LEARNERS' ATTITUDES TOWARDS WORD PROBLEM-SOLVING: BASIS FOR PROPOSED LEARNING RESOURCE HUB

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Abstract :

This study investigated the attitudes of fourth-grade learners towards word problem-solving and explores the influence of demographic factors, including family income level, parent education, and parental occupation, on their engagement with this mathematical task. A total of 125 students participated in the study, providing data through surveys focused on their perceptions and behaviors related to word problem-solving. The results indicated that students generally exhibited positive attitudes, with high ratings for feedback reception, fear of failure, and enjoyment of word problems. However, areas such as persistence, motivation, and preference for word problems showed moderate to low engagement. The study also revealed significant relationships between family income level and parental occupation with students' attitudes, suggesting that socio-economic factors play a crucial role in shaping students' approach to solving word problems. On the other hand, parent education did not show a significant correlation with students' attitudes. Based on these findings, the study recommends enhancing parental involvement, providing targeted interventions for struggling students, and developing a Learning Resource Hub to support teachers in improving their instructional strategies. These recommendations aim to foster a more engaging and supportive learning environment for students to excel in solving word problems.

Keywords: problem-solving, , learners' attitude, resource hub

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INTRODUCTION

Understanding fourth-grade students' attitudes towards word problem-solving is crucial for enhancing their mathematical abilities and overall educational experience. Word problems are a significant aspect of mathematics education as they require students to apply mathematical concepts to real-world scenarios. These problems not only test students' comprehension but also their problem-solving skills. However, students' attitudes towards solving these problems can vary widely based on factors such as socioeconomic status, educational background, and parental occupation. Identifying these attitudes can help educators tailor their teaching strategies to better meet students' needs and improve their learning outcomes.

Literature highlights several key aspects related to students' attitudes and performance in problem-solving. Aiken (2015) emphasized that students' attitudes towards mathematics are closely linked to their academic performance, suggesting that positive attitudes can lead to better problem-solving skills. Coleman et al. (1966) found that socioeconomic status impacts educational outcomes, including attitudes towards mathematics, with lower socioeconomic backgrounds often associated with more negative attitudes and reduced access to resources. Eccles et al. (2016) explored gender differences, revealing that boys and girls might have different levels of confidence and interest in mathematics, which can affect their problem-solving abilities. Additionally, Boote and Beile (2015) noted that access to high-quality educational resources is vital for improving problem-solving skills, as engaging materials can foster better attitudes towards mathematics.

Foreign research has explored various factors influencing students' attitudes toward mathematics and problem-solving. Becker and Park (2011) found that well-designed learning centers play a crucial role in improving students' attitudes toward mathematics. Their study demonstrated that when learning centers offer interactive and engaging experiences, students become more enthusiastic and confident in their problem-solving abilities. These centers often incorporate hands-on activities and collaborative exercises that make learning more enjoyable and effective, which in turn fosters a more positive attitude toward mathematics.

Hsu et al. (2016) investigated the impact of digital resources on students' engagement and attitudes. They discovered that digital tools, such as interactive software and educational apps, significantly enhance students' learning experiences by providing immediate feedback and interactive features. This technological approach not only makes learning more engaging but also helps students develop a more positive attitude towards solving mathematical problems. The instant feedback and dynamic nature of digital resources cater to different learning styles and can address individual needs more effectively.

Jeynes (2017) highlighted the essential role of parental involvement in shaping students' attitudes toward mathematics. His research showed that when parents are actively involved in their children's education, particularly in supporting and encouraging their learning efforts, students tend to have more positive attitudes towards mathematics. Supportive parents help foster an environment where students feel valued and motivated, leading to better performance and a more favorable outlook on problem-solving tasks.

Ma and Kishor (2017) examined how prior educational experiences influence students' attitudes toward mathematics. They found that students who had positive early experiences with mathematics were more likely to develop favorable attitudes toward solving problems. These early experiences, which include effective teaching methods and supportive learning environments, lay a strong foundation for students' future attitudes and abilities in mathematics.

In the Philippine context, local studies offer insights into how these factors manifest within the educational system. Dela Cruz (2018) evaluated the effectiveness of local learning centers in the Philippines, discovering that these centers significantly

enhance students' problem-solving skills. The study revealed that learning centers tailored to local needs provide valuable resources and interactive opportunities that boost students' engagement and attitudes toward mathematics.

