

Difficulties in Solving Mathematical Problems and Pupils' Performance

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Abstract

Mathematics helps people to look forward, plan and decide properly to solve each problem in daily life. The study focused on finding (1) difficulties in solving mathematical problems, (2) the pupils' performance, and (3) the relationship between the difficulties in solving mathematical problems and their Mathematics performance. The respondents were the Grades IV pupils of the three (3) schools in West 2 District, Division of Gingoog City. The instrument used was a researcher-made questionnaire. It employed the descriptive-correlational research design. The statistical tools were the Mean, Standard Deviation, and Pearson Correlation Coefficient. The study led to the findings that the difficulties in solving mathematical problems in terms of comprehension, mathematical skills, and attitude toward Mathematics were Frequent while the pupils' performance in Mathematics was at a Very Satisfactory level. The level of comprehension was the highest. Comprehension, mathematical skills and attitude towards math were Significant in pupils' Mathematics performance. The encouragement and guidance of the teachers and parents are important for the pupils to love and have a positive attitude toward Mathematics. Teachers may apply varied math learning interventions for the pupils and they should also provide numeracy materials. The school administrators should also give emphasis and importance to learning Mathematics. Lastly, pupils should inculcate in their minds that Mathematics is part of the curriculum and in their lives. Thus, it must be given importance.

Keywords: Mathematical Problems, Pupils' Performance

1. Introduction

Mathematics can be applied to represent, evaluate, and solve mathematical problems. Each challenge in Mathematics gives an additional value to life in which pupils know better the world full of problems that need to be solved by adding, subtracting, multiplying, dividing, and most of all, knowing its life relationship. However, most of the learners in many public schools find it challenging to solve problems in Math subject, as recorded in the local and national achievement examination outcomes.

According to Ardo et al.(2020), nowadays, most pupils are experiencing difficulties in solving mathematical problems; this trend is alarming because it affects their academic performance. The (TIMSS) Trends in International Mathematics and Science Study is a global comparison research that persuades and evaluates trends in Mathematics and Science achievement in the fourth grade every four years. TIMSS is designed to largely align with curricula for Math and Science in the accompanying educational systems, thus representing what students are learning in the classroom. By 2019, the Philippines scored 297 in Math and 249 in Science, by the International Association for the Evaluation of Educational Achievement (IAEEA). According to TIMSS, the Philippines ranks last among 58 countries in grade 4 math and Science only one percent of Filipino students met the high benchmark in Mathematics, which means that students at this level apply conceptual understanding to solve problems and about six percent of students met the intermediate standard, where the students at this level can apply basic mathematical knowledge in simple situations, and 19 percent of the students finished in the low benchmark, which shows they thoroughly answered some basic mathematical ability. Filipino children are low comprehension of Mathematics in terms of applying conceptual understanding to solve mathematical problems. The Department of Education is mandated to

improve the quality and effectiveness of education in the country.

Moreover, mathematical problems are part of every person's daily life, in which it is beneficial to face life's challenges. Pupils find it hard to get through Mathematics when they do not understand its meaning and importance towards dependent living. According to Gurat (2018), the main goal in teaching mathematical problem-solving is for the students to develop a generic ability to solve real-life problems and to apply Mathematics in real-life situations. Pupils with the abilities and skills to solve mathematical problems are those pupils who understand well and comprehend mathematical concepts and learn to love Mathematics with the support of the techniques presented by the teachers. Furthermore, according to Klang et al.(2021) appears to be important to create opportunities for peer contact and friendships when the approach is used in mathematical problem-solving activities.

Meanwhile, the difficulties in solving mathematical problems may affect the performance of the pupils in school. Every day, each pupil faces challenging tasks, and it is related to the content of the subject. Mathematical problem-solving difficulties are apparent inside the classroom. The most common among these is comprehension. According to Powell et al.(2020), third-grade students receive instruction and practice on Mathematics vocabulary, and no student in our sample scored a perfect score on the mathematics-vocabulary measure. Some pupils are obstructed from solving mathematical problems as they do not understand them.

Therefore, teachers might need a more direct approach when explaining the Mathematics-vocabulary terminology used in the classroom. According to Marwazi et al. (2019), cognitive style is important to be considered to determine the teaching model suitable for students to solve mathematical problems. The pupils' knowledge are restricted because they do not exercise or neglect mathematics subject in their lives. Hence, the pupils' performance can be strained by these difficulties. Ardo et al. (2020) students cannot solve mathematical problems. They cannot understand the issues in the examination and become unable to express themselves and lose their confidence, resulting in frequent absences. Pupils should practice learning Mathematics whether they like it or not, and it is part of the curriculum and also affects their performance in school and should know how to solve mathematical problems to make them easier to solve in daily circumstances. It is also vital in their daily lives because it is related to day-to-day living to solve personal problems that come to their lives someday. Thus, this study examined the difficulties to solve mathematical problems and the performance of the pupils in West District II, Division of Gingoog City.

