

Analysis of Mathematical Understanding Ability of Grade IV Students in Solving Mathematical Word Problem

Mariana Jeujan^{1*}, Wahyudin², Effy Mulyasari³, Siti Silmi Azzahra⁴ 

Faculty of Education, Universitas Pendidikan Indonesia, Bandung, Indonesia

ABSTRAK

Penelitian ini bertujuan untuk mendeskripsikan tingkat kemampuan pemahaman matematis siswa sekolah dasar dalam menyelesaikan soal cerita. Permasalahan penelitian berangkat dari temuan bahwa pemahaman konsep dasar matematika pada siswa kelas IV masih bervariasi, khususnya dalam mengaitkan konsep dengan situasi kontekstual. Penelitian ini menggunakan metode deskriptif kuantitatif di salah satu Sekolah Dasar di Kabupaten Manokwari. Subjek penelitian adalah siswa kelas IV yang berjumlah 31 orang, dengan data diperoleh melalui tes uraian yang terdiri dari sepuluh soal sesuai lima indikator kemampuan pemahaman matematis. Teknik pengumpulan data dilakukan melalui pemberian tes, sedangkan analisis data menggunakan statistik deskriptif untuk menafsirkan kecenderungan capaian siswa pada setiap indikator. Hasil penelitian menunjukkan bahwa kemampuan pemahaman matematis siswa berada pada tingkat sedang, dengan variasi penguasaan konsep yang cukup lebar antarsiswa. Indikator pengaplikasian konsep dalam situasi kontekstual merupakan aspek yang paling dikuasai, sedangkan kemampuan menyatakan ulang konsep serta membedakan contoh dan bukan contoh masih lemah. Temuan ini menegaskan perlunya penguatan pemahaman konseptual melalui strategi pembelajaran yang menekankan representasi makna dan hubungan antar konsep agar perkembangan kompetensi matematis siswa lebih merata.

Kata Kunci : *Kemampuan Pemahaman Matematis, Soal cerita Matematika, Siswa Sekolah dasar*

ABSTRACT

This study aims to describe the level of mathematical comprehension ability of elementary school students in solving story problems. The research problem departs from the finding that the understanding of basic mathematical concepts in grade IV students still varies, especially in relating concepts to contextual situations. This study uses a quantitative descriptive method in one of the elementary schools in Manokwari Regency. The research subjects were 31 students in grade IV, with data obtained through a description test consisting of ten questions according to five indicators of mathematical comprehension ability. The data collection technique is carried out through the administration of tests, while the data analysis uses descriptive statistics to interpret the tendency of student achievement in each indicator. The results of the study show that students' mathematical comprehension skills are at a moderate level, with a wide variation in concept mastery between students. Indicators of the application of concepts in contextual situations are the most mastered aspects, while the ability to restate concepts and distinguish examples and non-examples is still weak. These findings emphasize the need to strengthen conceptual understanding through learning strategies that emphasize the representation of meaning and the relationship between concepts so that the development of students' mathematical competence is more even.

Keywords:

Mathematical Understanding Ability, Grade IV Students, Mathematics Word Problem

1. INTRODUCTION

Mathematics education is one of the important indicators in assessing the quality of the basic education system in a country. The ability to understand mathematics applied from an early age will foster a critical, systematic mindset, and good problem-solving skills in elementary school students. In Indonesia itself, improving the quality of education has been carried out through various policies, but the results of the study show that the mathematical ability of elementary school students is not fully optimal. Several research results report that the mathematical ability

*Corresponding author

E-mail addresses: jeujananhaya@upi.edu (Mariana Jeujan)

of students, especially in grade IV of elementary school, is still at an alarming level. In the study, Nabila *et al.*, (2023) reported that of the 114 grade IV students studied on the aspect of mathematical connection, only 14% of students had a good to good category, and none reached the very good category, while the other 86% had less to very poor ability, with an average ability of 24%. The results of other studies also reveal the same thing, for example, in the aspect of problem-solving ability, only 6.67% are considered sufficient, while others have less to very less ability (Kenedi *et al.*, 2019). In the aspect of mathematical critical thinking ability, 88.33% is in the low to medium category, while in the aspect of numeracy literacy, the topic of numbers reaches an average of 65.8%, but difficulties are still found in understanding information and communicating mathematical reasons (Riadh *et al.*, 2023; Aini *et al.*, 2025). Meanwhile, in terms of mathematical ability and concept comprehension, only 43.27% are classified as low in mathematics and 30.2% have lower mathematical concept understanding skills (Jediut *et al.*, 2023; Pratama *et al.*, 2022). This shows that the achievement of mathematics learning in elementary level students is still not in line with the goals of the national curriculum.