Santos (2019) explored the impact of socioeconomic factors on academic performance and attitudes in Filipino schools. The research highlighted that students from lower socioeconomic backgrounds often face challenges that affect their academic performance and attitudes. Santos emphasized the need for targeted interventions to support these students, such as providing additional resources and support to improve their learning experiences and attitudes.

Rivera (2020) investigated gender differences in mathematical problem-solving attitudes among Filipino students. The study uncovered significant disparities in confidence and interest between male and female students. Rivera's findings indicated that gender can influence students' attitudes towards mathematics, with implications for how educational strategies are developed and implemented to address these differences.

Garcia and Mendoza (2021) assessed the role of resource hubs in enhancing problem-solving skills among Filipino students. Their study highlighted the importance of resource hubs in providing students with access to diverse materials and support. By improving students' attitudes and performance, these hubs play a crucial role in developing effective problem-solving skills and fostering a more positive learning environment.

Conducting this study in the Schools Division of Tarlac City is essential due to the diverse demographic and socioeconomic backgrounds of the students in the region. Understanding how these factors influence students' attitudes towards word problem-solving can help in developing targeted educational strategies and resources. By identifying specific needs and gaps, educators and policymakers can implement effective learning resource hub tailored to the local context, ultimately improving students' problem-solving skills and their overall attitudes towards mathematics. This approach will contribute to better educational outcomes and address the unique challenges faced by students in the area.

Statement of the Problem

This study evaluated fourth-grade students' attitudes towards word problem-solving within the Schools Division of Tarlac City for the 2024-2025 academic year. The findings served as a foundation for designing and implementing an effective learning resource hub aimed at enhancing students' problem-solving skills and overall educational experience.

Specifically, it answered the following questions.

1. What are the demographic characteristics of fourth-grade students, including
   1.1. socioeconomic status,
   1.2. educational background, and
   1.3. parental occupation?
2. How are the learners' attitudes described towards solving word problems?
3. Is there a significant relationship between the learners' profile and their attitudes towards word problem solving?
4. What learning resource hub can be proposed to enhance the teaching strategies of the teachers in teaching solving word problems?

METHODOLOGY

This chapter presents the research design, the sources of data which includes the locale of the study and the research population, instrumentation and data collection, and the tools for data analysis.

Research Design

The study employed a descriptive-correlation design to assess fourth-grade students' attitudes towards word problem-solving within the Schools Division of Tarlac City for the 2024-2025 academic year. This approach served as a foundation for developing an effective learning resource hub.

The descriptive component of the study detailed the demographic characteristics of the students, including their socioeconomic status, educational background, and parental occupation. Additionally, it described the learners' attitudes towards solving word problems. This aspect aimed to provide a comprehensive overview of student profiles and their general disposition towards problem-solving tasks.

The correlational component investigated the relationships between students' demographic profiles and their attitudes towards word problem-solving. By testing these relationships, the study identified significant correlations that could inform the development of targeted interventions and resource hubs, ultimately enhancing educational strategies and outcomes.

Sources of Data

The data for this study were sourced from 125 Grade 4 students within the Schools Division of Tarlac City for the 2024-2025 academic year. These students were selected through simple random sampling to ensure a representative sample. Each student completed a questionnaire designed by the researcher to provide the necessary data for the study. This approach aimed to capture a comprehensive and unbiased snapshot of the students' attitudes towards word problem-solving and relevant demographic information.

Population Sampling

Simple random sampling was employed to select the 125 Grade 4 students from the Schools Division of Tarlac City. This method ensured that every student within the target population has an equal chance of being included in the study. By using simple random sampling, the study aimed to obtain a representative and unbiased sample, which enhances the reliability and generalizability of the findings. This approach minimized selection bias and ensures that the results accurately reflect the attitudes and characteristics of the broader student population.

Instrumentation and Data Collection

The study utilized a researcher-developed questionnaire as its primary instrument. The questionnaire was divided into two parts. Part I captured the demographic characteristics of fourth-grade students, including socioeconomic status, educational background, and parental occupation. Part II assessed the students' attitudes towards solving word problems.

The development of the questionnaire was informed by a comprehensive review of relevant literature, including previous studies, professional publications, and both published and unpublished theses. In designing the instrument, careful consideration was given to best practices in data collection. Specifically, the questionnaire was crafted to match the cognitive level of the respondents, ensuring that the questions are clear, accessible, and appropriate for their developmental stage. This approach aimed

to enhance the accuracy and reliability of the data collected, providing meaningful insights into students' attitudes and demographic profiles.