This research study is anchored on the Jean Piaget's cognitivist theory. The pupils' difficulties to solve problems in Mathematics lesson rely on their low comprehension skills and abilities. In connection with this study, Pupils should have the skills and comprehension to understand and solve mathematical problems. Pupils not skilled in solving math will result in a negative attitude affecting their academic performance in school.

The Cognitive Psychology Approach emphasizes understanding and solving the mathematical problem. Pupils must apply cognitive strategies and learn from simple to understand complex mathematical problems. Pre-skills play a significant role in solving mathematical problems; thus, teachers should modify their instructional strategies to the various pre-skills that the pupils possess. Pupils become more capable and effective at learning Mathematics when they develop their conceptual and procedural skills.

The theories mentioned above provide a framework for the study's research. According to Hakim et al. (2021), conceptual and procedural knowledge in mathematics education is necessary, especially in solving mathematical problems. According to Mingke et al. (2019) imply that the problem is not with the teaching skills and the instructional materials used but with the pupils' attitude towards mathematical word problem-solving. Accordingly, Jumawin (2019) problem-solving and reading comprehension are two skills that students should develop to improve their Math performance. Pupils need to develop the concepts and procedures to solve problems in Mathematics lesson, the fundamental levels necessary for developing immense skills and knowledge in mathematical problem. Developing higher skills and knowledge in Mathematics lesson is vital to solve problems in Mathematics, and in turn, increases pupils' excellence.

2. Methodology

The researcher used descriptive-correlational methods of research to attain the objective set in this study. Specifically, a descriptive-correlational design describes the variables and the relationships that occur naturally between and among them (Noah, 2021). It is used to gather measurable information that can be used for statistical inference on the target respondents through data analysis. The descriptive method is a fact-finding study with an adequate and accurate interpretation of the findings. It describes the emphasis of research on current conditions, situations, or any phenomenon.

The descriptive research method through the questionnaire as the data gathering instrument was utilized to find answers to the problems imposed in the study. This research method was worn to know the difficulties to solve problems in Mathematics and the performance of the grade IV pupils. This provides the logical basis for deciding how the data collection was carried out, the analysis proceeds, and how the data was interpreted.

The researcher used descriptive statistics suchlike Frequency, Percentage, Mean and Standard Deviation to describe the variables of the study. Pearson Correlation was applied to determine the significant relationship between the difficulties in solving mathematical problems and pupils' performance.

3. Results and Discussions

Problem 1. What is the level of pupil's difficulties in solving a mathematical problem in terms of:

- 1.1 Comprehension;
- 1.2 Mathematical Skills; and
- 1.3 Attitude towards Math?

Table 1 on the next page exhibits the difficulties in solving mathematical problems on comprehension. It has overall Mean of 4.04 with SD =1.15, which is described as Frequent and interpreted as Observed Most of the Time. This implies that the pupils have difficulty comprehending or understanding the concepts or examples in Mathematics dealing with mathematical problems. In Mathematics, there are words that have different meanings and uses than in other subjects making it more difficult and challenging for the pupils. It is important that vocabulary skills and even reading and comprehension skills must be mastered. When pupils go from learning to read to reading to learn, they pass a crucial educational turning point.

The door to learning new things is opened by strong reading comprehension. A child's scholastic performance in all disciplines, where reading is the primary source of knowledge, including Mathematics, benefits from having better reading comprehension. Children need to understand how to solve linguistic puzzles in situations that have relevance to them if they are to learn Mathematics (Escudero, 2021). Thus, comprehension skills is a must in learning Mathematics because understanding, problem-solving, logical thinking, and effective communication are made possible by comprehension abilities, which are essential for studying Mathematics. Pupils can more successfully navigate the complexity of Mathematics and provide a strong mathematical foundation for future study and application by developing good comprehension abilities.

In the same table, the indicator I can identify the factors of a given number up to 100 got the highest Mean of 4.45 with SD = 0.94, which is described as Always and interpreted as At all Times. This implies that the pupils can solve problems by finding factors in numbers ranging from 1 to 100. This can be a positive sign of pupils showing interest in and progress in Mathematics. It is important to master the basic concepts in preparation for the higher and much more challenging topics. A factor is a number that completely divides another number. To put it another way, if adding two whole numbers of results in a product, then the numbers we add are factors of the product because the product is divisible. This concept is also essential in mastering multiplication and division operations, which is a positive indication that the pupils are learning the concepts in Mathematics (Ampo, 2022).

