JOURNAL ON MATHEMATICS EDUCATION RESEARCH (J-MER)
Universitas Pendidikan Indonesia | e-ISSN 3047-1095 | ejournal-science.upi.edu/jmer

RESEARCH ARTICLE | Vol. 7, No. 2 (2026) | pp. 285-294

The Effect of the Problem-Solving Model on Grade IV Elementary Students' Critical Thinking Ability in GCD and LCM

Sarah Dara Fhonna[1] · Jasmaniah[1*] · Novianti[1]

[1] Elementary Teacher Education Study Program, Universitas Almuslim, Bireuen, Indonesia

* Corresponding author: jasmaniah64@gmail.com

ABSTRACT

Critical thinking is an essential competency in mathematics learning because it involves understanding problems, determining solution strategies, applying reasoning, and evaluating results. This study aimed to examine the effect of the Problem-Solving learning model on fourth-grade students' mathematical critical thinking skills while learning the Least Common Multiple (LCM) and Greatest Common Divisor (GCD). This study employed a quantitative approach with a pre-experimental method using a one-group pretest–posttest design. The participants consisted of 19 fourth-grade students at an elementary school in Bireuen Regency, Aceh, Indonesia. Data were collected through an essay test consisting of four questions and analyzed using descriptive statistics, the Shapiro–Wilk normality test, and the Wilcoxon Signed-Rank test. The results showed that the students' mean mathematical critical thinking score increased from 73.58 on the pretest to 84.74 on the posttest. The Wilcoxon Signed-Rank test yielded a Z value of -3.845 with a significance level of $p < 0.001$. Thus, implementing the Problem-Solving learning model had a statistically significant effect on students' mathematical critical thinking skills in LCM and GCD topics. These findings indicate that systematic problem-solving activities in Problem-Solving-based learning can support the development of students' mathematical critical thinking skills.

Keywords: Critical Thinking Ability; GCD; LCM; Elementary School

ARTICLE INFORMATION	Received	Revised	Accepted	Published
	Sep 30, 2026 ·	Nov 1, 2026	Nov 2, 2026	Nov 7, 2026
DOI	https://doi.org/10.17509/j-mer.v7i2.1490			

HOW TO CITE

Fhonna, S.D., Jasmaniah, J., & Novianti, N. (2026). The Effect of the Problem-Solving Model on Grade IV Elementary Students' Critical Thinking Ability in GCD and LCM. *Journal on Mathematics Education Research*, *7*(2), 285–294. https://doi.org/10.17509/j-mer.v7i2.1490

OPEN ACCESS & COPYRIGHT

© 2026 Fhonna et al. Distributed under CC BY-SA 4.0
Reuse requires attribution and ShareAlike; authors retain copyright.

INTRODUCTION

Twenty-first-century learning requires students to develop the ability to deal with increasingly complex problems. Beyond acquiring knowledge, students need to process information, analyze problems, determine appropriate strategies, make decisions, and develop solutions. These abilities are closely related to higher-order thinking skills, particularly critical thinking. Mathematics provides an important context for developing these competencies because learning mathematics involves not only calculations and procedural knowledge but also reasoning, analysis, problem solving, and decision making (Hadi et al., 2025). In this process, students are required to interpret information, identify relationships, and select appropriate strategies to obtain solutions.

Critical thinking in mathematics can be demonstrated through students' ability to understand information, analyze problems, determine strategies, provide reasoning, evaluate solutions, and draw conclusions. Fatiah et al. (2021) reported that critical thinking in mathematical problem solving can be observed through students' processes of understanding problems, determining strategies, providing reasoning, and evaluating solutions. These abilities are particularly important when students encounter non-routine problems that cannot be solved simply by applying familiar procedures. One type of task that requires such processes is the mathematical word problem, in which students must interpret contextual information, identify relevant data, establish relationships among the information, and determine appropriate mathematical concepts or operations before performing calculations.