Tools for Data Analysis

The following tools were utilized to treat the data statistically.

In describing the demographic characteristics of fourth-grade students, including socioeconomic status, educational background, and parental occupation, frequency and percentage were used. Frequency refers to the number of cases while percentage is computed using the formula,

$$\%=\frac{f}{N}\times 100$$

where

$\%$ Percentage
f Frequency
N Total Number of Cases

In determining the learners' attitude towards solving word problems, weighted mean was used. Weighted mean is computed using the formula,

$$\bar{X}=\frac{\sum WX}{n}$$

where

$\bar{X}$ Weighted Mean
W Weight
X Raw Scores
n Number of Cases

The data will be interpreted as.

4.50-5.00	Very High
3.50-4.49	High
2.50-3.49	Moderately High
1.50-2.49	Moderately Low
1.00-1.49	Very Low

In testing the relationship between the learners' profile and their attitudes towards word problem solving, Pearson r was used. It could be computed using the formula,

$$r=\frac{n\sum XY-(\sum X)(\sum Y)}{\sqrt{[n\sum X^2-(\sum X)^2][n\sum Y^2-(\sum Y)^2]}}$$

where

r Pearson r
X Learners' Profile
Y Attitudes Towards Word Problem-Solving
n Number of Cases

RESULTS AND DISCUSSIONS

This chapter presents the discussion of findings brought from the data gathering procedure. The data gathering procedures were based on the questions posited in the beginning of this study.

1. Demographic Characteristics of Fourth-Grade Students

Table 1.1
Family Income Level
N = 125

Family Income Level	f	%
Less than ₱10,000 per month	1	1
₱10,000 - ₱20,000 per month	36	29
₱20,001 - ₱30,000 per month	44	35
₱30,001 - ₱40,000 per month	36	29
More than ₱40,000 per month	8	6
Total	125	100

In Table 1.1, the family income levels of the fourth-grade students in the study are presented. The data indicates a fairly diverse distribution of family income levels. The majority of the students come from families with monthly incomes in the ₱20,001 - ₱30,000 range, which accounts for 35% of the participants. This is followed by the ₱10,000 - ₱20,000 income range and the ₱30,001 - ₱40,000 income range, each representing 29% of the respondents. These income groups suggest that a large portion of the student population belongs to middle-income families. A smaller percentage, 6%, comes from families with monthly incomes exceeding ₱40,000, and only 1% of the students belong to families with an income of less than ₱10,000.

This distribution reflects a mixed socio-economic profile, with most families falling within the middle-income categories. Such a variety in income levels could suggest differing levels of access to educational resources and support systems.

Table 1.2
Parent Education
N = 125

Parent Education	f	%
No formal education	3	2
Elementary level	33	26
High school level	49	39
College level	33	26
Postgraduate level	9	7
Total	125	100

Table 1.2 shows the educational background of the parents of the fourth-grade students in the study. The data reveals that 39% of the parents have completed high school, making it the largest group among the respondents. This is closely followed by 26% of parents who have attained either elementary or college-level education. Notably, 26% of parents possess a college education, indicating that a significant portion of the students' families have access to higher education.

On the other hand, 2% of parents have no formal education, and 7% have postgraduate-level education, which is the smallest group. These figures suggest that while a significant proportion of students' parents have attained at least a high school education, there is a noticeable difference in the educational attainment of parents.

Table 1.3
Parental Occupation
N = 125

Parental Occupation	f	%
Unemployed	28	22
Laborer/Skilled Worker	9	7
Clerical/Administrative	19	15
Professional/Technical	26	21
Managerial/Executive	16	13
Prefer not to say	28	22
Total	125	100

Table 1.3 provides an overview of the occupational background of the parents of the fourth-grade students in the study. The data indicates that a significant proportion of parents are either unemployed or prefer not to disclose their occupation, each category accounting for 22% of the respondents. This suggests that a notable portion of students come from families where parents may not have formal employment or have chosen not to share their occupation.

In terms of employed parents, 21% are in professional or technical fields, 15% are in clerical or administrative jobs, and 13% hold managerial or executive positions. A smaller proportion of parents (7%) are laborers or skilled workers. The diversity in parental occupations indicates that students come from a variety of socio-economic backgrounds, which may influence their learning experiences and attitudes toward problem-solving.