Table 1
Difficulties in Solving Mathematical Problems on Comprehension

	INDICATORS	Mean	SD	Description	Interpretation
1.	I can identify the factors of a given number up to 100.	4.45	0.94	Always	At all Times
2.	I can differentiate prime from composite numbers.	3.96	1.21	Frequent	Observed Most of the Time
3.	I can find the common factors, greatest common factor (GCF), common multiples and least common multiple (LCM) of two numbers using the following methods: listing, prime factorization, and continuous division.	3.86	1.21	Frequent	Observed Most of the Time
4.	I can change improper fraction to mixed numbers and vice versa.	3.92	1.09	Frequent	Observed Most of the Time
5.	I can visualize addition and subtraction of similar and dissimilar fraction.	3.80	1.22	Frequent	Observed Most of the Time
6.	I can visualize decimal numbers using models like blocks, grids, number lines and money to show the relationship to fractions.	4.02	1.11	Frequent	Observed Most of the Time
7.	I can rename decimal numbers to fractions, and fractions whose denominators are factors of 10 and 100 to decimals.	3.99	1.17	Frequent	Observed Most of the Time
8.	I can read decimal numbers through hundredths	3.98	1.17	Frequent	Observed Most of the Time
9.	I can show decimal numbers to the nearest whole number and tenth.	3.93	1.13	Frequent	Observed Most of the Time
10.	I can recognize decimal numbers.	4.05	1.26	Frequent	Observed Most of the Time
	Overall Mean	4.04	1.15	Frequent	Observed Most of the Time

Note: 4.21-5.00 Always 3.41-4.20 Frequent 2.61-3.40 Sometimes 1.81-2.60 Seldom 1.00-1.80 Never

Meanwhile, the indicator I can visualize addition and subtraction of similar and dissimilar fractions got the lowest Mean score of 3.80 with SD = 1.22, which is described as Frequent and interpreted as At all Times. This means that the pupils were able to have a better acquisition of knowledge in understanding concepts on basic operations and fractions. These concepts form part of the important matters that the pupils must understand and master as they are part of the basic skills and concepts. Gimodo (2022) claimed that concepts on addition and subtraction operations, as well as fractions, are essential part of the development of basic skills in Mathematics. Therefore it must be given attention.

Table 2 presents the difficulties in solving mathematical problems on mathematical skills. It has an overall Mean of 3.97 with SD = 1.16, which is described as Frequent and interpreted as Observed Most of the Time. Moreover, all the indicators were rated as frequent. This implies that the pupils have difficulty in terms of mathematical skills they can manage it and still perform better. Mathematics is about patterns. If the pupils discover the pattern in solving the problems involving the concepts of the lessons being presented, it will not be difficult for them to solve and master it. Mathematical abilities are seen as a separate realm that consists of verbal (numerical understanding, counting, calculating, and reasoning) and nonverbal (math notation, reasoning in time and space) components. Each level of rising ability builds on a prior knowledge of a lower-level primitive since mathematical skill development is hierarchical in nature. Therefore, it is crucial that students master this ability in order to tackle much more difficult arithmetic problems (Luculano et al., 2018).

In the same table, the indicator I can round decimal numbers to the nearest whole number and tenth got the highest Mean score of 3.99 with SD = 1.27, which is described as Frequent and interpreted as Observed Most of the Time. This implies that the pupils are able to understand the concept of rounding up or down of numbers. This is an important concept, especially in division operations wherein there are numbers when divided, which would result to a series on numbers after the decimals, and the solver is asked to apply

rounding up or down of numbers as the final answer. Quinain (2022) stressed that the pupils need to learn concepts on rounding up or down on numbers as this concept is useful in computing or dividing numbers with non-terminating and repeating set of numbers as answers. It will help the pupils in converting much shorter answers.

Table 2
Difficulties in Solving Mathematical Problems on Mathematical Skills

INDICATORS	Mean	SD	Description	Interpretation
1. I can write a given number as a product of its prime factors.	3.95	1.01	Frequent	Observed Most of the Time
2. I can solve real-life problems involving GCF and LCM of 2 given numbers.	3.94	1.04	Frequent	Observed Most of the Time
3. I can change fractions to lowest forms.	3.96	1.22	Frequent	Observed Most of the Time
4. I can solve subtraction of a fraction from a whole number.	3.96	1.10	Frequent	Observed Most of the Time
5. I can perform addition and subtraction of similar and dissimilar fractions	3.98	1.13	Frequent	Observed Most of the Time
6. I can solve routine and non-routine problems involving addition and/or subtraction of fractions using appropriate problem-solving strategies and tools.	3.98	1.15	Frequent	Observed Most of the Time
7. I can give the place value and the value of a digit of a given decimal number through hundredths.	3.97	1.15	Frequent	Observed Most of the Time
8. I can write decimal numbers through hundredths	3.97	1.24	Frequent	Observed Most of the Time
9. I can round decimal numbers to the nearest whole number and tenth.	3.99	1.27	Frequent	Observed Most of the Time
10. I can compare and arrange decimal numbers.	3.97	1.29	Frequent	Observed Most of the Time
Overall Mean	3.97	1.16	Frequent	Observed Most of the Time

Note: 4.21-5.00 Always 3.41-4.20 Frequent 2.61-3.40 Sometimes 1.81-2.60 Seldom 1.00-1.80

Meanwhile, the lowest rated indicator is I can solve real-life problems involving GCF and LCM of 2 given numbers with the Mean score of 3.94 with $SD = 1.04$, which is described as Frequent and interpreted as Observed Most of the Time. This implies that the pupils can perform operations on GCF and LCM lessons with the applications of real-life situations. Applications of real life are important for the learners to connect the lessons to their daily lives and better appreciate the lessons. It is important for the teachers to do this kind of activity to help the pupils appreciate their studies in Mathematics meaningfully. Quinain (2022) claimed that answering problems about real-life situations inspires the learners to solve and calculate as they feel that they can relate to it. They feel that when they can solve it, they can also overcome obstacles in life.