One of the competency-based curriculums in Indonesia is the 2013 Curriculum, which not only emphasizes the memorization of mathematical formulas, but also on understanding and applying concepts in contextual situations or in the form of daily life story problems. One of the obstacles in learning mathematics is the inability of students to solve mathematical story problems, this is because mathematical word problems require two things, namely understanding concepts and the ability to interpret information into mathematical equations (Surbakti *et al.*, 2024; Kurniawati, 2024). Students who are used to memorizing formulas without understanding the concept and context will have difficulty solving story problems. Some of the factors that affect this include low numeracy literacy skills and low learning motivation (Endradewi *et al.*, 2025).

Mathematics learning in grade IV of elementary school is a stage where students begin to be introduced to more complex mathematical concepts introduction materials, such as materials related to fractions, measurements, story problems, and so on, where the material is focused on problem solving and understanding the relationship between concepts. However, the results of the study show that one of the biggest challenges still faced by grade IV elementary school students is about solving math story problems. The average mathematical comprehension of grade IV students in solving word problems is still at a low to medium level. Most students have difficulty understanding the meaning of the problem, using the right calculation operations, and applying the right solution strategy (Hamidah and Ain, 2022; Unaenah *et al.*, 2023). This is due to weak understanding of concepts, low motivation and interest in learning mathematics, and anxiety about mathematics (Muslimah and Witanto, 2025). In addition, success in solving math word problems is also influenced by the ability to read and understand the language of the problem (Nahdi *et al.*, 2023).

The main problems that students often face are difficulties in interpreting word problems into mathematical models, making a solution plan, and rechecking the answers. This is due to learning that is still oriented towards memorizing formulas, lack of practice in doing word problems in class, limited support and motivation from parents, and lack of students' habits in working on various problems. This causes students to have difficulty in starting and understanding questions, when the teacher gives math story problems. Standardization in the curriculum that requires word problems to be integrated into mathematics problems, so this research is important.

Several studies related to the ability to understand and solve mathematical word problems in grade IV in Indonesia have been conducted. Muhammad *et al.*, (2023) in their research on "Students' Ability to Solve Word Problems in Elementary School Grade IV Mathematics Learning" examined 70 grade IV students of SD Negeri 24 East Pontianak, found that students' ability to solve word problems was still relatively low, with an average score of 55.60. Furthermore, the research of Wasiah *et al.*, (2024) in their research on "Analysis of Students' Ability to Solve Word Problems in Mathematics Learning in Grade IV SDN 9 Bukit Batu Riau" obtained an average score of 63.08 from several indicators, such as writing down what is known, what is asked, completing mathematical models, and making conclusions. In addition, the research of Priandhika & Maharbid (2024) on "Analysis of Students' Mistakes in Solving Fractional Mathematics Word

problem for Grade IV Elementary School" showed that students often experience errors in understanding problems, using formulas, performing calculation operations, recognizing mathematical symbols, and interpreting word problems into mathematical models. From some of these studies, it can be seen that a lot of research on mathematics problems has been carried out, but the main focus is still on calculating scores or identifying errors without the division of more detailed indicators of mathematical understanding, such as the stages of completion in the Polya method starting from planning strategies to re-examining answers. In addition, some research results reported that students' mathematical understanding was still relatively low, especially in fraction materials, number operations, and flat buildings. However, the research is still descriptive and still focuses on single material, while research on word problems has not been specifically studied in grade IV of elementary school, along with indicators that compile understanding.