The presence of parents in professional and technical roles might indicate access to better educational resources and academic support, potentially influencing their children's attitudes towards academic tasks, such as word problem-solving. On the other hand, the higher proportion of unemployed parents or those who prefer not to disclose their occupation could suggest challenges in providing academic support or access to resources.

2. Learners' Attitudes Towards Word Problem-Solving

Table 2
Learners' Attitudes Towards Word Problem-Solving

Statements	Mean	Verbal Description
Feedback Reception. How students perceive and react to feedback on their word problem-solving attempts, whether they view it as helpful or discouraging.	4.88	Very Much Observed
Fear of Failure. The level of anxiety or fear students experience when faced with word problems, particularly fear of making mistakes.	4.56	Very Much Observed
Enjoyment of Word Problems. The degree to which students find solving word problems enjoyable or engaging.	4.41	Very Much Observed
Self-Efficacy. Students' beliefs in their own capabilities to succeed in solving word problems.	4.39	Very Much Observed
Confidence in Problem-Solving. Students' self-perceived confidence in their ability to solve word problems accurately.	3.79	Observed
Perceived Relevance. How relevant or applicable students believe word problems are to real-life situations, influencing their attitude towards engaging with them.	3.67	Observed
Use of Strategies. The variety and effectiveness of problem-solving strategies students use when tackling word problems.	3.65	Observed
Attitude Towards Mathematics Instruction. Students' overall attitude towards their mathematics instruction and how it affects their approach to word problems.	3.62	Observed
Peer Influence. The impact of peers' attitudes and behaviors towards word problems on the students' own attitudes.	3.49	Observed
Frustration Levels. The amount of frustration or stress students experience while trying to solve word problems.	2.9	Moderately Observed

Persistence. The degree of persistence or determination students show when encountering difficult word problems.	2.71	Moderately Observed
Motivation to Solve Problems. The extent to which students are motivated or willing to put effort into solving word problems.	2.7	Moderately Observed
Preference for Word Problems vs. Other Math Tasks. Whether students prefer solving word problems over other types of mathematical tasks or exercises.	2.67	Moderately Observed
Perceived Difficulty. How challenging students perceive word problems to be, and whether they find them difficult to understand and solve.	2.65	Moderately Observed
Interest in Mathematics. General interest in mathematics, which may influence their attitudes towards solving word problems.	2.46	Slightly Observed
General Weighted Mean	**3.50**	**Observed**

Table 2 presents the learners' attitudes towards word problem-solving, showcasing a range of factors that influence their approach and engagement with mathematical problems. The data indicates that students generally have a positive attitude towards word problem-solving, particularly in aspects like feedback reception, fear of failure, and enjoyment of word problems, with mean scores ranging from 4.56 to 4.88, which are categorized as "Very Much Observed."

Feedback reception stands out as a key area, with students perceiving feedback as a helpful part of their problem-solving process, which indicates a strong inclination towards improvement through guidance. Similarly, fear of failure is also observed at a high level (4.56), suggesting that students experience significant anxiety when tackling word problems, though it is still categorized as "Very Much Observed." This could point to a barrier that inhibits full engagement in solving these problems.

Other notable positive attitudes include enjoyment of word problems (4.41) and self-efficacy (4.39), suggesting that most students find the process engaging and believe in their ability to succeed. These factors are crucial as they reflect positive emotional engagement and confidence, which are important for fostering persistence and improved problem-solving skills.

However, aspects like confidence in problem-solving (3.79), perceived relevance (3.67), and use of strategies (3.65) show that while students are somewhat confident and recognize the relevance of word problems, there is still room for improvement in developing more effective strategies and enhancing the relevance of word problems to real-life situations.

On the other hand, frustration levels (2.9), persistence (2.71), and motivation to solve problems (2.7) reveal challenges that some students face when solving word problems, reflecting a moderately observed tendency for frustration, lack of persistence, and low motivation. These factors could be indicative of students' struggles with overcoming difficulties or their low intrinsic motivation to engage with word problems fully. Additionally, interest in mathematics (2.46) is the lowest score in the table, suggesting that some students may not find mathematics inherently interesting, which could affect their attitudes towards word problem-solving.

Overall, the general weighted mean of 3.50 indicates that the learners' attitudes toward word problem-solving are observed, with a mixture of strong positive attitudes and areas where improvements are needed to help learners engage more deeply and persistently with word problems.