Table 3 shows the difficulties in solving mathematical problems on attitude towards Math. It has an overall Mean of 3.97 with $SD = 1.13$, which is described as Frequent and Interpreted as Observed Most of the Time. Moreover, all the indicators were rated as frequent. This implies that the pupils have a high attitude toward Mathematics despite difficulties in solving mathematical problems. Attitude is an important factor in learning Mathematics as it will help the pupils develop positive behavior and disposition towards Mathematics. Thus, a positive attitude must be developed first. A favorable attitude toward math enhances the mind's memory and foresee math fulfillment, regardless of factors like a child's intelligence. The hippocampus, an important memory region in the brain, appears to work better when kids have a favorable attitude toward math, according to a study of elementary school pupils, when they are undertaking arithmetic activities. Teachers have long noticed that students who are more interested in Math and believe they are better at it do better on math tests. It is unclear, nevertheless, whether this attitude is only a reflection of other abilities, such as greater intelligence (Digitale, 2018).

Table 3
 Difficulties in Solving Mathematical Problems on Attitude Toward Math

	INDICATORS	Mean	SD	Description	Interpretation
1.	I like mathematics	3.98	1.19	Frequent	Observed Most of the Time
2.	Studying mathematical problems excites me.	3.97	1.11	Frequent	Observed Most of the Time
3.	I can learn more about and understand solving mathematical problem.	3.97	1.01	Frequent	Observed Most of the Time
4.	I want to learn more about how to solve mathematical problems.	3.97	1.16	Frequent	Observed Most of the Time
5.	It will help me earn a living by understanding and solving mathematical problem.	3.97	1.08	Frequent	Observed Most of the Time
6.	I feel confident expressing my thoughts in Mathematics.	3.96	1.18	Frequent	Observed Most of the Time
7.	You can be imaginative and independently discover things in Math.	3.97	1.17	Frequent	Observed Most of the Time
8.	I feel really satisfied after completing Math problem.	3.97	1.11	Frequent	Observed Most of the Time
9.	In a math class makes me more happier.	3.97	1.20	Frequent	Observed Most of the Time
10.	I want to improve my mathematical capabilities.	3.97	1.12	Frequent	Observed Most of the Time
	Overall	3.97	1.13	Frequent	Observed Most of the Time

Note: 4.21-5.00 Always 3.41-4.20 Frequent 2.61-3.40 Sometimes 1.81-2.60 Seldom 1.00-1.80 Never

In the same table, the indicator I like Mathematics got the highest Mean score of 3.98 with SD = 1.19, which is described as Frequent and interpreted as Observed Most of the Time. This implies that the pupils have a positive disposition towards the subject. Developing positive towards the subject will allow the pupils to have a positive mindset towards it and will lead to not easily giving up on challenging samples to solve. Hewer (2022) stated that children can start developing a good attitude toward math at a very young age, setting them up for academic success. With the right practice, instruction, motivation, and support, every youngster can succeed in Arithmetic. Parents are children's first teachers, and how they behave and feel about arithmetic might affect how they perceive it. Starting at a very young age, parents must inspire and promote a good attitude toward arithmetic outside of the classroom. Children must understand how math is relevant to daily life. Children can benefit from their parents' involvement in everyday math-related tasks like cooking, keeping track of time, spotting patterns in nature, and comparing grocery store pricing.

Meanwhile, the indicator I feel confident expressing my thoughts in Mathematics got the lowest Mean score of 3.96 with SD = 1.18, which is described as Frequent and interpreted as Observed Most of the Time. This implies that the pupils are now building their confidence and believing in themselves that they can express their ideas in mathematics. Confidence is also important as it gives the pupils the courage to ask for clarifications and even express what they understand about the math lessons. Digitale (2018) and Hewer (2022) both agreed that positive attitude towards mathematics and even other subjects can lead the pupils to have positive outlook in learning and discovering new things even if it will pass through challenges.

Table 4 shows the overall difficulties in solving Mathematical problems. It has an overall Mean of 3.99 with SD = 1.15, which is described as Frequent and interpreted as Observed Most of the Time. Moreover, all the variables were rated with Frequent level. This implies that the pupils recognize the challenges and difficulties in learning Mathematics. However, they are positive and confident that they can manage it and are still able to understand and learn the lessons. Oco and Comahig (2023) claimed that learners continue to face and experience challenges or difficulties in learning Math concepts. It is important for the teachers to conduct interventions and remedial classes to assist struggling learners as well as their parents in guiding and supporting them.

