
Problem-Solving Skills and Mathematics Performance of Select Grade 5 Pupils: Input for Mathematics Intervention Plan

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Abstract — The primary objective of the study was to investigate the relationship between pupils' problem-solving skills and their mathematics performance, providing input for a mathematics intervention plan during the 2025-2026 school year. The present study employed a quantitative research methodology using a descriptive-correlational design. The research respondents consisted of a group of grade 5 pupils chosen specifically from the Magalang South District within the Division of Pampanga. A total of 269 samples were determined. The researcher employed statistical tools in analyzing the gathered data such as frequency, percentage, weighted mean, and Pearson Correlation.

Based on the results, the pupils demonstrated a high level of problem-solving skills, as supported by their composite mean score of 3.57. The majority of respondents, comprising 54.28%, were categorized as having a “fairly satisfactory” level of academic performance in the mathematics subject. Meanwhile, only 12.27% performed at “very satisfactory.” There was a strong positive correlation between pupils' problem-solving skills and their academic performance in the mathematics subject, as evidenced by the computed r-value of 0.6731. The proposed intervention plan was crafted to address the knowledge gaps between problem-solving skills and pupils' mathematics performance.

Keywords: Problem-Solving Skills, Mathematics Performance, Intervention Plan

I. INTRODUCTION

Mathematics is commonly seen as a multifaceted discipline, encompassing characteristics of a language, an art form, a scientific field, a tool, and a recreational activity. A language can be defined as a mutually accepted collection of symbols or auditory representations. The discipline under consideration is the field of logical reasoning, wherein a collection of axioms is employed to derive conclusions that are deemed valid.

Furthermore, it serves as a mechanism that encompasses the aptitude for resolving problems, arranging them, and comprehending facts. The linguistic framework of mathematics is characterized by its inherent abstraction and the challenges it presents regarding comprehension.

Problem-solving is a widely employed cognitive process across several academic disciplines, frequently characterized by distinct perspectives and terminologies. It involves systematically navigating the intricacies of a problem in order to arrive at a viable solution.

The process of problem-solving encompasses the utilization of mathematical or systematic procedures. It serves as an indicator of an individual's capacity for critical thinking. The impact of problem-solving on a student's learning is evident in contemporary mathematical classrooms. Difficulties in problem-solving among at-risk students can be attributed to various factors.

As Thevenot (2011) stated, it is imperative to first acquire a comprehensive comprehension of the textual content within a word issue before proceeding with accurate mathematical calculations. Therefore, a primary obstacle faced by individuals solving word problems is to attain a comprehensive comprehension of the problem statement. Word problems can be a challenge to pupils due to the requirement of multiple stages and abilities to arrive at a solution.

Furthermore, pupils can encounter difficulties in comprehending the textual content of the given word issue. Numerous students encounter challenges in mathematics and reading, suggesting that including mathematical concepts within a language framework could pose difficulties for students who struggle with reading.

Corresponding to Pianta (2010), empirical support indicates that older children exhibit superior academic performance compared to their younger counterparts at the appropriate age for

their grade level. Existing research provides evidence about the correlation between age and academic performance, with some studies suggesting that older and more mature pupils tend to outperform their younger peers within a classroom setting.

Research findings have indicated a decrease in the link between age and academic performance as pupils progress through their educational journey. Educational institutions offer opportunities for equalization, thereby diminishing the influence of age on student accomplishment as the duration of their schooling increases.

Bessoondyal (2010) analyzed the academic performance of students in Mathematics phrased problems, which indicated that male students exhibited superior performance compared to their female counterparts at this particular academic level. This pattern is confirmed by utilizing a Mathematics Questionnaire that is specifically constructed for this study. Factors influencing the academic performance of secondary school pupils in Mathematics will be identified through classroom observations and interviews conducted with various stakeholders.

Additionally, a pedagogical resource has been developed to facilitate the implementation of student-centered approaches and foster collaborative learning. Research has indicated that implementing this instructional package positively impacts students' motivation to engage in mathematics learning and facilitates the development of a comprehensive mental grasp of the subject matter.

Conferring to Boocock (2011), "Test scores indicate that on all measures there is considerable overlap between the distribution of scores for the two sexes; and that on tests of total or composite abilities, the sexes do not differ consistently, and superior or highly developed ability is more or less equally distributed among boys and girls."

However, it is shown that males tend to achieve higher mathematics scores, while girls tend to outperform males in verbal skill assessments. The disparity in math performance between males and females has diminished due to an increase in the enrollment of females in math courses. However, starting from the early stages of education, male students generally are more inclined towards mathematics than their female counterparts.