GCD and LCM are elementary mathematics topics that can be presented through contextual problems. Understanding these concepts requires not only computational skills but also knowledge of factors, multiples, multiplication, and division. When presented in the form of word problems, students need to determine whether GCD or LCM is relevant to the situation and select an appropriate solution strategy. Previous research has identified difficulties in this process. Sari et al. (2020) found that fourth-grade students experienced difficulties in solving GCD and LCM problems, particularly in understanding problems, planning solutions, carrying out procedures, and reviewing answers. Similarly, Utami et al. (2020) reported that students' errors in solving GCD and LCM word problems could occur at various stages of Polya's problem-solving process, including understanding the problem, devising a plan, carrying out the plan, and reviewing the solution. These findings indicate that difficulties in GCD and LCM involve not only computational accuracy but also students' ability to analyze and solve problems systematically.

A similar condition was also identified through preliminary observations of fourth-grade mathematics learning at an elementary school in Bireuen Regency, Aceh, Indonesia. Several students experienced difficulties when solving contextual problems involving GCD and LCM, particularly in identifying relevant information, determining what was known and asked, selecting the appropriate concept, and explaining the reasoning behind their answers. Some students tended to perform calculations immediately without first analyzing the problem, while others had difficulty determining whether GCD or LCM should be used when the problem differed from previously learned examples. Difficulties with multiplication and division related to factors and multiples were also observed. These conditions suggest that the challenges faced by students extend beyond computational skills to the interpretation, analysis, and strategic aspects of mathematical problem solving.

Such conditions highlight the need for an instructional approach that provides students with opportunities to engage systematically in problem solving. The Problem-Solving learning model places

 © 2026 Fhonna et al. · CC BY-SA 4.0

the problem-solving process at the center of instruction, requiring students to understand the problem, develop a strategy, carry out the solution, and evaluate the result (Adeoye, 2023; Pikoli et al., 2024). This process can provide opportunities for students to develop reasoning and make decisions based on the characteristics of the problem. Rahayuningsih et al. (2020) reported that mathematical problem solving requires cognitive flexibility because students need to consider problems from different perspectives and select appropriate solution methods. In addition, Tanfiziah et al. (2022) reported improved mathematical critical thinking following the implementation of Problem Based Learning, while Nugraha and Suparman (2021), through a meta-analysis, found that the effect of Problem Based Learning on elementary students' mathematical critical thinking varied according to characteristics such as treatment duration and mathematical topic.

Research specifically related to GCD and LCM also provides relevant evidence. Hapsari et al. (2024) examined the effectiveness of Problem Based Learning in developing critical thinking skills in elementary mathematics learning, including studies involving GCD and LCM. Sulistiya et al. (2024) investigated Problem Based Learning combined with peer tutoring in GCD and LCM learning and reported differences between pretest and posttest results. Lestari et al. (2025) examined fourth-grade students' problem-solving abilities in HOTS-based GCD and LCM tasks. However, these studies differ in terms of instructional models, grade levels, and targeted competencies. In particular, previous studies have largely focused on Problem Based Learning, problem-solving abilities, or students' errors, leaving a need to examine the use of the Problem-Solving learning model specifically for developing critical thinking skills in fourth-grade GCD and LCM learning.

Although previous studies have examined the use of problem-solving approaches to improve students' critical thinking skills, further investigation is needed regarding their implementation in GCD and LCM learning, particularly among fourth-grade elementary school students. Therefore, the present study examines the effect of the Problem-Solving learning model on students' mathematical critical thinking skills in GCD and LCM topics at an elementary school in Bireuen Regency, Aceh, Indonesia.

METHOD

Research Design and Setting

This study employed a quantitative approach with a pre-experimental method using a one-group pretest-posttest design. The study was conducted at one elementary school in Bireuen Regency, Aceh, Indonesia, involving 19 fourth-grade students. The participants were selected using a total sampling technique because the school had only one fourth-grade class consisting of 19 students, and all students in the class were included as research participants. The research procedure consisted of a pretest, an intervention using the Problem-Solving learning model on GCD and LCM topics, and a posttest. The research design is presented in **Table 1**.