Table 4
Overall Difficulties in Solving Mathematical Problems

Variables	Mean	SD	Description	Interpretation
Comprehension	4.04	1.15	Frequent	Observed Most of the Time
Mathematical skills	3.97	1.16	Frequent	Observed Most of the Time
Attitude towards math	3.97	1.13	Frequent	Observed Most of the Time
Overall	3.99	1.15	Frequent	Observed Most of the Time

Note: 4.21-5.00 Always 3.41-4.20 Frequent 2.61-3.40 Sometimes 1.81-2.60 Seldom 1.00-1.80 Never

In this way, the learners will not feel alone in facing and conquering their challenges and fears.

In the same table, comprehension got the highest variable with the Mean score of 4.04 with SD = 1.15, which is described as Frequent and interpreted as Observed Most of the Time. This implies that the pupils' level of comprehension for Mathematics concepts and lessons is high, and it will give them more confidence that they can conquer it. Comprehension is very important in all aspects of pupil's activities. Therefore, it must be given emphasis by teachers. Sanlad (2020) claimed that one of the skills that is needed in understanding and learning mathematics is comprehension. Without the mastery of it, the pupils will have the hard time understanding the situation of a given problem as well as in identifying the right operations to use in solving the given problem.

Meanwhile, the variables mathematical skills and attitude towards Mathematics got the Mean scores of 3.97 with SD = 1.16 and 1.13, respectively. Both variables were described as Frequent and interpreted as Most of the Time. This implies that the pupils know that their skills and attitude toward Mathematics are always challenged due to the nature of the lessons and activities that also challenge them most of the time. The important is they are willing to try to solve and understand the lessons presented to them. Enriquez (2020) claimed that a positive attitude matters. In the area of Mathematics, there are objectives that need patience and even implement a series of challenges. If the pupils do not have a positive attitude toward learning Math, they will easily give up on it. With a positive mindset, they will give it a try and a chance for themselves if they can solve it alone or with assistance from others.

Problem 2. What is the pupils' performance in West 2 District for the 2nd Grading Period of School Year 2022-2023?

Table 5
Pupils' Performance

Grade Range	Frequency	Percentage
90-100	34	26.36
85-89	43	33.33
80-84	37	28.68
75-79	15	11.63
Below 75	0	0.00
TOTAL	129	100.00

Note: 90-100 Outstanding 85-89 Very Satisfactory 80-84 Satisfactory 75-79 Fairly Satisfactory
Below 75 Did not meet Expectations

Table 5 discloses the pupils' performance. It revealed that 33.33% of the pupils have Mathematics performance under Very Satisfactory level. Further, 28.68 of the pupils are at Satisfactory level, 26.36% of the pupils are at an Outstanding level, and 11.63% of the pupils are at a Fairly Satisfactory level. This implies that the pupils' performance in Mathematics is at a Very Satisfactory level. The sentiment that Mathematics is a difficult, challenging, and boring subject is always present. This result shows that the pupils can overcome it with the guidance and assistance of their teachers and parents. Thus, pupils should be reminded that they should give it a try in solving Math problems and lessons rather than immediately accepting defeats.

According to Ayabale et al. (2020), society sees Mathematics as the cornerstone of scientific and technological knowledge, which is essential for a country's social and economic progress. In reality, research indicates that Mathematics as a topic has varying effects on all facets of human existence. Key factors identified included teaching strategies, teachers' attitudes, and students' attitudes toward Mathematics. The idea that parents can have a favorable impact on their children's Arithmetic performance, classroom climate, pupils' prior math accomplishment, and gender-related characteristics appeared to be consistent as well. Therefore, enhancing students' mathematical ability and performance requires the combined efforts of many people. Moreover, Oco and Comahig (2022) suggested that teachers must give ample time to provide additional activities and interventions for pupils struggling with Mathematics concepts so that they can also catch up with those on an advanced level.

Problem 3. Is there a significant relationship between the difficulties in solving math problems and the performance of the pupils in Mathematics?

Table 6 on the following page shows the test correlation between the difficulties in solving Math problems and pupils' performance. For difficulties in solving mathematical problems on comprehension and pupils' performance. It registered an r-value of 0.557 with p-value of 0.001. The computed p-value is lower than the p-critical value at 0.05 level of significance.

Table 6

Test Correlation between the difficulties in Solving Math Problems and Performance

Difficulties in Solving Mathematical Problems	Mathematics Performance		Description
	r	P	
Comprehension	0.557	0.001*	Significant
Mathematical skills	0.412	0.001*	Significant
Attitude towards Math	0.438	0.001*	Significant

Note: r = correlation coefficient; P = probability value; * = Significant at 0 .05 level

This implies that a significant relationship was registered. Thus, the null hypothesis was rejected. This further means that pupils' difficulty with Math problems in terms of comprehension has effects on their level of performance. Escudero (2021) stressed the importance of comprehension skills development not just for Mathematics subjects but for others as well. This is because comprehension skills allow pupils to grasp ideas and important information that will aid them in studying and solving Math problems.