The educational curriculum in the 21st century is directed so that students have *problem solving* skills, so that students are required to not only be able to understand mathematical concepts, but also must have the ability to apply learning contextually. However, the results of the study show that the average students' Mathematical Understanding Ability is still relatively low, and only a few are in the high category. It will be difficult for teachers and policymakers to determine effective learning strategies if research on understanding stories is not done in depth. Efforts to improve mathematical understanding at the initial level will have a long-term positive impact on students, so that it will provide a solid foundation for mathematics learning at the higher education level. Therefore, research on the analysis of mathematical comprehension of grade IV students in solving word problems is important, to improve the effectiveness of mathematics learning and student learning outcomes in a sustainable manner.

2. METHOD

This study uses a quantitative approach with a descriptive method. This research was carried out at SD YPPK Sta. Sisilia, Manokwari, West Papua. The research subjects consisted of 31 elementary school students in grade IV for the 2025/2026 school year. The instrument used to collect data is a test instrument in the form of essay questions prepared based on the Mathematical Understanding Ability (MUA) indicator. The MUA indicator grid used to compile test questions can be seen in the following table 1.

Table 1. Indicator Blueprint for Mathematical Understanding Ability (MUA)

No.	MUA Indicator	Question Indicator	Question Number
1	Restating a concept that has been learned	Students can write repeated addition sentences to express the result of multiplication.	1
		Students can write repeated subtraction sentences to express the result of the division.	2
2	Identify and provide examples and non-examples of a concept that has been learned	Students can write down which statement or picture shows the multiplication operation	3
		Students can choose which statement or image shows the division operation	4
3	Applying concepts through specific procedures or algorithms	Students can calculate the results of multiplication operations correctly	5
		Students can calculate the results of division operations correctly	6
4	Presenting concepts in a wide variety of mathematical representations (symbols, drawings, diagrams, tables)	Students can draw or create a table to show the multiplication operation	7
		Students can draw or create a table to show the division operation	8
5	Applying concepts or algorithms to problem-solving	Students can use multiplication or division to solve story problems	9
		Students can use divisions to solve story problems	10

The test result data was analyzed using descriptive statistics which included the calculation of average scores, maximum and minimum values and standard deviations. The student's level of Mathematical Understanding Ability is calculated using the following equation:

$$\text{MUA Score} = \frac{\text{Student score}}{\text{Maximum score}} \times 100\% \quad (1)$$

The results of the calculation of students' MUA scores are then categorized based on the categorization table according to Suprihatin, (2018) as follows:

Table 2. Category Results Percentage of Assessment Results

No	Category	Percentage Results
1	High	> 70%
2	Medium	55% ≤ X ≤ 70%
3	Low	< 55%

3. RESULT AND DISCUSSION

Descriptive statistical analysis of students' abilities is presented in Table 3. Descriptive analysis provides general information about the range of grades, average grades, and the distribution of students' abilities in the classroom. This information is the basis for analyzing more deeply the pattern of diversity of abilities between students, as well as identifying students' strengths and weaknesses in understanding the context of the problem.

Table 3. Descriptive Statistics of Students' Mathematical understanding ability

Descriptive Statistics					
	N	Minimum	Maximum	Mean	Std. Deviation
Nilai	31	18	100	63.42	18.399
Valid N (listwise)	31				

The ability of grade IV students to solve math word problem still shows mixed and unstable results. Based on the results of the descriptive analysis in Table 3, from 31 students, the score was in the range of 18 to 100, with a mean score of 63.42, and a standard deviation of 18.399. This score shows that the average class has not reached an optimal level of mastery, especially when compared to the minimum competency standard or Minimum Completeness Criteria (MCC), which is more than 70 (Sholikhah *et al.*, 2025). This shows that most students have not fully mastered the process of understanding, interpreting, and solving math story problems. However, if referring to Maya (2011), the ability of students in grade IV is in the medium category, with a score range of 55 – 70.

A very wide range of grades indicates a relatively high variation in ability between students. Students who scored 18 described that there was a group of students who had difficulty reading information, identifying keywords, and integrating word problem into the mathematical model. On the other hand, the group of students who obtained a score of 100 described that the student already had excellent ability to solve problems, determine solution strategies, and provide detailed answers. This wide range of grades shows that uneven mastery of concepts and applied learning have not had the same impact on all students.

