descriptive statistics, particularly the mean, were used to summarize the overall levels of teacher support, mathematics learning strategies, and problem-solving performance among the participants. For inferential analysis, the study primarily relied on Pearson's correlation coefficient to examine the relationship between the independent variables and students' problem-solving skills, with attention to the strength and direction of the associations.

Although data derived from Likert scales are technically ordinal, it is widely accepted in educational research to treat the mean of multiple-item scales as interval-level when the data exhibit strong internal consistency. This practice justifies the use of Pearson correlation, which allows for a more precise interpretation and greater statistical power than non-parametric tests like Spearman's rho, especially when data distribution approximates normality.

To further analyze the predictive influence of teacher support and learning strategies, multiple linear regression was conducted. This analysis identified which specific dimensions of the independent variables significantly contributed to students' problem-solving outcomes. The method proved suitable for the study, given its focus on determining predictive relationships within a moderate sample size. While more comprehensive methods such as mixed approaches could have offered broader insight, the research objectives were best addressed through correlation and regression techniques.

Effect sizes were also reported alongside p-values to improve result interpretation. Pearson's r and R^2 values were categorized using Cohen's (1988) guidelines, with effect magnitudes interpreted as small, medium, or large.

RESULTS

The section below presents the discussion of findings on teacher support, mathematics learning strategies and problem-solving skills of mathematics students. It includes data on the levels of teacher support, mathematics learning strategies and problem-solving skills, as well as the significant relationships between these variables. It also highlights which domains of teacher support and mathematics learning strategies serve as significant predictors of problem-solving skills among mathematics students.

Level of Teacher Support

Table 1 summarizes students' reported use of teacher support, including emotional, informational, appraisal and instrumental.

Table 1. Level of Teacher Support of Mathematics Students

Indicators	Mean	Description
Emotional	4.30	Very High
Informational	4.33	Very High
Appraisal	4.18	High

Instrumental	4.11	High
OVERALL	**4.23**	**High**

The findings revealed that mathematics students reported a high level of perceived teacher support, with an overall mean score of 4.23. This indicates that learners generally feel encouraged and guided by their teachers, contributing to a more engaging and supportive classroom atmosphere. These findings align with Sagoughi and Hejazi (2021), who observed that students who perceive greater teacher support often show stronger engagement, more effort in schoolwork, and a greater appreciation for learning. Similarly, Sidenvall et al. (2022) emphasized that consistent teacher support tends to promote better academic outcomes.

Students who feel supported are also more inclined to develop positive self-perceptions, show persistence in the face of challenges, and set purposeful learning goals. These tendencies often lead to increased investment in academic tasks.

Additionally, each dimension of teacher support was rated as "high" by the students. Among the four domains, informational support received the highest mean score (M = 4.33), while instrumental support had the lowest (M = 4.11). Emotional (M = 4.30) and appraisal (M = 4.18) support were also rated highly, suggesting that these forms of support are regularly observed in classroom interactions.

Level of Motivation toward Mathematics Learning of Mathematics Students

Table 2 displays the overall level of mathematics learning strategies, covering the domains of cognitive strategies, metacognivite strategies, non-informational resource management and informational resource management.

Table 2. Level of Mathematics Learning Strategies of Mathematics Students

Indicators	Mean	Description
Cognitive Strategies	4.19	High
Metacognitive Strategies	4.17	High
Non-Informational Resource Management	4.09	High
Informational Resource Management	3.69	High
OVERALL	**4.10**	**High**

The study found that students showed a high level of motivation toward learning mathematics, with an overall mean score of 4.10. This reflects their consistent drive and engagement in academic activities related to mathematics.

Mvula (2020) noted that student-centered instructional approaches—such as collaborative work and problem-solving exercises—are closely linked to improved performance in mathematics. Students exposed to these active learning methods generally outperform those taught through conventional lectures, highlighting the benefits of engaging, hands-on learning experiences. In the same way, Boaler (2022) emphasized that elaboration strategies, which involve relating new mathematical ideas to prior knowledge, contribute positively to students' mathematical literacy. When learners frequently use such strategies, they tend to demonstrate stronger comprehension and problem-solving abilities, ultimately enhancing their overall academic outcomes in mathematics.