For difficulties in solving mathematical problems on mathematical skills and pupils' performance, it registered an r-value of 0.412 with p-value of 0.001. The computed p-value is lower than the p-critical value at 0.05 level of significance. This implies that a significant relationship was registered. Thus, the null hypothesis was rejected. This further means that pupils' difficulty with Math problems in terms of mathematical skills has effects on their level of performance. Quinain (2022) believed that learners must develop their mathematical skills as early as in their elementary years as they will take part on their foundations of development. Mathematics is a challenging but interesting subject that requires solid foundation on learning and mastery of its basic concepts.

For difficulties in solving mathematical problems on attitude towards Math and pupils' performance, it registered an r-value of 0.438 with p-value of 0.001. The computed p-value is lower than the p-critical value at 0.05 level of significance. This implies that a significant relationship was registered. Thus, the null hypothesis was rejected. This further means that pupils' difficulty with Math problems in terms of attitude

towards math has effects on their level of performance. Hewer (2022) reported that above all things, the attitude towards Mathematics must be positive in nature. These attitudes must start to develop at home as parents are the pupils' first teachers.

4. Conclusions and Recommendations

The following conclusions were made regarding the outcomes of this study:

1. In solving Math problems, comprehension is determined to be the most challenging.
2. The performance of the Grade IV pupils in Mathematics for the 2nd Quarter exposed at a Very Satisfactory Level.
3. Difficulties in solving Math problems and pupils' performance has a significant relationship. Therefore, the analysis yielded that the hypothesis test was rejected. The pupils' difficulty with Math problems in terms of comprehension has effects on their level of performance.

Founded on the outcomes and conclusions of the research study, the succeeding suggestions are hereby may:

1. School administrators should also prioritize the promotion of numeracy development among the pupils. They need to provide technical assistance to the teachers on effective strategies for mathematics to enhance the skills of the pupils.
2. Teachers may apply varied math learning interventions for the pupils and they should also provide numeracy materials that are durable.
3. Teachers and parents should work together for the children. Parents should follow up with their children at home. They should make numeracy materials available at home that encourage the pupils to study.
4. Pupils should make solving mathematical problems a habit in school and even at home. Pupils need to be responsible, dedicated, and have a constant attitude towards Math.

REFERENCES

- Admin. (2020, December 9). PH ranks last among 58 countries in Grade 4 math, Science: study. <https://eric.org.ph/ph-ranks-last-among-58-countries-in-grade-4-math-science-study/>
- Al, S. H. E. a. S. H. E. (2018). Students' Difficulties in Solving Mathematical Problems. www.academia.edu. https://www.academia.edu/36503941/students_difficulties_in_solving_mathematical_problems
- Ampo, J. (2022). Learned Competencies in English, Mathematics, Filipino And Araling Panlipunan Areas Of Grade 2 Pupils. Unpublished thesis. Cagayan de Oro City, Philippines.
- Ardo, J. (2020, April 1). Difficulties in Solving Mathematical Problems in General Mathematics Subject and its Impact on Academic Performance of Selected Grade 11 Humanities and Social Sciences Students. <https://ojs.aaresearchindex.com/index.php/aasgbcjpmra/article/view/2446>
- Ayebale, L., Habaasa, G., & Tweheyo, S. (2020). Factors affecting students' achievement in mathematics in secondary schools in developing countries: A rapid systematic review. *Statistical Journal of the IAOS*. <https://doi.org/10.3233/sji-200713>

