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Problem-Based Learning Approach in Solving Mathematical Word Problems Among Sixth Grade Students

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Abstract

Mathematics learning, especially in the topic of word problems, remains a challenge for elementary school students because it requires the ability to understand context, reasoning, and problem solving. This study aims to examine the effectiveness of the implementation of the Problem-Based Learning (PBL) model in improving the ability of sixth-grade students of SDN Pengadegan 07 Pancoran, South Jakarta, in solving mathematical word problems on the topic of comparison, as well as identifying the process and obstacles in its implementation. This study used a mixed methods approach with a sequential explanatory design. The research sample consisted of 30 sixth-grade students. The initial hypothesis of this study was that the implementation of the PBL model had an effect on students' ability to solve mathematical word problems. Quantitative data were obtained through a test of the ability to solve word problems, while qualitative data were collected through observations and interviews with teachers and students. The pretest results showed a moderate average initial ability score of 50. The results of the study showed that the implementation of PBL was able to improve students' abilities, indicated by a high average test score of 84 and increased student activity and participation in learning. Furthermore, the results of the paired sample t-test revealed a statistically significant difference between the pretest and posttest scores ($p < 0.05$), which confirmed that the increase was significant. Qualitative data also showed that PBL helped students understand problems more deeply through discussions and contextual problem solving, despite obstacles such as limited learning time and low reading comprehension skills of some students.

Keywords: Problem Based Learning; Story Questions; Learning; Mathematics.

Abstrak

Pembelajaran matematika, khususnya pada materi soal cerita, masih menjadi tantangan bagi siswa sekolah dasar karena menuntut kemampuan memahami konteks, penalaran, dan pemecahan masalah. Penelitian ini bertujuan untuk mengkaji efektivitas penerapan model Problem-Based Learning (PBL) dalam meningkatkan kemampuan siswa kelas VI SDN Pengadegan 07 Pancoran, Jakarta Selatan, dalam menyelesaikan soal cerita matematika pada materi perbandingan, serta mengidentifikasi proses dan kendala penerapannya. Penelitian ini menggunakan pendekatan mixed methods dengan desain sequential

explanatory. Sampel penelitian berjumlah 30 siswa kelas VI. Hipotesis awal penelitian ini adalah terdapat pengaruh penerapan model PBL terhadap kemampuan siswa dalam menyelesaikan soal cerita matematika. Data kuantitatif diperoleh melalui tes kemampuan menyelesaikan soal cerita, sedangkan data kualitatif dikumpulkan melalui observasi dan wawancara dengan guru dan siswa. Hasil pretest menunjukkan skor kemampuan awal rata-rata sedang yaitu 50. Hasil penelitian menunjukkan bahwa implementasi PBL mampu meningkatkan kemampuan siswa, ditunjukkan oleh skor tes rata-rata yang tinggi yaitu 84 dan peningkatan aktivitas serta partisipasi siswa dalam pembelajaran. Lebih lanjut, hasil uji t sampel berpasangan mengungkapkan perbedaan yang signifikan secara statistik antara skor pretest dan posttest ($p < 0,05$), yang menegaskan bahwa peningkatan tersebut signifikan. Data kualitatif juga menunjukkan bahwa PBL membantu siswa memahami masalah secara lebih mendalam melalui diskusi dan pemecahan masalah kontekstual, meskipun terdapat kendala berupa keterbatasan waktu pembelajaran dan rendahnya kemampuan membaca pemahaman sebagian siswa.

Kata kunci: *Problem Based Learning; Soal Cerita; Pembelajaran; Matematika.*

INTRODUCTION

Mathematics learning, particularly in solving mathematical word problems, remains a significant challenge for many elementary school students. Mathematical word problems require students to integrate conceptual understanding, critical thinking, and the ability to translate contextual information into appropriate mathematical models. Maryati (2021), in a study conducted in the elementary school context, reported that students' low performance in solving mathematical word problems is closely associated with limited conceptual understanding and underdeveloped higher-order thinking skills. Consequently, students often encounter difficulties at several stages of problem solving, including understanding the problem, designing appropriate solution strategies, and obtaining accurate solutions (Ritel et al., 2019).