Moreover, the findings also reveal that all components of mathematics learning strategies were rated as "high," indicating they are oftentimes manifested among students. The highest mean was in *cognitive strategies* (M = 4.19). *Metacognitive strategies* (M = 4.17) and *non-informational resource management* (M = (4.09) also showed high motivation levels. The lowest mean score was *informational resource management* (M = 3.69), though still rated as high.

Level of Problem-Solving Skills of Mathematics Students

The level of problem-solving skills of all mathematics education students was measured through a test questionnaire with 25 items covering the topics in the course, Mathematics in the Modern World. The response of the 130 respondents was presented and analyzed on the table below.

Table 3. Level of Trigonometry Performance of Mathematics Students

Data	Frequency	Percentage	Mean	Description
16	8	6.15%		
17	14	10.77%		
18	27	20.77%		
19	19	14.62%	**19.70**	**Very Good**
20	19	14.62%		
21	11	8.46%		
22	15	11.54%		
23	5	3.85%		
24	12	9.23%		
TOTAL	**130**	**100%**		

Legend: 1 – 5 Poor 6 – 10 Fair 11 – 15 Good 16 – 20 Very Good 21 – 25 Excellent

The data revealed an overall average score of 19.70 out of 25, which falls within the 16–20 range. This corresponds to a "Very Good" descriptive level, indicating that the mathematics proficiency of the students is satisfactory. While 12 students (9.23%) achieved scores within the 21–25 range, classified as "Excellent", the majority of students performed within the "Very Good" range, affirming strong problem-solving skills among the cohort. The lowest score was 16, which still falls within the "Very Good" level and was obtained by only 8 students (6.15%), showing a narrow gap in performance. Furthermore, the most frequent scores were 19 and 20, both near the upper bound of the "Very Good" range, achieved by 19 students (14.62%). These results suggest that most mathematics education students demonstrate solid proficiency in problem-solving, with a consistent and commendable level of understanding and application of mathematical concepts.

These findings are supported by Farida et al. (2022), who emphasize the importance of problem-solving skills in education, noting that developing these abilities remains a key challenge for teachers. Problem-solving helps students apply mathematical knowledge to real-life situations, fostering critical thinking. Similarly, Ling and Mahmud (2023) highlight the relevance of solving math problems in sentence form, which enhances creativity, comprehension, and real-world application, though many students struggle with understanding and planning solutions. Both studies stress the need for effective teaching strategies to strengthen students' problem-solving skills.

Correlation Between Independent Variables and Problem-Solving Skills

Presented in Table 4 is the correlation results for both teacher support and mathematics learning strategies with problem-solving skills. Findings indicate a significant positive correlation between teacher support and problem-solving skills (r = 0.215, p = 0.014), suggesting that higher levels of perceived support from teachers are associated with stronger problem-solving performance among students. Likewise, mathematics learning strategies also demonstrated a significant but weaker positive correlation (r = 0.117, p = 0.043), implying that the more frequently students employ effective learning strategies, the better their problem-solving skills tend to be. These results confirm that both variables are meaningfully related to students' academic competencies, though they differ in strength.

Table 4. Correlation Between Independent Variables and Problem-Solving Skills

Variable Correlated	Mean	r	p-value	Decision
Teacher Support & Problem-Solving Skills	4.23	.215	**.014**	**H_o Rejected**
Mathematics Learning Strategies & Problem-Solving Skills	4.10	.117	**0.014**	**H_o Rejected**

The findings of correlation between teacher support and problem solving skills support Brenner (2022), who found that teacher support positively influences students' academic achievement and problem-solving skills by fostering resilience, motivation, and engagement. Likewise, Cronin et al. (2019) emphasize that perceived teacher support, through autonomy, involvement, and structure, enhances students' basic need satisfaction and skill development. Both studies highlight that supportive teachers create encouraging environments that help students actively engage in mathematical problem-solving.

On the other hand, the findings of mathematics learning strategies and problem solving skills align with Klang et al. (2021), who emphasized that problem-solving is central to mathematics learning strategies, as it enhances students' cognitive ability to understand and apply concepts effectively. Similarly, Hačatrjana and Linde (2023) found that students who use structured strategies and monitor their progress perform better in problem-solving tasks. Their study also highlights the importance of supplementary materials and metacognitive skills in guiding students through a step-by-step problem-solving process.

The correlation between teacher support and problem-solving skills (r = 0.215) indicates a small to moderate effect size based on Cohen's (1988) conventions. Similarly, the correlation between mathematics learning strategies and problem-solving skills (r = 0.117) suggests a small effect size. Though statistically significant, these results imply that the strength of association is relatively modest in practical terms.