In addition, the standard deviation in this study was 18,399 which confirmed that there is a diversity of story-solving skills among students. This also shows that the class is not homogeneous, which means that there are groups of students who can understand the material quickly and there are also groups who have difficulty analyzing the questions. This difference is caused by several factors, including different reading skills, less experience in solving non-routine problems, and lack of habit in using visual models to interpret word problem into mathematical models. The results of the study showed that there was a positive and significant correlation between reading ability and the ability to solve story problems. Reading ability contributes to the ability to solve word problem by 21.3% (Muarifa *et al.*, 2021; Hadioanto *et al.*, 2021). Students who have a weak understanding of the text tend to have difficulty identifying important information and translating the problem into mathematical form (Nahdi *et al.*, 2023; Cimen & Kartal, 2021).

The characteristics of math word problem are not just the ability to calculate, but students are required to have the ability to understand the context, filter relevant information, make mathematical models, and perform calculations. The average ability score of 63.42 indicates that many students have difficulties in the early stages, especially in translating word problem and creating mathematical models. This is in line with

previous research that reported that most grade IV students experience obstacles not in arithmetic operations, but in the ability to interpret text into mathematical symbols (Cimen & Kartal, 2021). In addition, the results of this study are in line with previous research which stated that most grade IV students tend to only master part of the stages of solving mathematical word problem (Vessonen *et al.*, 2024). Therefore, this study provides the same pattern, where students' ability to think conceptually is not strong, but students are still dwelling on procedural skills.

Based on these conditions, learning must be focused on the ability to understand problems. Teachers need to provide scaffolding gradually by providing concrete examples, mathematical reading exercises, the use of storyline diagrams, information tables or with other visualizations that help students in analyzing information (Saidul & Widyasari, 2025; Anggreni & Munzir, 2025; Iavars & Llinares, 2020). The use of a variety of representations (text, images, videos, diagrams) helps students understand abstract concepts and improve problem-solving skills, especially if scaffolding is tailored to students' needs (Chen *et al.*, 2023; rezat & Leifield, 2022). Contextual learning and the use of examples in daily life can help students in building meaning before entering the calculation process.

The analysis was also carried out to see the percentage of students' Mathematical Understanding Ability categories divided into 3 categories, namely high, medium and low categories. The categorization of students' MUA results can be seen in the following diagram:

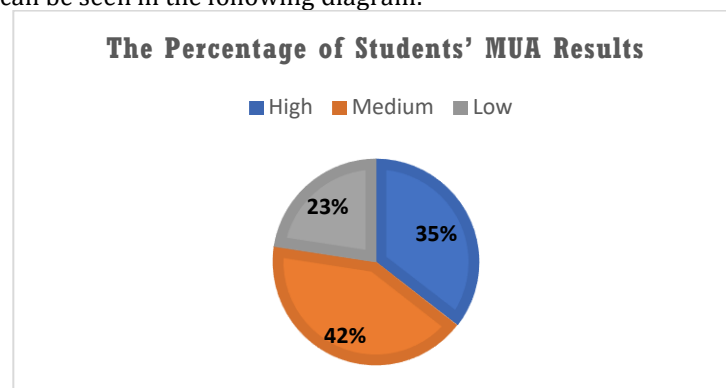


Figure 1. Percentage of Students Based on Mathematical Understanding Ability Category

High Category

Students in the high category (35%) show good mathematical comprehension skills. Students are able to solve problems in systematic steps and provide logical explanations of each completion procedure. In their work, they can see an understanding of the concept of number operations and the ability to relate concepts to each other. This indicates that students in this category have reached a mature stage of conceptual and procedural understanding.

Medium Category

Students in the medium category (42%) have been able to understand most basic math concepts, but still have difficulty applying the concepts to new situations or non-routine problems. The errors that arise generally lie in the process of interpreting the problem and applying the formula. This shows that they understand the steps of completion, but are not yet fully able to reason about the meaning of the concept in depth.