Elementary pupils have difficulties solving worded problems because some cannot differentiate worded problems into types of problems. They have low scores on their test about solving worded problems compared to solving mathematical equations.

When it comes to group activities, they cannot finish their task at a given time because of difficulty understanding the problem. As stated by McEwen (2011), it is essential for the outcomes of assessments to accurately reflect the effectiveness of educational programs in attaining their objectives for student learning. Therefore, individuals must communicate their concerns to the educator, which can afterward contribute to enhancements in the teaching and learning environment.

Cummins et al. (2011) assert that the insufficiency in the mapping of phrases leads to students experiencing difficulties in successfully solving word problems. Similarly, Nathan and colleagues (2011) posited that students commit errors due to their inability to perceive the connection between the situational context of an issue and the formal expressions they employ to generate the desired internal representations.

The linguistic structure of the problem's text effectively communicates the key elements that impact the comprehension process. However, the primary cause of students encountering challenges with word problems stems from a lack of grasp regarding the mathematical reasoning inherent in the problem. The authors contend that students, based on their previous encounters with arithmetic word problems, tend to view the process of problem-solving as a sequence of computations. Consequently, there is transition in their cognitive approach from algebraic to arithmetic thinking when confronted with word problems.

In order to effectively solve a word problem, students are required to analyze the given text carefully to detect any missing information. Subsequently, they must formulate a strategic strategy to address the absence of data and proceed to execute the necessary calculations to ascertain the missing information. The initial cognitive representation is referred to as the text base, which is firmly grounded in the explicit content of the text. This study involves a preliminary examination of the diverse concepts present in the written document. The analysis of the students' responses indicated that many struggled to understand or misunderstood the text presented in the word problems, notably in the fourth problem. Consequently, they had difficulties in formulating the corresponding equation.

Yeo's (2010) research showed that students have a delayed rate of advancement in problem-solving tasks due to their difficulty in effectively transforming these problems into mathematical representations. Certain pupils may have challenges when attempting to solve a problem due to a lack of comprehension stemming from confusion surrounding the topic.

Didis (2013) demonstrated comprehension of the problem statement. Nevertheless, their ability to locate the provided information is lacking. Yared (2013) argued that problem solvers tend to simplify problems, perhaps leading to a misrepresentation. The subsequent tier of representation pertains to the problem model. This representation exhibits a higher level of formality as it establishes a direct correlation between the problem model, the posed question, and the mathematical techniques required to resolve the problem. At this level of representation, the emphasis is placed on the relationship between variables, while the contextual aspects of the problem are of lesser importance.

The problem model enables students to develop a substantial mathematical representation of the problem. In order to streamline the development of the problem model, it is advisable to use the contextual information on the problem and afterward design the scenario model. The current state of the scenario model involves engaging in problem comprehension to address a deficiency in the model's consideration of non-essential aspects that could potentially enhance students' comprehension of the problem. The concept of the situation model is characterized as an intermediary and less quantitative construct, which is formed by leveraging an individual's real-world knowledge and personal experiences to comprehend the information presented in the text base while solving arithmetic problems.

The successful resolution of a mathematical word problem is believed to rely not only on the student's proficiency in executing the necessary mathematical operations but also on their capacity to comprehend the textual content of the problem appropriately (Van der Schoot, 2010). Problem solvers in the field of word problems are required to employ a problem model method to convert the given problem statement into a qualitative mental representation of the underlying problem situation embedded within the text. This representation method enables individuals to strategize a resolution and execute the necessary mathematical computations. There is a suggestion that reading comprehension can be particularly advantageous when addressing stated concerns.

Under the No Child Left Behind policy, teachers must use research-based techniques that have been proven beneficial. The need to employ effective and validated instructional strategies has become increasingly paramount due to the elevation of educational standards. The Theory of Heuristic Reasoning and Strategies Polya (2005) is a notable academic reference. Heuristic reasoning aims to examine the methodologies and principles underlying the processes of discovery and creation. The system should possess sufficient flexibility to effectively address various challenges and guide students in directing their cognitive processes toward the most promising pathways for achieving a successful solution.

Additionally, it should promote problem-solving behavior that prioritizes feasible and practical cognitive processes. A collection of practical reasoning principles was produced by Polya. These concepts will be drawn from the empirical and experimental methodologies. In order to maximize the chance of obtaining effective outcomes, these recommendations serve as a guide for planning and thinking. There are four key processes that are included in the individual's proposed framework for problem-solving. These stages are as follows: comprehension of the problem, formulation of a strategy, execution of the plan, and retrospective evaluation of the received response. Despite the apparent simplicity and obviousness of these stages of reasoning, they possess a greater level of complexity than initially seen, necessitating a comprehensive description and instruction to be imparted to students.