- Callaman, R. A., & Itaas, E. C. (2020). Students' mathematics achievement in Mindanao context: A meta-analysis. *Journal of Research and Advances in Mathematics Education*, 5(2), 148–159. <https://doi.org/10.23917/jramathedu.v5i2.10282>
- Cardino, J. M., & Cruz, R. a. O. (2020). Understanding of learning styles and teaching strategies towards improving the teaching and learning of mathematics. *LUMAT*, 8(1). <https://doi.org/10.31129/lumat.8.1.1348>
- Cho, E. H., & Hwang, S. H. (2019). Exploring changes in multi-ethnic students' mathematics achievement motivation: A longitudinal study using expectancy-value theory. *The Mathematical Education*.
- Clerkin, A., & Gilligan, K. A. (2018). Pre-school numeracy play as a predictor of children's attitudes towards mathematics at age 10. *Journal of Early Childhood Research*, 16(3), 319–334. <https://doi.org/10.1177/1476718x18762238>
- Digitale, E. (2018). Positive attitude toward math predicts math achievement in kids. *Stanford Medicine*. <https://med.stanford.edu/>
- Donovan, L. (2022, December 14). Help Your Child Develop Early Math Skills | ZERO TO THREE. ZERO TO THREE. <https://www.zerotothree.org/resources/299-help-your-child-develop-early-math-skills>
- Enriquez, R. (2020). The Use of MELCs in the Normal and its impact on learning of the learned competencies in core subjects.
- Escudero, A. (2021). Better Reading Comprehension Leads to Better Math Comprehension.
- Faulkner, F., Breen, C., Prendergast, M. A., & Carr, M. J. (2021). Profiling mathematical procedural and problem-solving skills of undergraduate students following a new mathematics curriculum. *International Journal of Mathematical Education in Science and Technology*, 1–30. <https://doi.org/10.1080/0020739x.2021.1953625>
- Figueiredo M., Guimarães H. M. (2019). A relevância dos fatores motivacionais nos estilos de aprendizagem da Matemática no início do ensino secundário.
- Galvan, J. L., & Galvan, M. C. (2017). *Writing Literature Reviews: A Guide for Students of the Social and Behavioral Sciences*. Taylor & Francis.
- Gimodo, A. (2022).). Learned Competencies In 7 Learning Areas of Junior High Schools.
- Gomez, A. I., Pecina, E. D., Villanueva, S. F., & Huber, T. (2020, December 10). The Undeniable Relationship between Reading Comprehension and Mathematics Performance. *Issues in Educational Research*. <http://www.iier.org.au/iier30/gomez.pdf>
- Goulet-Lyle, M., Voyer, D., & Verschaffel, L. (2020). How does imposing a step-by-step solution method impact students' approach to mathematical word problem solving? *Zdm – Mathematics Education*, 52(1), 139–149. <https://doi.org/10.1007/s11858-019-01098-w>
- Guhl, P. (2019). The Impact of Early Math and Numeracy Skills on Academic Achievement in Elementary School. <https://nwcommons.nwciowa.edu/>
- Gurat, M. G. (2018). Mathematical Problem-Solving Strategies among Student Teachers. *Journal on Efficiency and Responsibility in Education and Science*, 11(3), 53–64. <https://files.eric.ed.gov/fulltext/EJ1208772.pdf>
- Habib, M., & Rana, R. A. (2020). Exploring 8th graders' metacognition and its relationship with mathematical academic achievement.
- Hadianto. (2021). Does reading comprehension competence determine level of solving mathematical word problems competence?, <https://iopscience.iop.org/article/10.1088/1742-6596/1806/1/012049/pdf>.
- Hakim, L. L., & Yasmadi, B. (2021). Conceptual and Procedural Knowledge in Mathematics Education. *ResearchGate*. https://www.researchgate.net/publication/356711989_Conceptual_and_Procedural_Knowled

ge_in_Mathematics_Education

- Harris, B., & Petersen, D. (2019). Developing math skills in early childhood.
- Hwang, S., & Son, T. (2021). Students' Attitude toward Mathematics and its Relationship with Mathematics Achievement. *Journal of Education and E-learning Research*, 8(3), 272–280. <https://doi.org/10.20448/journal.509.2021.83.272.280>
- Iuculano, T., Padmanabhan, A., & Menon, V. (2018). Systems Neuroscience of Mathematical Cognition and Learning. In Elsevier eBooks (pp. 287–336). Elsevier BV. <https://doi.org/10.1016/b978-0-12-811529-9.00015-7>
- Javaid, M. (2020). Exploring 8th graders' metacognition and its relationship with Mathematical academic achievement. *Pakistan Journal of Education*. <https://doi.org/10.30971/pje.v37i1.1053>
- Khan, D. M., Ali, A., & Alamgir, I. U. (2018). Academic Performance of Students in Mathematics and English: A Case Study of District Malakand, Khyber Pakhtunkhwa, Pakistan. *Global Social Sciences Review*, III(IV), 356–366. [https://doi.org/10.31703/gssr.2018\(iii-iv\).23](https://doi.org/10.31703/gssr.2018(iii-iv).23)
- Kihwele, J. E. (2022). Promoting students' interest and achievement in mathematics through "King and Queen of Mathematics" initiative. <https://www.emerald.com/insight/content/doi/10.1108/JRIT-12-2021-0083/full/html>.
- Kiwanuka, H. N., Van Damme, J., Van Den Noortgate, W., & Reynolds, C. A. (2020). Temporal relationship between attitude toward mathematics and mathematics achievement. *International Journal of Mathematical Education in Science and Technology*, 53(6), 1546–1570. <https://doi.org/10.1080/0020739x.2020.1832268>
- Klang, N., Karlsson, N., Kilborn, W., Eriksson, P., & Karlberg, M. (2021). Mathematical Problem-Solving Through Cooperative Learning—The Importance of Peer Acceptance and Friendships. *Frontiers in Education*, 6. <https://doi.org/10.3389/feduc.2021.710296>
- Learned competencies in learning of junior Learned Competencies in Learning Areas Of Junior High School In Mathematics. (2022).
- Maass, K., Cobb, P., Krainer, K., & Potari, D. (2019). Different ways to implement innovative teaching approaches at scale. *Educational Studies in Mathematics*, 102(3), 303–318. <https://doi.org/10.1007/s10649-019-09920-8>
- Marwazi, M., Masrukan, M., & Putra, N. M. D. (2018). Analysis of Problem Solving Ability Based on Field Dependent Cognitive Style in Discovery Learning Models. *Journal of Primary Education*, 8(2), 127–134.
- Mazana, M. Y., Montero, C. S., & Casmir, R. (2018). Investigating Students' Attitude towards Learning Mathematics. *International Electronic Journal of Mathematics Education*, 14(1). <https://doi.org/10.29333/iejme/3997>
- Mingke, G. P., & Alegre, E. M. (2019). Difficulties Encountered In Mathematical Word Problem Solving Of The Grade Six Learners. *International Journal of Scientific and Research Publications*. <https://doi.org/10.29322/ijsrp.9.06.2019.p9053>
- Mosa, A. (2021). The degree of using modern teaching strategies in distance learning among primary school teachers in private schools in the capital Amman. An unpublished master's thesis, Middle East University, Amman, Jordan.
- Oco, R. M., & Comahig, A. G. (2023). Synchronous, Asynchronous and Modular Distance Learning: Effects on Students' Mathematics Performance. *Asian Research Journal of Mathematics*, 19(6), 84–102. <https://doi.org/10.9734/arjom/2023/v19i6669>
- Özcan, Z., & Doğan, H. (2017). A longitudinal study of early math skills, reading comprehension and mathematical problem solving. *Eğitim Ve Öğretim*, 8(1), 01–18. <https://doi.org/10.14527/pegegog.2018.001>
- Peteros, E. D., Gamboa, A., Etcuban, J. O., Dinauanao, A. M., Sitoy, R. E., & Arcadio, R. D. (2019). Factors Affecting Mathematics Performance of Junior High School Students. *International*