Domain/s of Teacher Support that Best Predict Problem-Solving Skills of Mathematics Students

Table 5 summarizes the regression results evaluating the impact of different teacher support domains on mathematics students' problem-solving performance. The analysis indicated that none of the four domains—emotional, informational, appraisal, and instrumental—were statistically significant predictors, as their p-values exceeded the 0.05 threshold.

Table 5. Domain/s of Teacher Support that Best Predict Problem-Solving Skills of Mathematics Students

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	P-Value	Decision @=0.05
	Beta	Std. Error	Beta		
(Constant)	14.725	1.872			
Emotional	0.93	0.495	0.211	0.062	**H_o Accepted**
Informational	0.136	0.542	0.032	0.802	**H_o Accepted**
Appraisal	-0.092	0.562	-0.022	0.87	**H_o Accepted**
Instrumental	0.181	0.455	0.049	0.692	**H_o Accepted**
Dependent Variable:					
Problem-Solving Skills					

Note: R= 0.250, R^2=0.062, F-ratio= 2.08 P-value= 0.087

Among these, emotional support (β = 0.93, p = 0.062) came closest to significance but still fell short. The other domains showed weaker effects: informational (β = 0.136, p = 0.802), appraisal (β = -0.092, p = 0.870), and instrumental (β = 0.181, p = 0.692). The regression model explained a modest portion of the variance (R^2 = 0.062), with F = 2.08 and p = 0.087, indicating that only 6.2% of the variability in problem-solving skills could be attributed to the teacher support factors, and the overall model lacked statistical significance.

These results suggest that while teacher support may play a role, it does not appear to be a dominant predictor in this context. Emotional support, although approaching significance, might still be influenced by additional variables such as students' emotional states or classroom climate. This is consistent with findings by Suren and Kandemir (2020), who emphasized that emotional support alone may not improve problem-solving skills, especially when students experience anxiety that hinders engagement. Likewise, Hartono et al. (2019) highlighted that poorly applied informational support can limit student autonomy, reducing opportunities for independent learning and critical thinking.

Domain/s of Mathematics Learning Strategies that Best Predict Problem-Solving Skills of Mathematics Students

Table 6 displays the results of the regression analysis examining how different domains of mathematics learning strategies relate to students' problem-solving abilities. The analysis revealed that none of the four domains—namely cognitive, metacognitive, informational resource management, and non-informational resource management strategies—had a statistically significant effect on students' problem-solving performance, as all p-values exceeded the 0.05 threshold.

Table 6. The Domain of Mathematics Learning Strategies Significantly Predicts the Problem-Solving Skills of Mathematics Students

Independent Variables	Unstandardized Coefficients		Standardized Coefficients	P-Value	Decision @=0.05
	Beta	Std. Error	Beta		

(Constant)	15.974	1.674			
Cognitive Strategies	-0.302	0.501	-0.078	0.549	**H_o Accepted**
Metacognitive Strategies	0.754	0.523	0.183	0.152	**H_o Accepted**
Non-Informational Resource Management	0.471	0.475	0.122	0.323	**H_o Accepted**
Informational Resource Management	-0.028	0.399	-0.009	0.944	**H_o Accepted**
Dependent Variable:					
Problem-Solving Skills					

Note: R= 0.217, R^2=0.047, F-ratio= 1.539 P-value= .195

The regression analysis revealed that none of the mathematics learning strategy domains served as significant predictors of students' problem-solving performance. The coefficients for each domain—cognitive (β = -0.302, p = 0.549), metacognitive (β = 0.754, p = 0.152), non-informational resource management (β = 0.471, p = 0.323), and informational resource management (β = -0.028, p = 0.944)—showed non-significant results, indicating limited predictive relevance. The overall model also did not reach statistical significance, with an R^2 of 0.047, F-value of 1.539, and p = 0.195, meaning that the included variables explained only 4.7% of the variance in students' problem-solving outcomes.

These results suggest that other influences, such as students' motivation, instructional approaches, or foundational knowledge, might play a more substantial role. With the R^2 value indicating a small effect size, it becomes clear that the assessed learning strategies contributed only minimally to variations in students' problem-solving performance.