Polya's contributions to problem-solving extend to developing heuristic techniques employed in the second phase of the problem-solving process. These gadgets serve as tools that assist students in narrowing down their quest for a solution within a complex problem domain. They prove to be particularly beneficial in instances where students confront unfamiliar or previously unencountered difficulties.

Moreover, empirical studies have demonstrated that pupils exhibit a notably enhanced academic performance when explicitly instructed in problem-solving procedures.

Chapman (2011) discussed the theory of cognitive functioning and delineated a differentiation between a paradigmatic approach and a narrative-oriented approach regarding word difficulties. The paradigmatic method is grounded in conceptualizing mathematical models or structures with universality and lacks contextual dependencies.

The teacher proposed that pupils explore the potential independence of mathematical structure from its contextual use. Bruner (nd) states that these two cognitive activities cannot be approached separately. He claims that reducing one mode to another or ignoring one mode in favor of another fails to capture the diversity of thought.

Students engage in brainstorming, debates, skills simulations, and assignments throughout these sessions. In this group, Social Cognitive Theory (SCT) remediation had a greater influence on problem-solving skills (PSS) than knowledge acquisition remediation.

The research conducted by Dela Cruz and Lapinid (2015) focused on examining the challenges encountered by students while converting verbal problems into mathematical notation. As a result of the information presented above, it has been concluded that the ability of pupils to solve word problems is directly proportional to their capacity to transform words into mathematical symbols. It is possible that the process of issue-solving will be difficult because of the multifarious nature of the problem, which requires the execution of several consecutive activities.

The students are required to overcome the challenges that are connected with moving from one level to the next, despite the fact that these stages may not necessarily need to be completed in the order that they are presented. The purpose of this study is to investigate the several processes that are involved in the process of answering word problems that demand reading comprehension abilities. More specifically, the paper targets the manner in which students construct and implement a strategic strategy.

The research investigation is centered on this particular aspect due to its relevance in assessing the student's proficiency in converting verbal difficulties into mathematical expressions. The learning target of acquiring a minimum of 85% competency in translating word problems into mathematical expressions is not accomplished since the percentage of students performing at or above the satisfactory level is less than 60%. This indicates that the learning objective will not be attained. Due to the fact that they have a propensity to misunderstand words that have several meanings and overlook the contextual cues that are associated with them, a great number of pupils struggle with working through problems. In most cases, this difficulty arises when the issues are presented in a written fashion.

Tambychik et al. (2010) determined that students encountered challenges in mathematical problem-solving due to their inadequate acquisition of various mathematical skills and limited cognitive learning abilities.

The most crucial mathematical skill is determined to be information literacy. While students may have developed proficiency in various mathematical concepts, their ability to comprehend and establish meaningful connections between issue material would be limited without acquiring transferable information abilities. In general, a significant proportion of the students did not thoroughly learn this talent. The cognitive faculties involved in the learning process, including but not limited to recall, memorization, and perception, significantly impact problem-solving efficacy.

The presence of challenges in the acquisition of mathematical abilities is a significant barrier for pupils to surmount. Insufficient linguistic skills, a lack of information, and an inadequate command of numerical facts all operate as barriers to the process of problem-solving. The absence of this component results in doubt, confusion, and inaccuracy in the process of making decisions and forming connections between different bits of information. Due to the presence of these circumstances, it is possible that mathematical problems will be solved with an inaccurate solution.

Additionally, it has been observed that the process of recalling factual information can be challenging when attempting to establish meaningful connections between problems. This difficulty in making connections can impact the effectiveness of each phase within the problem-solving process. The failure to maintain focus during the problem-solving process can also lead to the omission of the third phase (confirmation of answer) in problem-solving. The significance of this phase in problem-solving among kids is not recognized. Additional investigation is necessary to investigate the notion as mentioned above.

Sundling (2012) examined effective Grades Three–Five mathematics remediation programs, demonstrating the growing academic importance of maths education.

Resources and excellent methods make this daunting task possible. Today, data for decision-making and student growth is essential. After that, the researcher personally administered the questionnaire. Giving respondents a week to complete the questionnaire was appropriate given their busy schedules. After a week, the researcher received the questionnaires. The field of education has

seen significant transformations over the past few decades, resulting in a scarcity of resources available to address these developments effectively.

Using a mathematics response to remediation program can effectively address these challenges and render this undertaking more feasible. A recurring motif observed in various research is the necessity for students to possess automaticity in their fundamental mathematical facts to achieve fluency and avoid difficulties in mathematics training. The occurrence of mathematical difficulties and disabilities is commonly observed among children upon the completion of fundamental skills, such as number sense, number and operations, and word problem solving (Moors et al., 2010).