Low Category

Students in the low category (23%) tend to have difficulty understanding problems and choosing the right solution strategy. Some of the students' work results show errors in understanding the information from the questions or applying inappropriate procedures. This condition shows that they are still in the early stage of understanding, where the concept has not been fully conceptually embedded. Support in the form of contextual learning and the use of concrete media needs to be provided to help them understand the meaning of mathematics more fully (Chen *et al.*, 2023; Rezat & Leifield, 2022).

The analysis was also carried out to obtain a deeper picture of aspects of students' Mathematical Understanding Ability by looking at the average score on each MUA indicator. The average score results per indicator are presented in the following table:

Table 4. Average Score per Indicator

No	Indicators of Mathematical Understanding Ability (MUA)	Average Score	MUA Value (%)	Category
1	Restating a concept that has been learned	1,87	47	Low
2	Identify and provide examples and non-examples of a concept that has been learned	1,87	47	Low
3	Applying concepts through specific procedures or algorithms	2,82	71	High
4	Presenting concepts in a wide variety of mathematical representations (symbols, figures, diagrams, tables)	2,76	69	Medium
5	Applying concepts or algorithms to problem-solving	3,32	83	High

Based on the results of the analysis of the average score per indicator of mathematical understanding ability, it was found that the fifth indicator, namely the ability to apply concepts to contextual problem solving, had the highest average score of 3.32 or obtained a score percentage of 83%, so it was in the high category. This shows that most students have been able to use the concept of number operations in solving word problemrelated to real situations. In other words, they have come to the stage of conceptual application in a broader context.

Meanwhile, the lowest average score was found in the first and second indicators of the same magnitude, namely 1.87 or 47%. This value shows that indicators 1 and 2 of the MUA value obtained are in the low category. These two indicators relate to the ability to restate concepts and identify and provide examples and not examples of concepts that have been learned. The low score on the indicator indicates that some students still have difficulty in understanding the basic meaning of a concept and distinguishing the characteristics of mathematical cooperatives correctly. This condition shows that students' conceptual understanding is not fully mature, even though they have been able to apply the procedure in the context of the problem.

The third indicator (applying concepts through procedures or algorithms) and the fourth indicator (presenting concepts in various forms of mathematical representation) obtained an average score of 2.82 and 2.76. The MUA score for indicator 3, which is 71%, is in the high category. Meanwhile, indicator 4 is in the medium category with a score of 69%. This score shows that students are relatively able to carry out calculation procedures and display concepts in the form of symbols or tables, but a deep understanding of the meaning of concepts still needs to be improved. Although students can perform procedures and representations, many still make mistakes in calculation, formula selection, or interpretation of questions. This shows that students' conceptual understanding is not optimal, so mistakes often occur in solving problems that require an understanding of the meaning behind the procedure (Otniel & Kurniadi, 2025; Novitasari & Fitriana, 2021).

The average score per MUA indicator in this study is in line with the trend of national MUA indicators, where the basic indicators of "restating concepts" and "identifying examples/not examples tend to have sufficient to very good scores, but in some studies students experience difficulties if the questions require in-depth understanding or analysis. In the indicators "applying concepts" and "presenting in various representations" are often a challenge, with medium to low average achievements. Students tend to have an easier time with routine questions than questions that demand representation or application of concepts in different forms, while indicators of "applying concepts to contextual problem-solving" tend to score high, especially if the questions are relevant to daily life, but there are still variations depending on the complexity of the questions (Nasution & Rahyu, 2023; Alfina & Sutirna, 2022; Rahayu & Pujiastuti 2018).

This average pattern shows that students' applicability and representation skills are higher than initial conceptual skills. These findings are in line with the views of Kilpatrick *et al.* (2001) and NCTM (2000), that conceptual understanding develops gradually through learning experiences that require students to represent and apply concepts in a variety of contexts. Therefore, a learning strategy that emphasizes the exploration of the meaning of concepts and their relationship to real situations is needed to strengthen the mathematical understanding of elementary school students.