Table 1. One-Group Pretest-Posttest Research Design

Group	Pretest	Treatment	Posttest
One group	O_1	X	O_2

 © 2026 Fhonna et al. · CC BY-SA 4.0

Participants, Instruments, and Procedures

Data were collected using an essay test consisting of four main questions comprising several sub-items, designed to measure students' mathematical critical thinking skills. The questions were developed based on predetermined indicators of mathematical critical thinking and focused on GCD and LCM topics. Students were required to provide written explanations of their reasoning and problem-solving processes. Their responses were assessed using an analytical scoring rubric.

The scoring rubric was developed based on five indicators of mathematical critical thinking: (1) elementary clarification, (2) the basis for the decision, (3) inference, (4) advanced clarification, and (5) supposition and integration. Each indicator was assessed using a scoring scale ranging from 0 to 4. A score of 4 represented the highest level of performance, indicating a complete, accurate, and logical response, whereas a score of 0 indicated no relevant response or no answer. The scoring criteria considered students' ability to understand problems, identify relevant information, provide logical reasons, explain their solutions using appropriate evidence, and determine suitable problem-solving strategies. The detailed scoring rubric is presented in **Table 2**.

Table 2. Mathematical Critical Thinking Scoring Rubric

Indicator	Scoring criteria	Score
Elementary Clarification	Identifies all given and required information accurately and completely.	4
	Identifies most of the given and required information, with minor errors.	3
	Identifies only some information, resulting in an incomplete understanding of the problem.	2
	Has difficulty identifying the given and required information.	1
	Unable to identify relevant information or provides no answer.	0
The Basis for the Decision	Uses all relevant information appropriately to determine an accurate solution.	4
	Uses relevant information but overlooks some important information.	3
	Uses only some relevant information, resulting in an inaccurate solution.	2
	Uses information that is irrelevant to the problem.	1
	Does not use relevant information or provides no answer.	0
Inference	Provides logical and conceptually appropriate reasons that fully support the answer.	4
	Provides logical reasons, but they do not fully support the answer.	3
	Provides partially incorrect reasons or reasons that are not supported by appropriate concepts.	2
	Provides reasons that are inconsistent with the solution.	1
	Provides no reasoning or no answer.	0
Advanced Clarification	Explains the solution process in detail and supports it with appropriate evidence or data.	4
	Explains the solution process adequately, but the supporting evidence or data are incomplete.	3
	Provides limited explanations with insufficient supporting evidence.	2
	Provides explanations that are inconsistent with the solution process.	1
	Provides no explanation or no answer.	0
Supposition and Integration	Determines an appropriate and systematic strategy that leads to the correct answer.	4
	Determines an appropriate strategy, but the solution steps are not sufficiently systematic.	3
	Determines a less appropriate strategy, resulting in a suboptimal solution.	2
	Determines a strategy that is inconsistent with the problem.	1
	Is unable to determine a problem-solving strategy or provides no answer.	0

© 2026 Fhonna et al. · CC BY-SA 4.0

Before being administered in the main study, the test instrument was pilot-tested on 15 students who were not included in the research sample. Instrument validity was examined using the Pearson Product-Moment correlation by correlating the score of each question with the total score obtained by summing the scores of all four questions. The validity test was conducted at a 5% significance level, with 13 degrees of freedom (df = 15-2) and a critical r-value of 0.514. An item was considered valid when its calculated r-value exceeded the critical r-value and its significance value was below 0.05. The results indicated that all four questions met the validity criterion, with correlation coefficients of 0.777, 0.582, 0.592, and 0.871, respectively.

Instrument reliability was assessed using Cronbach's Alpha to determine the internal consistency of the four-question test. The analysis produced a Cronbach's Alpha coefficient of 0.663, indicating an acceptable level of internal consistency based on the reliability criteria adopted in this study. Both validity and reliability analyses were performed using SPSS 27.

Data Analysis

Data analysis involved descriptive statistics and the Shapiro-Wilk normality test. The selection of the statistical test was based on the normality of the difference scores between the pretest and posttest. If the difference scores were normally distributed, a paired-samples t-test was used. If the normality assumption was not met, the Wilcoxon Signed-Rank Test was applied as a non-parametric alternative. All statistical analyses were conducted at a significance level of 0.05.