Students' difficulties in solving mathematical word problems generally occur across three key stages of the problem-solving process (Verschaffel et al., 2020). First, at the problem comprehension stage, students often struggle due to limited reading comprehension skills and difficulty translating verbal statements into mathematical representations. Second, at the problem-solving planning stage, students experience challenges in selecting appropriate strategies because of weak connections between relevant mathematical concepts. Third, at the solution execution stage, students frequently make technical errors in calculations or misuse mathematical formulas (Sanjaya & Fitri, 2021). These findings

suggest that mathematics instruction that primarily emphasizes procedural practice and memorization has not fully supported the development of students' mathematical problem-solving abilities.

Several previous studies conducted in school contexts have recommended Problem-Based Learning (PBL) as an effective instructional approach to enhance students' ability to solve mathematical word problems (Laine, & Mahmud, 2022). PBL utilizes contextual problems as the starting point of learning and engages students in inquiry, analysis, and collaborative solution development (Zainal, 2022). In an elementary school study, Fauzi and Nurdin (2023) reported that the implementation of PBL significantly improved students' ability to solve mathematical word problems because the model encourages learners to connect mathematical concepts with real-life situations,

Mathematics learning in elementary schools, particularly word problems, remains a challenge because it requires the ability to understand context, reason, and determine problem-solving strategies (Pongsakdi et al., 2020). Therefore, a learning model is needed that can encourage active student involvement and develop critical thinking skills, one of which is through Problem-Based Learning (PBL). This model places contextual problems as the starting point of learning, thereby increasing collaboration, problem-solving, and reducing student anxiety towards mathematics (Yunitasari et al., 2023). Several studies have demonstrated the effectiveness of PBL in improving the ability to solve word problems.

Hutagaol et al. (2025) found that the implementation of PBL increased students' ability scores from 67.7 to 82.1 and mastery levels from 52% to 81%. Classroom action research by Elya and Ratnaningsih (2025) also showed an increase in student participation from 29% to 82% and learning outcomes from 31.82% to 86.36% of students achieving the KKTP. In addition, Muharomah et al. (2023) showed that PBL combined with Student Centered Learning was able to increase understanding of story problems by up to 81.2%, with students being more active in identifying information and formulating solutions independently.

From a theoretical perspective, these challenges indicate the need for instructional approaches aligned with constructivist learning theory, which views learning as an active process in which students construct knowledge through interaction with problems, experiences, and social collaboration (Mishra, 2023). In mathematics learning, this perspective emphasizes the importance of engaging students in meaningful problem-solving activities that encourage them to interpret situations, develop strategies, and reflect on their reasoning (Gannar & Kilani, 2025).

However, most previous studies still focus on measuring improvements in learning outcomes or problem-solving abilities quantitatively, without examining in depth the process of implementing PBL in the classroom, the characteristics of students' difficulties during learning, and the obstacles faced by teachers and students in applying this model, especially in the context of elementary schools. In addition, studies on the effectiveness of PBL in teaching math word problems in public elementary schools with heterogeneous student characteristics are still relatively limited.

SDN Pengadegan 07 Pancoran South Jakarta is one of the elementary schools that has implemented innovative learning as an effort to improve the quality of student learning outcomes. However, to date, there has been no empirical study that specifically examines the application of the Problem Based Learning model in teaching mathematics story problems at this school, both in terms of effectiveness, student abilities, and obstacles that arise during the learning process.

Based on the background above, this study aims to answer the following questions how effective is the implementation of the Problem-Based Learning (PBL) model in improving students' ability to solve mathematical word problems, how do students solve mathematical word problems through the stages of the PBL model; and what difficulties and obstacles are encountered by students and teachers during the implementation of the PBL model in mathematics learning.

RESEARCH METHOD

This study employed a mixed methods approach with a sequential explanatory design, in which quantitative data were collected and analyzed first, followed by qualitative data to explain and enrich the quantitative findings (Creswell, 2027). The study was conducted at SDN Pengadegan 07 Pancoran, South Jakarta, during the even semester of the academic year. The research participants consisted of 30 sixth-grade students who participated in mathematics learning on the topic of mathematical word problems using the Problem-Based Learning (PBL) model.