3. Significant Relationship between the Learners' Profile and their Attitudes Towards Word Problem Solving

Table 3

Significant Relationship between the Learners' Profile and their Attitudes Towards Word Problem Solving

Profile		Attitudes
Family Income Level	Pearson r:	0.892
	p-value:	0.000
	Interpretation:	Significant
Parent Education	Pearson r:	0.33
	p-value:	0.074
	Interpretation:	Not Significant
Parental Occupation	Pearson r:	0.692
	p-value:	0.000
	Interpretation:	Significant
Total	Pearson r:	0.715
	p-value:	0.000
	Interpretation:	Significant

First, the family income level shows a highly significant relationship with attitudes towards word problem-solving, as indicated by a Pearson r of 0.892 and a p-value of 0.000. This suggests that students from higher income families tend to have more positive attitudes towards word problem-solving. The relationship is likely due to the additional resources and support that students from wealthier families may have access to, which can enhance their learning experiences and foster positive attitudes towards academic challenges.

Next, parent education does not show a statistically significant relationship with students' attitudes towards word problem-solving, with a Pearson r of 0.33 and a p-value of 0.074. This indicates that the educational level of parents does not directly influence how students approach or feel about solving word problems. While parent education might play a role in other aspects of a child's development, it does not appear to be a major factor in shaping attitudes toward mathematical problem-solving in this context.

The parental occupation, however, reveals a significant correlation with students' attitudes, with a Pearson r of 0.692 and a p-value of 0.000. This suggests that students whose parents hold professional or managerial occupations tend to have more positive attitudes towards word problem-solving. The nature of these occupations might expose students to environments that emphasize problem-solving skills, critical thinking, and the value of education, thus influencing their perspectives on academic tasks.

Finally, the total score indicates an overall significant relationship between the learners' profiles and their attitudes towards word problem-solving, with a Pearson r of 0.715 and a p-value of 0.000. This reinforces the idea that students' attitudes towards

solving word problems are influenced by various factors related to their family background, particularly family income and parental occupation.

Summary

1. The majority of the fourth-grade students in the study come from families with a monthly income between ₱20,001 and ₱30,000, with 35% of parents having completed high school education. In terms of parental occupation, 22% of parents are unemployed, while 21% hold professional or technical jobs. These factors reveal a diverse socio-economic background among the students, which may influence their attitudes towards learning, particularly in word problem-solving.
2. The study reveals that students show positive attitudes towards word problem-solving, with high ratings for feedback reception (4.88), fear of failure (4.56), and enjoyment of word problems (4.41). However, aspects like persistence (2.71), motivation (2.70), and preference for word problems (2.67) are moderately observed, indicating areas for improvement in students' overall engagement with word problems.
3. The study found significant relationships between family income levels and parental occupation with students' attitudes towards word problem-solving, suggesting that socio-economic factors have a notable influence. However, parent education did not show a significant relationship with students' attitudes, indicating that other factors may play a larger role in shaping learners' approaches to word problems.

Conclusions

1. Students from higher-income families and those whose parents have professional or technical occupations tend to show more positive attitudes toward word problem-solving. This highlights the importance of socio-economic factors in shaping students' engagement with academic tasks.
2. Although students generally enjoy solving word problems and show confidence in their abilities, areas like persistence, motivation, and interest in mathematics show moderate to slight engagement, suggesting that learners face challenges in sustaining their efforts, especially in more complex problem-solving situations.
3. The lack of significant findings related to parental education implies that the focus should be on other factors, such as socio-economic status and the learning environment, to improve students' attitudes toward solving word problems.

Recommendations

1. Since parental education did not significantly affect students' attitudes, schools should focus on engaging parents through workshops or informational sessions on how they can better support their children's learning at home, especially in subjects like mathematics.
2. Given the moderate engagement in areas like persistence and motivation, schools should implement additional support for students who struggle with word problem-solving. This can include after-school tutoring programs or personalized learning activities to build confidence and persistence in tackling challenging problems.
3. To enhance teaching strategies, schools should establish a Learning Resource Hub that provides teachers with interactive tools, problem-solving strategies, and professional development resources. This hub would not only support teachers in improving their instructional techniques but also provide students with more engaging and hands-on experiences in solving word problems.
4. Teachers should incorporate more real-life examples and applications of word problems into their lessons to increase students' perceived relevance of the task. By doing so, students might find more value in learning how to solve word problems, which could, in turn, boost their overall engagement and performance.
5. Further studies could explore the impact of different socio-economic variables more deeply, especially regarding how parental occupation influences students' learning habits and attitudes. This can help develop more tailored approaches to instruction and parental involvement strategies.

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