RESULTS

Descriptive Analysis

Descriptive analysis was conducted to provide an overview of students' learning outcomes before and after the learning process. The analysis included the minimum, maximum, mean, and standard deviation scores. The results of the descriptive analysis of the pre-test and post-test scores are presented in **Table 3**.

Table 3. Descriptive Analysis of Students' Learning Outcomes

Statistic	Pre-test	Post-test
N	19	19
Minimum	66	68
Maximum	82	94
Mean	73.58	84.74
Std. Deviation	4.97	8.32

The descriptive analysis in **Table 3** indicates an improvement in students' mathematical critical thinking abilities following the learning process. This finding suggests better overall performance in mathematical critical thinking, although the differences in post-test score variability indicate that students demonstrated varying levels of achievement.

Normality Test

Before conducting the hypothesis test, a normality test was performed to determine whether the pre-test and post-test scores were normally distributed. The Shapiro-Wilk test was used because the sample consisted of 19 students. The results of the normality test are presented in **Table 4**.

 © 2026 Fhonna et al. · CC BY-SA 4.0

Table 4. Results of the Shapiro-Wilk Normality Test

Test Score	Shapiro-Wilk Statistic	df	Sig.
Pre-test	0.957	19	0.521
Post-test	0.848	19	0.006

Based on **Table 4**, the Shapiro-Wilk test showed that the pre-test scores had a significance value of 0.521, which was greater than 0.05, indicating that the pre-test scores were normally distributed. In contrast, the post-test scores had a significance value of 0.006, which was less than 0.05, indicating that the post-test scores were not normally distributed. Therefore, since the data were not normally distributed, a non-parametric statistical test was used for the subsequent hypothesis testing.

Wilcoxon Signed-Rank Test

Based on the normality test results, the post-test scores were not normally distributed. Therefore, the Wilcoxon Signed-Rank Test was used to examine the difference between students' pre-test and post-test scores. The results of the Wilcoxon Signed-Rank Test are presented in **Table 5**.

Table 5. Results of the Wilcoxon Signed-Rank Test

Comparison	N	Z	Sig. (2-tailed)
Pre-test-Post-test	19	3.845	< 0.001

Based on the Wilcoxon Signed-Rank Test results presented in **Table 5**, the Z value was 3.845 with a significance value of < 0.001. Since the significance value was lower than 0.05 ($p<0.001$), H_0 was rejected and H_a was accepted. Therefore, there was a significant difference between the students' pre-test and post-test scores. These results indicate that the Problem-Solving model had a significant effect on the critical thinking ability of Grade IV elementary school students in solving GCD and LCM problems.

DISCUSSION

The findings indicate that the implementation of the Problem-Solving learning model in GCD and LCM topics had a significant effect on the mathematical critical thinking skills of fourth-grade students at an elementary school in Bireuen Regency, Aceh, Indonesia. Based on the descriptive analysis, students' mean scores increased from 73.58 in the pretest to 84.74 in the posttest. Furthermore, the Wilcoxon test showed a significance value of less than 0.001 ($p < 0.001$). These results indicate a significant difference in students' mathematical critical thinking skills before and after the implementation of the Problem-Solving learning model. This finding suggests that learning activities that actively engage students in solving problems can support the development of mathematical critical thinking skills.

This improvement is related to the characteristics of the Problem-Solving learning model, which places problems at the center of the learning process. Students are not merely exposed to teachers' explanations or asked to follow worked examples; rather, they are presented with problems that require understanding before solutions can be determined. Students are guided to identify the given information, determine what is being asked, select appropriate strategies, carry out the solutions, and review the results obtained. These activities require students to use reasoning when making decisions, consider relevant information, and determine appropriate solution procedures.

© 2026 Fhonna et al. · CC BY-SA 4.0

The relationship between the implementation of the Problem-Solving model and the development of mathematical critical thinking skills can be explained through the theories of Polya (1945) and Ennis (1985). Polya proposed four stages of problem solving: understanding the problem, devising a plan, carrying out the plan, and looking back. Meanwhile, Ennis (1985) conceptualized critical thinking as reasonable and reflective thinking focused on deciding what to believe or do. These two perspectives complement each other in Problem Solving instruction. The problem-solving stages provide opportunities for students to analyze information and determine strategies, while the process also involves critical thinking when students justify their decisions and evaluate their solutions. Thus, problem-solving activities implemented through the Problem-Solving model are closely related to the development of students' mathematical critical thinking skills.