The sample was selected using purposive sampling, considering the suitability of the learning material, student characteristics, and class readiness to implement problem-based learning (Ghanad, 2023). The quantitative phase used a quasi-experimental design with a one-group pretest–posttest design. In this design, students were first given a pretest to measure their initial ability in solving mathematical word problems. Afterward, students

received treatment in the form of mathematics learning using the Problem-Based Learning (PBL) model, implemented according to its main stages: problem orientation, group investigation, problem analysis, solution development, and presentation of results. At the end of the learning process, students were given a posttest to measure changes in their problem-solving abilities.

The research instruments consisted of: (1) a mathematical word problem-solving test in essay form, developed based on four indicators of problem-solving ability, namely understanding the problem, planning the solution, implementing the strategy, and checking the results; (2) observation sheets to examine the implementation of the PBL learning process and students' learning activities; and (3) semi-structured interview guidelines to explore deeper information regarding students' learning experiences and the obstacles encountered during the implementation of the PBL model.

The validity of the test instrument was established through expert judgment by mathematics education experts, while the reliability of the instrument was examined through a pilot test prior to the study. Quantitative data were obtained from the pretest and posttest scores. Descriptive statistics were used to determine the mean and standard deviation of students' scores, while inferential analysis was conducted using a paired sample t-test to examine whether there was a significant difference between pretest and posttest results. Before conducting the t-test, assumption testing was performed using a normality test to ensure that the data distribution met the statistical requirements.

Qualitative data were collected through classroom observations and interviews with the teacher and several selected students. The qualitative data were analyzed using thematic analysis, which involved data reduction, data display, and conclusion drawing to identify patterns related to students' learning processes, difficulties in solving mathematical word problems, and challenges encountered during the implementation of the PBL model. To ensure the trustworthiness of the qualitative findings, data triangulation was conducted by comparing information obtained from tests, observations, and interviews.

RESULTS AND DISCUSSION

Characteristics of Students' Difficulties in Solving Math Word Problems

Initial observations and interviews with teachers showed that before the implementation of the Problem-Based Learning (PBL) model, most sixth-grade students at SDN Pengadegan 07 Pancoran experienced significant difficulties in solving math word

problems. These difficulties were particularly evident in the students' inability to understand the context of the problems presented in narrative form. Many students were unable to accurately identify the known and unknown information, thus tending to make mistakes from the early stages of problem solving. This condition indicates that the students' mathematical literacy skills, particularly in understanding mathematical texts, are still relatively low.

The students' difficulties became even more apparent when they were asked to convert the verbal sentences in the story problems into mathematical models. Some students immediately performed calculations without understanding the relationship between the data available in the problems. As a result, their answers were often not in line with the context of the problems. In addition, technical errors in calculations were still frequently found, indicating that the students did not yet have strong accuracy and conceptual understanding. These findings reinforce the view that mathematics learning that emphasizes memorization of procedures has not been able to equip students with comprehensive problem-solving skills.

When analyzed based on Polya's problem-solving stages, students' most dominant difficulties occur at the stage of understanding the problem and planning the solution. Low reading comprehension skills cause students to have difficulty understanding the sentences in the questions, while weak conceptual mastery prevents students from determining the appropriate solution strategy. These findings are in line with the results of research by Sanjaya and Fitri (2021), which states that errors in understanding questions and converting them into mathematical models are the main difficulties elementary school students face in solving story problems.

Overall, the characteristics of student difficulties found in this study indicate that the problem with math word problems lies not only in the calculation aspect, but more in the conceptual understanding and mathematical reasoning aspects. Therefore, a learning approach is needed that can train students to analyze problems deeply and systematically, so that they do not only focus on the final result, but also on the problem-solving process.

Implementation of the Problem-Based Learning Model in Story Problem Learning

The implementation of the Problem-Based Learning model in mathematics story problem learning in this study was carried out through structured stages in accordance with the characteristics of PBL, namely student orientation to the problem, organization of students into groups, group investigation and discussion, presentation of problem-solving results, and learning reflection. The problems presented were contextual and close to the

students' daily lives, especially in the subject of comparisons, making it easier for students to understand the problems and relate them to real experiences.