4. CONCLUSION

Based on the results of the research, it can be concluded that the Mathematical Understanding Ability of grade IV elementary school students is in the medium category. These findings suggest that most students have been able to understand the basic concepts of addition and subtraction operations, despite considerable variation in abilities between individuals. These variations show that the mastery of mathematical concepts is still uneven in the classroom.

Analysis per indicator shows that the ability to apply concepts in contextual problem solving is the aspect that students are most proficient in. Students are relatively able to use the concept of number operations when they have to solve problems related to real situations. On the other hand, the first and second indicators related to the ability to restate concepts and identify examples and not examples were the aspects with the lowest achievements. This indicates that students' basic conceptual understanding is still weak, especially in distinguishing the characteristics of concepts and in interpreting the meaning of a mathematical operation precisely.

The pattern of students' abilities shows that the application aspect is more developed than the conceptual aspect. This condition is in line with various studies that state that elementary school students tend to be able to follow problem-solving procedures, but do not fully understand the underlying concepts. These findings emphasize the need to strengthen learning that is oriented towards the meaning of concepts, the development of varied mathematical representations, and the deepening of the relationships between concepts.

The results of this study also provide implications for future academic studies, especially regarding the factors that affect students' low conceptual understanding. Further research can be directed to examine the role of learning strategies, reading literacy skills, and problem characteristics in shaping students' mathematical understanding at the elementary education level.

5. ACKNOWLEDGE

The author would like to thank the Lembaga Pengelola Dana Pendidikan (LPDP) for the funding support provided so that this research was held. The author also expresses his appreciation to the University of Education Indonesia and the Supervisor for their guidance and academic support during the research and writing process of this article.

6. REFERENCES

- Aini, S., Syam, S., & Chandra, C. (2025). Analisis Kemampuan Peserta Didik dalam Literasi Numerasi pada Soal Bilangan di Sekolah Dasar. *Algoritma : Jurnal Matematika, Ilmu pengetahuan Alam, Kebumihan dan Angkasa*. <https://doi.org/10.62383/algoritma.v3i3.487>.
- Alfina, S., & Sutirna, S. (2022). Kemampuan Pemahaman Matematis Siswa Mts pada Materi Aljabar. *JPMI (Jurnal Pembelajaran Matematika Inovatif)*. <https://doi.org/10.22460/jpmi.v5i2.10283>.
- Anggreni, M., , A., & Munzir, S. (2025). Pedagogical scaffolding strategies for supporting students with mathematical learning difficulties in special education. *Jurnal Elemen*. <https://doi.org/10.29408/jel.v11i3.29996>.
- Chen, M., Chen, Y., Zuo, P., & Hou, H. (2023). Design and evaluation of a remote synchronous gamified mathematics teaching activity that integrates multi-representational scaffolding and a mind tool for gamified learning. *Education and Information Technologies*, 1 - 27. <https://doi.org/10.1007/s10639-023-11708-6>.
- Çimen, E., & Kartal, E. (2021). An Investigation of 4th Grade Students' Abilities of Solving Problems Given in Symbolic, Numerical and Story Formats. *Acta Didactica Napocensia*. <https://doi.org/10.24193/adn.14.2.11>.
- Endradewi, C. F., Muhtarom, M., & Setyowati, R. D. (2025). Analisis Kemampuan Literasi Numerasi dalam Menyelesaikan Soal Cerita Matematika Siswa Sekolah Dasar. *Cetta*, 8(4), 107–119. <https://doi.org/10.37329/cetta.v8i4.4479>
- Hadianto, D., Damaianti, V., Mulyati, Y., & Sastromiharjo, A. (2021). Does reading comprehension competence determine level of solving mathematical word problems competence?. *Journal of Physics: Conference Series*, 1806. <https://doi.org/10.1088/1742-6596/1806/1/012049>.
- Hamidah, N., & Ain, S. (2022). Faktor-Faktor Penyebab Kesulitan Belajar Matematika pada Siswa Kelas IV Sekolah Dasar. *Scaffolding: Jurnal Pendidikan Islam dan Multikulturalisme*. <https://doi.org/10.37680/scaffolding.v4i1.1331>.