This relationship is particularly evident in the characteristics of GCD and LCM topics. Solving GCD and LCM problems requires more than mastery of calculation procedures; students must also understand the problem context and determine the appropriate mathematical concepts. They need to analyze the information to distinguish between problems involving the greatest common divisor and those involving the least common multiple. Such decisions require an understanding of the problem situation, reasoning, and consideration in selecting appropriate solution strategies. Therefore, learning through the Problem-Solving model provides opportunities for students to use reasoning and develop critical thinking skills in mathematical problem-solving contexts.

The findings of this study are also related to previous studies by Sidiq (2020) and Ariyanto et al. (2018), which have been used as references in discussing problem-solving-oriented instruction. The relevance of these studies lies in the importance of involving students in understanding problems and determining solution strategies. Learning activities that provide opportunities for students to analyze problems and develop reasoning can support mathematical thinking processes. This is consistent with the implementation of the Problem-Solving model in the present study, in which students are directly involved in analyzing and solving GCD and LCM problems.

Sennen et al. (2020) found that the Problem-Solving model was effective in developing HOTS-based critical thinking skills in elementary school mathematics learning. Similarly, Sormin and Pasaribu (2023) reported an improvement in students' critical thinking skills through mathematics instruction using the Problem-Solving method. These findings are consistent with Anggraeni et al. (2023), who highlighted the potential of problem-based learning to develop students' critical thinking skills through their engagement in problem-solving activities. Likewise, Loyens et al. (2023) reported positive effects of problem- and project-based learning environments on higher-order and critical thinking processes. In addition, Ahdhianto et al. (2020) demonstrated that problem-based learning could improve fifth-grade elementary school students' mathematical problem-solving and critical thinking skills. Collectively, these studies indicate that mathematics learning activities involving problem analysis, reasoning, strategy selection, and evaluation can provide meaningful opportunities for students to develop critical thinking skills. Therefore, the implementation of the Problem-Solving model in the present study provides opportunities for students to engage in these thinking processes when solving GCD and LCM problems.

The findings of this study indicate that the implementation of the Problem-Solving learning model has a significant effect on elementary school students' mathematical critical thinking skills. Students' involvement in analyzing problems, identifying relevant information, determining solution strategies, and evaluating outcomes provides learning experiences that encourage the use of reasoning and critical

 © 2026 Fhonna et al. · CC BY-SA 4.0

decision-making. Therefore, the Problem-Solving model can serve as an alternative approach to mathematics instruction for developing students' mathematical critical thinking skills, particularly in GCD and LCM topics.

CONCLUSION

The findings indicate that the problem-solving learning model significantly improved students' mathematical critical thinking skills in GCD and LCM topics. The mean score increased from 73.58 (SD = 4.97) in the pretest to 84.74 (SD = 8.32) in the posttest. The Wilcoxon test also revealed a significant difference ($Z = -3.845$, $p < 0.001$).

However, this study was limited to 19 fourth-grade students from one elementary school and employed a one-group pretest-posttest design without a control group. Therefore, future research should involve larger samples from multiple schools and include control groups to provide stronger evidence of the effectiveness of the Problem-Solving learning model.

DECLARATIONS

Author Contributions: All authors contributed to the conceptualization, research design, data collection, analysis, interpretation of results, and manuscript preparation. All authors reviewed and approved the final manuscript.

Funding: The authors declare that this research received no external funding.

Ethics Approval and Consent: This study involved 19 fourth-grade students at an elementary school in Bireuen Regency, Aceh, Indonesia. Data were collected through pretest and posttest assessments of mathematical critical thinking skills.

Data Availability: The data supporting this study consist of students' pretest and posttest scores on mathematical critical thinking assessments. Due to participant confidentiality and the involvement of minors, the data are not publicly available but may be obtained from the corresponding author upon reasonable request, subject to applicable permissions.