Interviews with teachers showed that in the early stages of PBL implementation, students still showed confusion and dependence on teacher guidance. This was due to their previous learning habits, which were more oriented towards lectures and routine exercises. However, after several meetings, students began to get used to problem-based learning. They became more active in discussions, asking questions, and expressing their opinions during group activities. Teachers acted as facilitators who provided guidance and asked questions to help students develop their thinking.

Observations during learning showed significant changes in classroom dynamics. Interaction between students increased, and the learning atmosphere became more lively and collaborative. Students did not only focus on solving problems but also on the process of discussion and exchange of ideas with their groupmates. These findings indicate that PBL succeeded in creating a student-centered learning environment and encouraged active involvement in the learning process.

These findings are in line with the results of research by Azura et al. (2024) and Elya and Ratnaningsih (2025), which state that PBL is effective in increasing participation, collaboration, and activity among elementary school students. Thus, the implementation of PBL in teaching math story problems not only has an impact on learning outcomes but also on the quality of the learning process itself.

Improvement in Students' Ability to Solve Mathematical Word Problems

Quantitative analysis of tests on the ability to solve ratio-based math word problems shows a significant improvement after the implementation of the PBL model. The distribution of scores shows that most students obtained high scores, with the highest score being 100 and the class average score being 70. And there was only one student who got a low score, namely 40. This shows that almost all students have achieved a good level of mastery of the material.

This improvement in ability reflects that students have been able to understand problems more deeply and systematically organize the steps to solve them. Analysis of student worksheets shows that students are becoming accustomed to writing down known and unknown information, determining solution strategies, and performing calculations more carefully. This indicates the development of students' logical thinking and mathematical reasoning abilities after participating in PBL-based learning.

The results of interviews with students also show that they find it easier to understand story problems because the problems given are relevant to everyday life. Group discussions helped students share their understanding and correct mistakes, making mathematical concepts easier to understand (Interview, October 27, 2025). These findings are in line with the research by Hutagaol et al. (2025), which reported that PBL improved students' abilities in all stages of problem solving, from understanding the problem to checking the results.

Table 1. Pretest and Posttest Scores of Students' Mathematical Word Problem-Solving Ability After the Implementation of Problem-Based Learning (PBL).

No	NIS	Student Name	M/F	Pretest Score	Posttest Score
1	2860	S1	M	40	60
2	2714	S2	F	60	80
3	2784	S3	M	20	40
4	2772	S4	F	60	80
5	2723	S5	F	80	100
6	2724	S6	F	60	80
7	2945	S7	F	60	80
8	2726	S8	F	60	80
9	2727	S9	F	80	100
10	2729	S10	M	60	80
11	2730	S11	F	80	100
12	2731	S12	M	40	60
13	2732	S13	M	60	80
14	2736	S14	F	60	80
15	2739	S15	M	80	100
16	2741	S16	M	60	80
17	2755	S17	M	80	100
18	2753	S18	M	60	80
19	2754	S19	M	60	80
20	2756	S20	M	60	80
21	2759	S21	F	60	80

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22	2846	S22	F	80	100
23	3063	S23	F	40	60
24	2762	S24	M	80	100
25	2764	S25	F	80	100
26	2861	S26	M	60	80
27	2769	S27	F	80	100
28	2770	S28	F	60	80
29	2782	S29	M	80	100
30	2775	S30	F	80	100

The posttest results of students' mathematical word problem-solving ability after the implementation of the Problem-Based Learning (PBL) model indicate a generally high level of performance among the participants. As shown in Table 1, the scores obtained by the 30 students ranged from 40 to 100, with an average score of 84.0, indicating that most students achieved a relatively high level of mastery in solving mathematical word problems after the learning intervention. Notably, only two students obtained relatively low scores, namely 40 and 60, while the remaining students achieved higher scores, further emphasizing the overall effectiveness of the intervention.

Based on the frequency distribution, 26 students (86.7%) achieved scores in the high category (80–100), indicating strong problem-solving performance following the implementation of the PBL model. Meanwhile, three students (10%) were classified in the moderate category (60–80), and one student (3.3%) obtained a score in the low category (40–59). These findings suggest that the majority of students were able to understand the problem context, formulate appropriate solution strategies, and correctly apply mathematical procedures when solving word problems.