The attainment of automaticity necessitates the repetition and practice of fundamental information. As a result of this discovery, the idea that pupils should acquire fundamental knowledge through the process of memorizing rather than relying entirely on external resources to recall information is brought into sharper focus. It is possible for individuals to concentrate more of their mental capacity on the acquisition of more sophisticated mathematical concepts if the cognitive burden that is necessary for solving elementary issues is reduced.

Educational institutions bear the responsibility for ensuring and promoting student academic performance. While reading instruction and assistance will be the main focus twenty years ago, there is a growing concern for mathematics performance. Modifications to the current mathematics instruction are required in order to tackle the issue of nationwide mathematics performance effectively. By implementing effective mathematics instruction and employing research-based treatments, significant improvements can be achieved, which can be substantiated by testing test scores.

Mathematics is a complex discipline that performs various functions, including performing as a language, a scientific domain, a problem-solving instrument, and a visual form. One of the most significant challenges that students face is the requirement to shift between verbal and mathematical representations, which requires a level of abstraction and comprehension. In the research that has been conducted, it has been found that solving word problems requires a combination of reading comprehension, logical reasoning, and mathematical fluency. Challenges usually arise as a result of students' inability to interpret or relate problem situations to appropriate mathematical models.

Studies indicate that problem-solving capacity is affected by age, gender, and teaching approaches. Older students typically exhibit superior academic performance, although boys normally have greater proficiency in mathematics than girls; however, this disparity has diminished due to the rising enrollment of females in mathematics courses. However, students often use arithmetic reasoning in algebraic contexts, making it difficult to transform word problems into mathematical equations.

Polya's heuristic reasoning paradigm emphasizes understanding problems, developing strategies, executing solutions, and assessing results. This methodical, cooperative learning-based strategy improves problem-solving and math engagement. Narrative-based methods help children learn arithmetic by applying it to real-world circumstances.

Research shows that pupils struggle to solve increasingly complex problems due to a lack of basic skills such as number sense and operations. Response to Remediation (RTI) programs and concentrated remedial strategies help struggling learners achieve fluency and automaticity through tailored instruction and frequent repetition.

Mathematical performance improvement goes beyond computation. An integrated strategy that includes language understanding, problem-solving, cooperative learning, and personalized remediation can boost children's math abilities and academic performance. This study examined how problem-solving skills affect mathematics proficiency. The findings will inform a math intervention plan.

Conceptual Framework

The present study employed the Independent Variable-Dependent Variable (IV-DV) framework. The terminology of IV (independent variable) and DV (dependent variable) was employed suitably to elucidate the association between variables denoting causality and those representing effects (Tabuena, 2021).

In this premise, the independent variable consisted of the pupils' problem-solving skills.

Meanwhile, the dependent variable comprised pupils' mathematics performance. This study aimed to establish the relationship between the two and propose a mathematics remediation plan for learners in the mathematics subject. Figure 1 illustrates the study's paradigm.

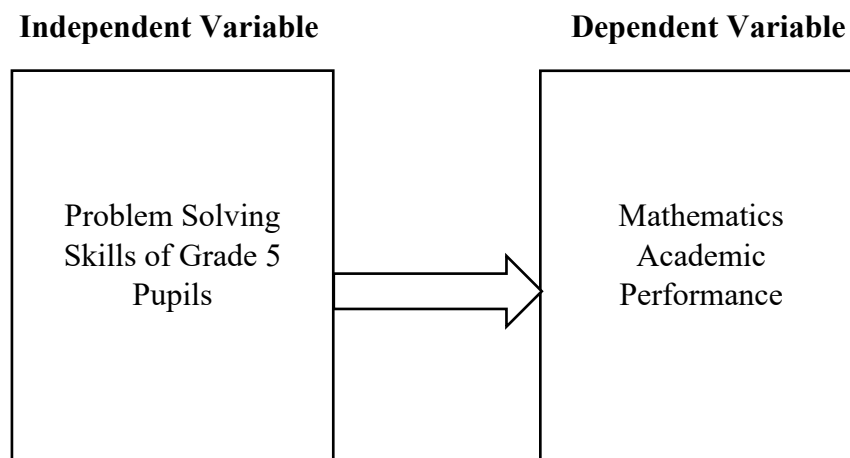


FIGURE 1
RESEARCH PARADIGM

Statement of the Problem

The general problem of the study was to determine the relationship between pupils' problem-solving skills and mathematics performance as input for a mathematics intervention plan during the 2025-2026 school year.

This study sought to answer the following questions:

1. How may the level of problem-solving skills of the participants be described?
2. What is the participants' level of academic performance in mathematics?
3. Is there a significant relationship between the participants' problem-solving skills and mathematics performance?