While both teacher support and mathematics learning strategies showed significant positive correlations with students' problem-solving skills, the regression analyses revealed that none of the individual domains within these variables significantly predicted problem-solving performance. This discrepancy may be attributed to several factors. First, multicollinearity among the domains could have inflated standard errors, weakening the apparent predictive power of each individual component. Second, the effect sizes of individual predictors may have been too small to reach statistical significance within the available sample size. Lastly, it is also possible that shared variance among the predictors was captured in the correlation but diluted when controlling for multiple variables in the regression model. These findings suggest that while overall support and strategy use relate to student performance, their isolated effects are less clear and may depend on additional mediating or moderating variables not captured in this study.

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performance, their isolated effects are less clear and may depend on additional mediating or moderating variables not captured in this study.

Although both teacher support and mathematics learning strategies were rated as "high" by the students, their individual domains did not significantly predict problem-solving performance. This apparent contradiction may suggest the presence of mediating or moderating variables that influence how these factors affect students' problem-solving skills. For instance, variables such as academic motivation, self-efficacy, math anxiety, or prior mathematical achievement may mediate the impact of teacher support and strategies. In other words, students may feel supported and report frequent use of learning strategies, but if their confidence or emotional state is low, these supports may not translate into improved outcomes. Alternatively, moderating factors such as teaching quality, learning environment, or even cultural attitudes toward mathematics may condition whether and how teacher support or strategies lead to academic success. Future studies should explore these potential mediators and moderators using more complex models (e.g., structural equation modeling) to clarify these indirect relationships.

CONCLUSION

This study explored the levels of teacher support and mathematics learning strategies among mathematics education students and how these relate to their problem-solving performance. The findings provide useful perspectives on the influence of these factors on students' academic development and engagement in learning mathematics.

Results indicated that students generally experienced a high degree of teacher support, suggesting that supportive behaviors were regularly observed in the classroom. Such support likely contributes to a learning environment that encourages student confidence and participation in mathematics.

In a similar manner, students reported frequent use of various mathematics learning strategies, particularly in cognitive, metacognitive, and resource management areas. This points to their active involvement in applying effective approaches to enhance their mathematical understanding and mindset.

High scores in problem-solving skills were also observed, implying that students are often capable of employing appropriate strategies to address academic and real-life mathematical challenges.

Correlation results showed significant positive associations between teacher support and students' problem-solving performance, as well as between learning strategies and problem-solving. These findings confirm that both support and strategy use play a meaningful role in enhancing students' ability to solve problems, resulting in the rejection of the first null hypothesis.

However, regression analysis revealed that none of the specific domains of teacher support—including emotional, informational, appraisal, and instrumental—had a statistically significant impact on problem-solving skills. This outcome supports the second null hypothesis and suggests that other influences—such as students' motivation, prior understanding, or classroom practices—may have a stronger predictive value. The model explained just 6.2% of the variation ($F = 2.08$, $p < 0.001$).

Likewise, none of the individual domains of mathematics learning strategies significantly contributed to predicting problem-solving performance. This also confirms the second null hypothesis, with the model accounting for only 4.7% of the variance ($F = 1.539$, $p < 0.001$), indicating that a majority of influencing factors lie beyond the scope of the strategies examined in this study.

Despite the regression findings, the significant correlations and high frequency of teacher support and learning strategy use underscore their continuing relevance in mathematics education. Educators can still leverage these insights by fostering a supportive environment where students feel emotionally and academically encouraged. Teacher behaviors such as giving timely feedback, offering encouragement, and providing instructional clarity may not directly predict outcomes in isolation, but they collectively contribute to students' engagement and confidence in problem-solving. Similarly, promoting cognitive and metacognitive strategies—such as goal-setting, self-monitoring, and reflection, as seen in structured models like the IDEAL model (Identify, Define, Explore, Act, and Look back) can reinforce students' independent learning habits, even if their predictive power is statistically weak. The key implication is that consistent and integrated application of these supports and strategies, rather than reliance on isolated interventions, may better position students for long-term success. Institutions should consider embedding these practices in teacher education curricula to cultivate well-rounded future educators capable of modeling and facilitating effective problem-solving approaches.

In summary, while teacher support and mathematics learning strategies both show significant overall relationships with students' problem-solving skills, their individual domains do not directly predict these outcomes. Further research is recommended to identify other influential factors and explore how these variables interact in shaping students' problem-solving performance.

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