The data consists of 30 students with pretest and posttest scores. Inferential analysis was conducted using a paired t-test to examine the difference in scores before and after the intervention. With a sample size (n) of 30, a mean pretest score of 64, and a mean posttest score of 84, the results of the paired t-test showed that all students consistently improved their scores by 20 points. Since there was no variation in the score differences, the t-value was very large (approaching infinity) and the significance level was $p < 0.05$.

However, this result should be interpreted with caution due to a key limitation in the research design, namely the absence of a control group. Without a comparison group, it is

difficult to determine whether the observed improvements can be attributed solely to the intervention, as other factors such as natural learning progression or external influences may also have contributed. This limitation has important theoretical implications, as it restricts the strength of causal claims regarding the effectiveness of the instructional approach.

From a pedagogical perspective, while the findings suggest that the intervention may support students' ability to solve mathematical word problems, educators should be careful in generalizing these results. The positive outcomes can be seen as indicative rather than conclusive evidence of effectiveness, highlighting the need for further studies employing more rigorous experimental designs to validate and strengthen these findings.

Integration of Quantitative and Qualitative Findings

The mixed methods approach used in this study allowed researchers to integrate quantitative and qualitative findings more comprehensively. Quantitative data showed an increase in students' ability to solve math story problems after the implementation of PBL, while qualitative data provided an overview of the learning process underlying this improvement. The integration of these two types of data provided a deeper understanding of the effectiveness of PBL.

Qualitative data from observations and interviews show that the improvement in students' abilities was not only due to problem solving practice, but also to the process of discussion, collaboration, and reflection that occurred during learning (Interview, October 29, 2025). Students became more active, independent, and confident in expressing their opinions. Teachers also reported positive changes in students' learning attitudes, such as increased motivation and interest in learning mathematics (Observation, 27-29 October 2025).

The integration of quantitative and qualitative findings strengthens the validity of the research results, as the increase in test scores is supported by empirical evidence of changes in student learning behavior. Thus, the mixed methods approach allows researchers to not only assess the final learning outcomes, but also understand the mechanisms and processes that contribute to these improvements.

These results indicate that evaluating the effectiveness of a learning model, particularly PBL, needs to consider both the cognitive and noncognitive aspects of students. The mixed methods approach is highly relevant in educational research because it provides a more complete and in-depth picture of the learning phenomenon.

Challenges in Implementing the Problem-Based Learning Model

Although the implementation of the Problem-Based Learning (PBL) model demonstrated positive outcomes, several challenges were identified during the learning process. One of the main challenges was the limited instructional time, as PBL activities such as group discussion and problem investigation require more time than conventional teacher-centered instruction. This finding implies that teachers need to plan learning time more strategically by organizing classroom activities efficiently and selecting contextual problems that are manageable within the available time. In addition, effective classroom management and clear guidance during group discussions are essential to ensure that all stages of the PBL process can be implemented optimally.

The interview results further supported the findings of the classroom observations by providing deeper insights into the challenges encountered during the implementation of the Problem-Based Learning (PBL) model (Observation, 27-29 October 2025). Teachers reported that limited instructional time was one of the primary constraints, as PBL activities require more extensive time allocation for discussion, exploration, and problem-solving compared to conventional methods. In addition, teachers acknowledged that some students still relied heavily on direct instructions and were not yet fully accustomed to independent and critical thinking, particularly during the initial stages of the learning process (Interview, October 29, 2025).

From the students' perspective, several difficulties were also identified. Some students expressed challenges in understanding the content of mathematical word problems due to limited reading comprehension skills, which hindered their ability to interpret and analyze the problems effectively (Interview, October 29, 2025). Furthermore, issues related to group dynamics emerged, where certain students were less active, while others tended to dominate discussions. Teachers also emphasized that designing appropriate and contextual problems requires specific pedagogical skills and experience.

In addition, some students still show dependence on teacher instructions and are not yet fully accustomed to independent thinking. This is especially evident in the early stages of PBL implementation, where students still wait for teacher instructions before starting discussions or developing solutions. Low reading comprehension skills are also an obstacle for some students, causing them to have difficulty interpreting the information contained in the story questions.