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4. What mathematics intervention plan can be proposed based on the findings of the study?

Hypothesis

This study was based on the following alternative hypothesis: a significant relationship exists between participants' problem-solving skills and their mathematics performance.

Significance of the Study

Some target beneficiaries and expected users of this study's outputs were indicated below:

School Heads. The study's findings may significantly help school administrators to provide in-service training to capacitate teachers' pedagogies and techniques in teaching, especially in mathematics.

Teachers. The findings may help them determine the students' weaknesses in solving word problems. This may help them adjust their methods, techniques, and strategies in teaching the subject.

Students. The study findings may help them reflect on their weaknesses towards the subject that greatly affected their performance. This may help them develop their strengths and capacities in solving word problems in mathematics. Also, this may help them better and more precisely understand the subject.

Parents. The findings may help them identify their children's difficulties in mathematics, which significantly impact their performance. This may help them realize their role in guiding, directing, helping, and encouraging their children in their studies, particularly in their mathematics subject.

Scope and Delimitation

The general problem of the study determined the relationship between students' problem-solving skills and mathematics performance as input for the mathematics intervention plan during the School Year 2024-2025.

The study's respondents were the grade 5 pupils in Magalang South District, Division of Pampanga, who were selected using simple random sampling. Furthermore, the discussion of the specific objectives was limited to the following: the level of problem-solving skills among the pupil-respondents and the level of mathematics performance. The significant relationship between the pupils' problem-solving skills and mathematics performance; finally, the proposed mathematics intervention plan based on the study's findings.

Definition of Terms

The study presents the definition of terms or phrases relevant to the presentation and concept of this research as follows:

Problem Solving. This concept pertains to cognitive processes aimed at resolving a particular problem, encompassing the generation of potential solutions and the subsequent choice among those solutions.

Problem Solving Skills. This involves performing sets of actions to arrive at a solution for tasks. It refers to the pupils' problem-solving skills in answering the worded problem, such as what is asked, what is given, what is to be used, and what is the complete answer.

Intervention Plan. This refers to the plan proposed based on the findings that would serve as an remediation activity for the struggling learners in mathematics subject.

II. METHODOLOGY

This chapter discusses the research design, study respondents, research instruments, data collection procedure, and the statistical treatment of the raw data.

Research Design

The present study employed a quantitative research methodology. Typically, this form of investigation relied upon numerical data to depict, examine, and elucidate findings. Watson (2015) stressed that this approach involved various procedures that systematically examined social issues through statistical or numerical data. The study incorporated the measurement process and operated under the assumption that the phenomenon being investigated is quantifiable.

This study utilized a descriptive-correlational design as its research methodology. The descriptive study design offered an overview of the present condition or situation. On the other hand, correlational research is a type of research that aims to identify and understand the correlations between variables, as well as to facilitate the prediction of future events based on existing knowledge (Lappe, 2020).

Respondents

The research respondents consisted of a group of grade 5 pupils chosen specifically from the Magalang South District within the Division of Pampanga. The district had a collective number of grade 5 pupils of 889. The sample size was determined using Calmorin's formula. This formula is used when the population size exceeds 100, and the researcher chose to employ scientific sampling techniques (Calmorin & Calmorin, 2007). A total of 269 samples were determined. Thereafter, the respondents were randomly selected using the simple random sampling technique. Table 1 displays the distribution of the participants.

TABLE 1
RESPONDENTS OF THE STUDY

District	Population of Grade 5 Pupils	Sample
School A	59	17
School B	50	15
School C	248	75
School D	29	9
School E	39	12
School F	55	17
School G	60	18
School H	46	14
School I	58	18
School J	56	17
School K	53	16
School L	66	20
School M	70	21
Total	889	269

Research Instrument

The researcher utilized the Problem-Solving Inventory for Children (PSIC) questionnaire, established by Serin et al. (2010), to assess the self-perception levels of fifth-grade students in relation

to their problem-solving skills. It assessed the problem-solving abilities, behavioral patterns, and cognitive perspectives of elementary school students.

Moreover, documentary analysis was facilitated by the researcher to describe the pupils' academic performance in mathematics subject.

Data Collection

Before commencing the data-gathering phase, the researcher obtained the authorization of the Schools Division Superintendent. The researcher drafted a formal letter that included a request for approval, which was subsequently submitted to the Division Office after receiving an endorsement from the researcher's adviser.

The actual visit to schools commenced after the superintendent's approval. The researcher explained the study's objectives to the school administrators and teachers during the first visit. Consent and assent were secured in compliance with the ethical requirements of research. Other standards complied with by the researcher included the confidentiality of their identities, scores, and responses.