- Ivars, P., Fernández, C., & Llinares, S. (2020). A Learning Trajectory as a Scaffold for Pre-service Teachers' Noticing of Students' Mathematical Understanding. *International Journal of Science and Mathematics Education*, 18, 529-548. <https://doi.org/10.1007/s10763-019-09973-4>.
- Jediut, M., Ndiung, S., & Madu, F. (2023). Kemampuan Matematisasi Siswa SD dalam Menyelesaikan Soal Non Rutin. *Jurnal Elementaria Edukasia*. <https://doi.org/10.31949/jee.v6i3.6299>.
- Kenedi, A., Helsa, Y., Ariani, Y., Zainil, M., & Hendri, S. (2019). Mathematical Connection Of Elementary School Students To Solve Mathematical Problems. *Journal on Mathematics Education*. <https://doi.org/10.22342/jme.10.1.5416.69-80>
- Kilpatrick, J., Swafford, J., & Findell, B. (Eds.). (2001). *Adding it up: Helping children learn mathematics*. National Academy Press.
- Kurniawati, A. (2024). Analisis Kesulitan Belajar Matematika dalam Menyelesaikan Soal Cerita Siswa Kelas 4 Sekolah Dasar. *Islamika: Jurnal Keislaman Dan Ilmu Pendidikan*, 6(4), 1861–1884. <https://doi.org/10.36088/islamika.v6i4.5392>
- Maya, R. (2011). Pengaruh Pembelajaran Dengan Metode Moore Termodifikasi Terhadap Pencapaian Kemampuan Pemahaman Dan Pembuktian Matematik Mahasiswa. Desertasi Upi: Tidak Diterbitkan.
- Muarifa, A., Ngatman, N., & Hidayah, R. (2021). The Effect Of Reading Comprehension Skills On Ability To Solve Math Word Problems To Fourth Grade Students Of Public Elementary Schools In Kebumen Sub-District In Academic Year Of 2020/2021. *Kalam Cendekia: Jurnal Ilmiah Kependidikan*. <https://doi.org/10.20961/jkc.v9i3.52986>.
- Muhammad, S., Trisnawati, Du., Sulistiani, S. (2025). Kemampuan Murid Menyelesaikan Soal Cerita Pada Pembelajaran Matematika Kelas Iv Sekolah Dasar. *Jurnal Ilmiah Dan Pendidikan Dasar*, 10(02), 2548-6950. <https://doi.org/10.23969/jp.v10i02.26131>
- Muslimah, R., & Witanto, Y. (2025). A Study of Students' Mathematical Concept Understanding Ability: Learning Anxiety and Independence in Learning Mathematics. *Journal Evaluation in Education (JEE)*. <https://doi.org/10.37251/jee.v6i2.1482>.
- Nabillah, R., Herwin, H., & Tandukar, K. (2023). How is the Mathematical Connection Ability of Post-Pandemic Class IV Elementary School Students in whole Numbers Material?. *PYTHAGORAS Jurnal Pendidikan Matematika*. <https://doi.org/10.21831/pythagoras.v18i1.58448>.
- Nahdi, D., Cahyaningsih, U., Jatisunda, M., & Rasyid, A. (2023). Mathematics Interest and Reading Comprehension as Correlates of Elementary Students' Mathematics Problem-Solving Skills. *Edukasiana: Jurnal Inovasi Pendidikan*. <https://doi.org/10.56916/ejip.v3i1.510>.
- Nasution, E., & Rahayu, A. (2023). Analisis Kemampuan Pemahaman Konsep Matematis Siswa MAN 1 Sungai Penuh Pada Materi Bangun Ruang. *Venn: Journal of Sustainable Innovation on Education, Mathematics and Natural Sciences*. <https://doi.org/10.53696/2964-867x.94>.
- National Council of Teachers of Mathematics. (2000). *Principles and standards for school mathematics*.
- Novitasari, P., Usodo, B., & Fitriana, L. (2021). Visual, Symbolic, and Verbal Mathematics Representation Abilities in Junior High School's Students. *Journal of Physics: Conference Series*, 1808. <https://doi.org/10.1088/1742-6596/1808/1/012046>.
- Otniel, O., & Kurniadi, E. (2025). Students' Mathematical Representation Ability in Learning of Mathematical Modeling Using Android-Based Learning Media. *Jurnal Pendidikan Matematika (JUPITEK)*. <https://doi.org/10.30598/jupitekvol7iss2pp123-133>.
- Pratama, M., Yurniwati, Y., & Chaeruman, U. (2022). An Analysis of Elementary School Students' Understanding of Mathematical Concept. *Jurnal Basicedu*. <https://doi.org/10.31004/basicedu.v6i3.2672>.
- Priandhika, A. A., & Maharbid, D. A. (2024). Analisis Kesalahan Siswa dalam Menyelesaikan Soal Cerita Matematika Pecahan Kelas IV Sekolah Dasar. *Jurnal Basicedu*, 8(5), 3806–3815. <https://doi.org/10.31004/basicedu.v8i5.8437>
- Rahayu, Y., & Pujiastuti, H. (2018). Analisis Kemampuan Pemahaman Matematis Siswa Smp Pada Materi Himpunan. *Symmetry: Pasundan Journal of Research in Mathematics Learning and Education*. <https://doi.org/10.23969/symmetry.v3i2.1284>.
- Rezat, S., Malik, S., & Leifeld, M. (2022). Scaffolding Close Reading of Mathematical Text in Pre-service Primary Teacher Education at the Tertiary Level: Design and Evaluation. *International Journal of Science and Mathematics Education*, 20, 215 - 236. <https://doi.org/10.1007/s10763-022-10309-y>.
- Riadhoh, R., Habibi, M., & Wati, R. (2023). Analysis of Mathematical Critical Thinking Ability of Fourth Graders of Public Elementary School 001 Air Tiris. *Journal of Educational Sciences*. <https://doi.org/10.31258/jes.7.2.p.324-333>.