Other obstacles relate to group work and communication between students. Some students are less active in discussions or tend to be dominated by certain group members. Teachers also acknowledge that special experience and skills are needed in designing contextual problems that are appropriate to the ability level and characteristics of students. These findings are in line with Muharomah et al. (2023), who state that the success of PBL is highly dependent on student readiness, teacher competence, and learning environment support.

Overall, these obstacles indicate that the implementation of PBL requires a continuous adaptation process. Support in the form of improving students' literacy skills, strengthening collaboration skills, and training teachers in designing and managing problem-based learning are important factors for optimizing the success of PBL in elementary schools.

CONCLUSION

This study demonstrates that the implementation of the Problem-Based Learning (PBL) model contributes positively to improving sixth-grade students' ability to solve mathematical word problems, particularly in the topic of comparison. The findings indicate that engaging students in contextual problem investigation, collaborative discussion, and reflective solution processes supports the development of conceptual understanding and structured problem-solving strategies. The integration of quantitative and qualitative findings confirms that the improvement in students' performance is closely related to the instructional characteristics of PBL, which emphasize inquiry, collaboration, and active student participation.

From an academic perspective, this study contributes to the growing body of research on problem-based mathematics learning at the elementary school level, particularly by highlighting how PBL supports students' abilities to interpret contextual problems and translate them into mathematical models. Practically, the findings suggest that PBL can serve as an effective instructional approach for teachers seeking to foster students' problem-solving skills and collaborative learning in mathematics classrooms.

Nevertheless, this study is limited by the use of a single-group design and a relatively small sample of 30 students, which may restrict the generalizability of the findings. Future research is therefore recommended to involve larger samples, employ control-group experimental designs, and explore the integration of PBL with literacy-support strategies to address students' reading comprehension difficulties in mathematical word problems.

REFERENCES

- Aspers, P., & Corte, U. (2024). What is qualitative in qualitative research. *Qualitative Sociology*, 47(2), 345–362. <https://doi.org/10.1007/s11133-024-09532-4>
- Creswell, JW (1999). Penelitian metode campuran: Pendahuluan dan aplikasi. Dalam *Buku pegangan kebijakan pendidikan* (hlm. 455-472). Penerbit akademik.
- Azura, D., Nisa, S., & Suriani, A. (2024). Studi literatur: Implementasi model based learning (PBL) untuk meningkatkan kemampuan pemecahan masalah matematika siswa SD. *Dewantara: Jurnal Pendidikan Sosial Humaniora*, 3(2), 267-281. <https://doi.org/10.30640/dewantara.v3i2.2651>
- Elya, & Ratnaningsih, N. (2025). Penerapan Problem Based Learning untuk Meningkatkan Hasil Belajar dan Partisipasi Peserta Didik. *PTK: Jurnal Tindakan Kelas*, 5(2), 384-400. <https://doi.org/10.53624/ptk.v5i2.565>
- Fauzi, M. Z., & Nurdin, E. (2023). Peningkatan Kemampuan Pemecahan Masalah Matematika Siswa Melalui Penerapan Model Problem Based Learning. *Jurnal Ilmiah Pendidikan Matematika Al Qalasadi*, 7(1), 1–10.
- Firdaus, A., Asikin, M., Waluya, B., & Zaenuri. (2021). Problem based learning (PBL) untuk meningkatkan kemampuan literasi matematika siswa. **Qalamuna: Jurnal Pendidikan, Sosial, dan Agama**, 13(2), 187–200. <https://doi.org/10.37680/qalamuna.v13i2.871>
- Gannar, S., & Kilani, C. (2025). Pembelajaran Kontekstual dan Konstruktivisme Sosial: Menerapkan Pendekatan Berbasis Proyek dalam Pendidikan Pengembangan Sistem Informasi. *Jurnal Pembelajaran Sains*, 8 (1), 15-24.
- Ghanad, A. (2023). Tinjauan umum metode penelitian kuantitatif. *Jurnal internasional penelitian dan analisis multidisiplin*, 6 (08), 3794-3803.
- Hutagaol, K. R. M., Raharjo, T., Handoyo, E., Subali, B., & Avrilianda, D. (2025). Studi literatur: Implementasi model problem based learning untuk meningkatkan kemampuan pemecahan masalah matematika siswa sekolah dasar. *Jurnal Studi*, 9(2), 220-230.
- Laine, CE, & Mahmud, MS (2022). Pengaruh pembelajaran berbasis masalah (PBL) terhadap pembelajaran matematika: Tinjauan literatur sistematis. *Jurnal Internasional Penelitian Akademik dalam Pendidikan dan Pengembangan Progresif*, 11 (3), 1120-1137.