Immediately after that, the researcher was the one who personally oversaw the process of administering the questionnaire. The questionnaire was delivered to the respondents, and they were allowed a week to respond to it. This was a sufficient amount of time considering the busy schedules that the respondents currently have. The researcher was able to acquire the questionnaires that had been filled out after a week had passed since the questionnaires had been distributed.

In addition to this, the researcher made certain that the data were investigated and evaluated in the suitable manner. All of the findings of the study were presented in a clear and straightforward manner. Furthermore, the researcher made certain that the research was carried out in an ethical manner and ensuring that the rights of the participants were safeguarded.

Statistical Treatment

The data collected from the respondents through the survey questionnaires were tallied, tabulated, and organized accordingly. The following statistical tools were used to analyze and interpret the quantitative data:

1. Weighted Mean. This described the problem-solving skills of the grade 5 pupils along with the three (3) thematic areas.
2. Mean. This was the most commonly used measure of central tendency, computed by summing all the values in the variable and dividing the sum by the number of responses in the distribution. This tool is used to describe the mathematics performance of the grade 5 pupils.
3. Pearson r . This tool established the relationship between the pupils' problem-solving skills and mathematics performance.

III. RESULTS AND DISCUSSION

This chapter presents the analysis and interpretation of data obtained from the questionnaires, aiming to answer the specific questions raised in Chapter 1.

1. Descriptions of Problem-Solving Skills of the Pupil-Respondents

Table 2 describes the problem-solving skills of the respondents. As appeared in the table, the respondents rated achieving a “high level” of problem-solving skills, as evidenced by the grand mean score of 3.75. The findings denote that the pupils demonstrated effective problem-solving behaviors in mathematics.

Moreover, among the indicators, “I feel proud when I successfully solve a difficult problem” registered the highest mean score of 4.28 with a verbal description of “strongly agree”. This suggests

that the pupils possess a strong sense of accomplishment when they overcome challenging learning tasks.

Additionally, several indicators, such as “checking answers to ensure correctness, asking for help when concepts are unclear, and understanding math problems after careful reading also registered relatively high mean scores of 4.13, 3.99, and 3.91, respectively. The findings denote that the pupils also display essential metacognitive skills, such as self-monitoring and comprehension, which are vital components of problem-solving skills.

Conversely, indicators such as “I can solve math problems quickly and accurately most of the time” and “I use math tools like a calculator or ruler to help me solve problems” yielded the least weighted mean scores of 3.38 and 3.11, respectively. Notably, this implies that pupils are experiencing difficulty in achieving speed and use of tools, despite demonstrating conceptual understanding and strategic awareness.

Özsoy and Ataman (2019) found that pupils with strong comprehension skills in mathematical problems demonstrate higher success in problem-solving. Dela Cruz's (2020) findings demonstrated that elementary school students in the Philippines who actively use step-by-step procedures have higher confidence when completing arithmetic word problems. Similarly, Reyes and Santos (2022) found that the use of drawings had a beneficial impact on students' comprehension of the subject mathematics.

TABLE 2
DESCRIPTIONS OF PROBLEM-SOLVING SKILLS OF THE PUPIL-RESPONDENTS

Statement	Mean	SD	DR	Interpretation
1. I understand the math problem after reading it carefully.	3.91	0.83	Agree	High
2. I can identify important information in math problems.	3.71	0.80	Agree	High
3. I always try to break down math problems into smaller steps to solve them.	3.75	0.80	Agree	High
4. I feel confident using different strategies to solve math problems.	3.70	0.86	Agree	High
5. I can use visual aids (like pictures or diagrams) to help solve math problems.	3.49	0.94	Agree	High
6. I ask for help when I don't understand how to solve a math problem.	3.99	0.87	Agree	High
7. I always check my answers to make sure they are correct.	4.13	0.81	Agree	High
8. When I make a mistake in math, I try to figure out what went wrong.	3.87	0.87	Agree	High
9. I feel frustrated when I can't solve a math problem right away.	3.51	1.07	Agree	High
10. I like to try different methods to see which one works best for solving math problems.	3.88	0.79	Agree	High

11. I understand the importance of asking questions when I don't understand the math.	3.81	0.82	Agree	High
12. I feel proud when I successfully solve a difficult math problem.	4.28	0.73	Strongly Agree	Very High
13. I can solve math problems quickly and accurately most of the time.	3.38	0.92	Somewhat Agree	Moderate
14. I use math tools (like a calculator or ruler) to help me solve problems.	3.11	1.18	Somewhat Agree	Moderate
15. I enjoy solving word problems in math.	3.75	0.85	Agree	High
Grand Mean	3.75	0.90	Agree	High

2. Descriptions of Respondents' Level of Academic Performance in Mathematics

As reflected in Table 3, none of the respondents achieved “outstanding performance,” a score within 90-100. Meanwhile, the majority of the respondents, or 54.28% fell within the “fairly satisfactory” performance. This connotes that more than half of the pupils achieved only the minimum passing level. This signifies that they possess basic mathematics competence and signals potential difficulties in solving higher-level problem-solving.