- Saidul, M., & Widyasari, N. (2025). Efficiency of Scaffolding Method in The Learning Process of Mathematics Comparative Material in Grade V Elementary School Students. *Jurnal Pendidikan Matematika (JUPITEK)*. <https://doi.org/10.30598/jupitekvol7iss2pp111-122>.
- Sholikhah, A. B., Cahyono, B. E. H., & Andriani, I. Y. (2025). Peningkatan Hasil Belajar Matematika Melalui Model Pembelajaran Cooperative Learning Tipe Teams Games Tournament (TGT) pada Siswa Kelas IV di SDN 01 Winongo. *Lencana: Jurnal Inovasi Ilmu Pendidikan*, 3(1), 125-136.
- Suprihatin, Tri R., et al. "Analisis Kemampuan Penalaran Matematis Siswa SMP pada Materi Segitiga dan Segiempat." *Jurnal Kajian dan Pembelajaran Matematika*, vol. 2, no. 1, 2018, pp. 9-13.
- Surbakti, A. A., Nuryadi, & Supriyanti. (2024). *Analisis Kesulitan Siswa Dalam Menyelesaikan Soal Cerita Matematika Pada Siswa SMP*. <https://doi.org/10.47233/jpst.v3i1.1572>
- Unaenah, E., Safitri, L., & Julianis, T. (2023). Analisis Pemahaman Konsep Siswa Kelas 4 pada Materi Bilangan Bulat di Sekolah Dasar. *YASIN*. <https://doi.org/10.58578/yasin.v3i6.1592>.
- Vessonen, T., Dahlberg, M., Hellstrand, H., Widlund, A., Korhonen, J., Aunio, P., & Laine, A. (2024). Task Characteristics Associated with Mathematical Word Problem-Solving Performance Among Elementary School-Aged Children: A Systematic Review and Meta-Analysis. *Educational Psychology Review*. <https://doi.org/10.1007/s10648-024-09954-2>.
- Wasiah, R., Witri, G., & Antosa, Z. (2020). *Analisis kemampuan siswa menyelesaikan soal cerita pada pembelajaran matematika di kelas IV SDN 9 Bukit Batu Riau*. *Jurnal Inovasi Pendidikan dan Pembelajaran Sekolah Dasar (JIPPSD)*, 8(1), 45-54. <https://doi.org/10.24036/jippsd.v4i2.112328>