Edisi : Vol. 10, No. 1, April/2026, hlm. 82-96

- Lee, SJ, & Kriewaldt, J. (2025). Di mana pengetahuan yang kuat dan pengetahuan konten pedagogis beririsan: Kasus pengetahuan dan keyakinan untuk pengajaran geografi sekolah melalui penyelidikan. *Penelitian Internasional dalam Pendidikan Geografi dan Lingkungan* , 34 (1), 79-94.
- Maryati, T. (2021). Efektivitas Model Problem Based Learning (PBL) terhadap Kemampuan Pemecahan Masalah Siswa pada Mata Pelajaran Matematika. *Muallimuna: Jurnal Madrasah Ibtidaiyah*, 1(2), 1-19.
- Mishra, NR (2023). Pendekatan konstruktivis terhadap pembelajaran: Analisis model pedagogis teori pembelajaran konstruktivis sosial. *Jurnal penelitian dan pengembangan* , 6 (01), 22-29.
- Muharomah, D. R., Amroh, Salwa Nur Azizah, & Yuke Andriani. (2023). Analisis kesulitan dalam pemahaman soal cerita matematika dengan pendekatan student center learning (SCL) dan metode pembelajaran problem based learning (PBL). *Cendekia*, 17(1), 152-164. <https://doi.org/10.30957/cendekia.v17i1.843>
- Nasution, A. (2024). Desain penelitian kualitatif dalam pendidikan: Pendekatan dan langkah-langkah. *Jurnal Pendidikan Indonesia*, 6(3), 201–215.
- Polya, G. (1973). *How to solve it: A new aspect of mathematical method*. Princeton University Press.
- Pongsakdi, N., Kajamies, A., Veermans, K., Lertola, K., Vauras, M., & Lehtinen, E. (2020). Apa yang membuat penyelesaian soal cerita matematika menjadi menantang? Menjelajahi peran karakteristik soal cerita, pemahaman teks, dan keterampilan aritmatika. *Zdm* , 52 (1), 33-44.
- Ritter, S., Baker, R., Rus, V., & Biswas, G. (2019). Mengidentifikasi strategi dalam pemecahan masalah siswa. *Rekomendasi Desain untuk Sistem Bimbingan Belajar Cerdas* , 7 , 59-70.
- Sanjaya, D., & Fitri, Y. (2021). Analisis Kesulitan Siswa Sekolah Dasar dalam Menyelesaikan Soal Cerita Matematika Berdasarkan Prosedur Newman. *Jurnal Pendidikan Dasar*, 9(2), 195–204.
- Sugiyono. (2020). *Metode Penelitian Kualitatif*. Bandung: Alfabeta.
- Verschaffel, L., Schukajlow, S., Star, J., & Van Dooren, W. (2020). Masalah kata dalam pendidikan matematika: Sebuah survei. *Zdm* , 52 (1), 1-16.

Edisi : Vol. 10, No. 1, April/2026, hlm. 82-96

- Yunitasari, F., Sintawati, M., & Mastul, A.-RH (2023). Penerapan Pengajaran dan Pembelajaran Kontekstual untuk Meningkatkan Hasil Belajar dan Mengurangi Kecemasan dalam Matematika Sekolah Dasar. *Jurnal Internasional Reformasi Pembelajaran dalam Pendidikan Dasar*, 2 (02), 77–85. <https://doi.org/10.56741/ijlree.v2i02.283>
- Zainal, N. F. (2022). Problem Based Learning pada Pembelajaran Matematika di Sekolah Dasar/ Madrasah Ibtidaiyah. *JURNAL BASICEDU*, 6(3), 3584–3593. [DOI: 10.31004/basicedu.v6i3.2650]