On the one hand, less than half, or 33.46% of them, met the expected learning standards in mathematics. This group demonstrated an adequate understanding of mathematical concepts, although they still require further enrichment to achieve their optimal proficiency.

On the other hand, 12.27% of them belonged to the “very satisfactory” performance category, which indicates that only a portion of the respondents demonstrated above-average mastery of the most essential mathematical concepts.

Mullis et al. (2020) noted that students do not have the deeper conceptual understanding they need, even while they know enough about the procedures to pass math class.

In the same way, Reyes (2021) found that most grade school children only passed math at the minimum level.

Mendoza (2023) also said that the students' low grades in math class might be partly because they don't get to undertake many enrichment activities.

TABLE 3
DESCRIPTIONS OF RESPONDENTS' LEVEL OF ACADEMIC PERFORMANCE IN MATHEMATICS

Scores	Frequency (f)	Percentage (%)	Verbal Description
90–100	0	0.00	Outstanding
85–89	33	12.27	Very Satisfactory
80–84	90	33.46	Satisfactory
75–79	146	54.28	Fairly Satisfactory
Total	269	100.00	

3. The Significant Relationship Between the Pupils' Problem-Solving Skills and Mathematics Academic Performance

Table 4 shows how problem-solving skills affect arithmetic performance. The table shows a strong positive link between problem-solving and academic achievement. The 0.6731 r-value shows this. This suggests that good problem-solving skills can boost academic performance. It may be deduced from this that having a high level of problem-solving skills can result in improvement in academic achievement.

Additionally, the p-value of 0.0001 is relatively smaller than 0.05. This confirms significantly the strong link between problem-solving and academic performance. Furthermore, the strong positive association between the two variables indicates that learners who can solve problem sets tend to achieve higher scores in the mathematics subject. The relationship between the ability to solve problems and academic achievement in mathematics is a topic that is frequently brought up in the field of foreign studies. One example is Schoenfeld (2018), who stated that the most important factor in determining whether or not a learner will be successful in mathematics is their strategic competency. Children who are able to solve problems effectively perform significantly better in mathematics than students who rely mostly on memorization strategies, according to research conducted by Rittle-Johnson and Schneider (2020).

As an additional point of interest, Star and Rittle-Johnson (2019) highlighted the fact that the integration of conceptual understanding and strategic problem-solving are both drivers of improved mathematical performance. One further thing that the authors

stressed was the fact that this was a point. The findings of the current study indicate that pupils who have superior problem-solving abilities attained better levels of academic accomplishment. These results are compatible with the conclusions of the study, which suggests that they are accurate.

Recent reports from all over the world have also provided evidence that this relationship is indeed present. Students that have higher-order problem-solving skills tend to perform better in mathematics examinations, as stated by the Organization for Economic Co-operation and Development (OECD). In the context of the local environment, Filipino students have reported findings that are comparable to those detailed in the previous paragraph. The outcomes of the research that was conducted by Reyes (2021) suggested that there is a strong and advantageous connection between the ability of pupils to answer mathematical problems and their overall academic performance. This was found to be the case. Similarly, Santos and Dizon (2022) discovered that students who consistently employed problem-solving procedures got greater scores in mathematics than students who had limited strategic skills. This was the case among students who were enrolled in mathematics classes. In spite of the fact that the pupils all possessed the same level of strategic aptitude, this was nevertheless the case.

TABLE 4
SIGNIFICANT RELATIONSHIP BETWEEN THE PUPILS' PROBLEM-SOLVING SKILLS AND MATHEMATICS ACADEMIC PERFORMANCE

Variable	r-value	p-value	Remarks
Problem-Solving Skills and Mathematics Academic Performance	0.6731	0.0001**	Significant

4. Proposed Intervention Plan to Improve Pupils' Mathematics Performance

I. Rationale

The study reveals that pupils generally displayed a high level of problem-solving skills in the Mathematics subject; however, the majority of them achieved only a fairly satisfactory performance in their mathematics academic work, with most of them surpassing the minimum passing grade. Moreover, a closer examination of the findings reveals that two (2) indicators registered the lowest mean scores, namely: the ability to solve math problems quickly and accurately and the use of mathematical tools such as calculators and rulers, implying that they struggle in procedure skills and familiarity of tools utilization which are essential components of mathematical performance a success. Thus, there is a necessity to implement a focused intervention plan to bridge the gap between pupils' conceptual understanding and their actual performance.