- Electronic Journal of Mathematics Education, 15(1). <https://doi.org/10.29333/iejme/5938>
- Powell, S. R., Berry, K., & Tran, L. C. (2020). Performance Differences on a Measure of Mathematics Vocabulary for English Learners and Non-English Learners with and without Mathematics Difficulty. *Reading & Writing Quarterly*, 36(2), 124–141. <https://doi.org/10.1080/10573569.2019.1677538>
- Quaye, J. (2020). ATTITUDES TOWARDS MATHEMATICS AND MATHEMATICAL ACHIEVEMENT IN SECONDARY SCHOOLS IN ENGLAND: EXPLORING THE ROLE OF SOCIAL CLASS, GENDER AND ETHNICITY. Lulu.com.
- Quinain, M. (2022). Learned competencies in learning of junior Learned Competencies in Learning Areas Of Junior High School In Mathematics. Cagayan de Oro City, Philippines.
- Roar, A., Callaman, & Itaas, E. (2020).). Students' mathematics achievement in Mindanao context: A meta-analysis. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, 5(2), 148–159. <https://files.eric.ed.gov/fulltext/EJ1267489.pdf>.
- Sanlad, L. (2020). Comprehensive Analysis on Least Learned Competencies in Mathematics 5: Basis for Learning Activities. GRIN Verlag.
- Smartick | Online Mathematics for Children. (n.d.). <https://www.smartick.com/>
- Taruc,C.et.al.,(2019). (2019). Reading Comprehension in Relation to Class Performance in Mathematical Word Problems of Selected Grade Six Pupils of Bagong Pook Elementary School, Trece Martires City, Cavite School Year 2018-2019. <https://ojs.aaresearchindex.com/index.php/AAJMRA/article/view/9130>.
- Trakulphadetkrai, N. V., Courtney, L., Clenton, J., Treffers-Daller, J. & Tsakalaki, A. (2020). The contribution of general language ability, reading comprehension and working memory to mathematics achievement among children with English as additional language (EAL): An exploratory study. *International Journal of Bilingual Education and Bilingualism*, 23(4), 473-487. <https://doi.org/10.1080/13670050.2017.1373>
- Verschaffel, L., Schukajlow, S., Star, J. R., & Van Dooren, W. (2020). Word problems in mathematics education: a survey. *Zdm – Mathematics Education*, 52(1), 1–16. <https://doi.org/10.1007/s11858-020-01130-4>
- Wong, S. F., & Wong, S. L. (2019). Relationship between interest and mathematics performance in a technology-enhanced learning context in Malaysia. *Research and Practice in Technology Enhanced Learning*, 14(1). <https://doi.org/10.1186/s41039-019-0114-3>
- Yeh, C. S., Cheng, H. N., Chen, Z., Liao, C. C., & Chan, T. (2019). Enhancing achievement and interest in mathematics learning through Math-Island. *Research and Practice in Technology Enhanced Learning*, 14(1). <https://doi.org/10.1186/s41039-019-0100-9>
- Yildirim, B. A., Şen, E., & Sedef, A. M. (2022). *Meme Kanserinde Lokal Tedavi Yaklaşımları*. Akademisyen Kitabevi.