II. Objectives

1. To solve math problems quickly with accuracy;
2. To demonstrate proper use of mathematical tools; and
3. To improve their mathematics performance

III. Work Plan

Objectives	Activities / Strategies	Persons Involved	Resources Needed (Financial / Physical)	Time Frame	Expected Output
Improve pupil speed and accuracy in solving math problems	Conduct timed problem-solving drills (5–10 items per session); use step-by-step guided practice before timed activities	Mathematics Teachers, Pupils	Financial: Printing of drill sheets, bond paper, ink/toner. Physical: Worksheets, timer/stopwatch, flashcards, whiteboard, markers	Weekly (during Math period)	Pupils solve math problems faster with fewer errors
Strengthen procedural fluency	Implement daily Math warm-up exercises focusing on basic operations and word problems	Mathematics Teachers	Financial: Reproduction of warm-up materials, paper, ink. Physical: Warm-up activity sheet, board, markers, teacher-made learning materials	Daily (5–10 minutes)	Increased accuracy and confidence in computations

Enhance proper use of math tools	Conduct hands-on demonstration lessons on using rulers and calculators	Mathematics Teachers	Financial: Purchase or maintenance of rulers and calculators. Physical: Rulers, calculators, activity sheets, demonstration materials	Twice a month	Pupils correctly use math tools during activities
Encourage application of tools in problem-solving	Integrate tool-based Math tasks (measurement estimation, checking answers)	Mathematics Teachers, Pupils	Financial: Printing of task cards and activity sheets. Physical: Ruler, calculators, manipulatives, measurement tools, worksheets	Weekly	Increased frequency of tool usage in Math tasks
Reinforce mastery through enrichment	Provide enrichment and remedial worksheets focusing on speed, accuracy, and tool use	Mathematics Teachers	Financial: Photocopying/printing expenses, paper, ink. Physical: Enrichment worksheets, remedial materials, learners' notebooks, assessment tools	Monthly	Improved scores in quizzes and assessments

IV. Monitoring and Evaluation Plan

Activity	Monitoring Tool	Persons Involved	Time Frame
Timed problem-solving drill	Scores from timed exercises	Math Teachers	Weekly
Use of math tools during lessons	Observation checklist	Math Teachers	Ongoing
Remedial and enrichment activities	Pre-test and post-test results	Math Teachers	Monthly
Overall improvement in performance	Comparison of quarterly Mathematics grades	School Head, Teachers	End of quarter

IV. CONCLUSIONS AND RECOMMENDATIONS

This chapter presents the summary of findings, conclusions drawn, and recommendations offered.

Summary of Findings

Based on the analysis and interpretation of data, the following were the summary of findings:

1. The pupils demonstrated a high level of problem-solving skills, as supported by their composite mean score of 3.57.
2. The majority of the respondents, comprising 54.28% were categorized as “fairly satisfactory” level of academic performance in the mathematics subject. Meanwhile, only 12.27% performed at “very satisfactory.”
3. There was a strong positive correlation between pupils’ problem-solving skills and their academic performance in the mathematics subject, as evidenced by the computed r-value of 0.6731.
4. The proposed intervention plan was crafted to address the knowledge gaps between problem-solving skills and pupils’ mathematics performance.

Conclusions

Based on the summary of findings, the following conclusions were drawn:

1. The pupils displayed the necessary cognitive skills and confidence in solving mathematical tasks aligned with their grade level.
2. Most learners have achieved the minimum passing requirements in mathematics learning standards, although they are still struggling to reach higher proficiency levels, particularly in complex problems.
3. The learners who are usually good at solving mathematics problems usually obtain higher grades in mathematics.

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4. The proposed intervention plan aims to bridge the gap between pupils' conceptual understanding and their actual performance.

Recommendations

Given the preceding conclusions, the following recommendations are offered:

1. School Heads may lead and initiate the implementation of the enrichment programs through intervention classes, one-on-one tutorials, or focus-group discussions focused on improving pupils' mathematical problem-solving skills.
2. Mathematics teachers may use explicit problem-solving strategies to improve learners' mathematics performance.
3. Teachers may reinforce the integration of problem-solving activities in their mathematics lessons since these are strongly associated with learners' mathematics performance. Likewise, parents can help their children learn better by showing interest in their mathematics activities at home.
4. The proposed intervention plan may be adopted for school-based implementation to ensure its efficacy and replication.
5. Additional variables may be integrated to expound and substantiate the results of the present investigation. Likewise, factors affecting academic performance in mathematics may also be investigated.

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