Conflict of Interest: The authors declare no conflicts of interest related to this research

Use of Generative AI: The authors declare that no generative AI tools were used in conducting the research or preparing the manuscript

REFERENCES

Adeoye, M. A. (2023). Problem-Solving Skills Among 21st-Century Learners Toward Creativity and Innovation Ideas. *Thinking Skills and Creativity Journal*, *6*(1), 52–58. https://doi.org/10.23887/tscj.v6i1.62708

Ahdhianto, E., Marsigit, Haryanto, & Nurfauzi, Y. (2020). Improving fifth-grade students' mathematical problem-solving and critical thinking skills using problem-based learning. Universal Journal of Educational Research, 8(5), 2012–2021. https://doi.org/10.13189/ujer.2020.080539

Anggraeni, D. M., Prahani, B. K., Suprapto, N., Shofiyah, N., & Jatmiko, B. (2023). Systematic review of problem based learning research in fostering critical thinking skills. *Thinking Skills and Creativity*, *49*, 101334. https://doi.org/10.1016/j.tsc.2023.101334

 © 2026 Fhonna et al. · CC BY-SA 4.0

Ariyanto, M., Kristin, F., & Anugraheni, I. (2018). Penerapan model pembelajaran problem solving untuk meningkatkan kemampuan berpikir kritis dan hasil belajar siswa. *Jurnal Guru Kita*, *2*(3), 106-115. https://doi.org/10.24114/jgk.v2i3.10392

Ennis, R. H. (1985). A logical basis for measuring critical thinking skills. *Educational Leadership*, *43(2*), 44-48.

Fatiah, A., Riyadi, R., & Daryanto, J. (2021). Analisis keterampilan berpikir kritis dalam pemecahan masalah matematika berdasarkan teori Robert H. Ennis pada kelas V sekolah dasar. *Didaktika Dwija Indria*, *9*(6), 7-13. https://doi.org/10.20961/ddi.v9i6.56158

Hapsari, N. A., Khusniyati, L., & Anisa, S. (2024). Meta analisis: Efektivitas model pembelajaran *Problem Based Learning* terhadap kemampuan berpikir kritis pada pelajaran matematika SD materi KPK dan FPB. *Didaktik: Jurnal Ilmiah PGSD STKIP Subang*, *10*(1), 1487-1497.

Lestari, N. A., Trisiana, A., & Rizkasari, E. (2025). Analisis kemampuan pemecahan masalah dalam menyelesaikan soal matematika materi KPK dan FPB berbasis HOTS peserta didik kelas IV SD Negeri Ngandul 1 tahun pelajaran 2024/2025. *Pendas: Jurnal Ilmiah Pendidikan Dasar*, *10*(3).

Loyens, S. M., Van Meerten, J. E., Schaap, L., & Wijnia, L. (2023). Situating higher-order, critical, and critical-analytic thinking in problem-and project-based learning environments: A systematic review. *Educational Psychology Review*, *35*(2), 39. https://doi.org/10.1007/s10648-023-09757-x

Nugraha, T., & Suparman, S. (2021). Heterogeneity of Indonesian primary school students' mathematical critical thinking skills through problem-based learning: A meta-analysis. *Al-Jabar: Jurnal Pendidikan Matematika*, *12*(2), 315-328.

Pikoli, M., Amu, S. F. M., & Suleman, N. (2024). Implementation of Problem-Solving Learning Model to Improve Problem-Solving Skills of MAN 1 Kota Gorontalo Students. *Hydrogen: Jurnal Kependidikan Kimia*, *12*(4), 793-804. https://doi.org/10.33394/hjkk.v12i4.11646

Polya, G. (1945). *How to solve it: A new aspect of mathematical method*. Princeton University Press.

Rahayuningsih, S., Sirajuddin, S., & Nasrun, N. (2020). Cognitive flexibility: Exploring students' problem-solving in elementary school mathematics learning. *JRAMathEdu (Journal of Research and Advances in Mathematics Education)*, *6*(1), 59-70.

Sari, Y. L., Subekti, E. E., & Wardana, M. Y. S. (2020). Analisis kesulitan belajar pemecahan masalah matematika materi KPK dan FPB kelas IV SD. *JS (Jurnal Sekolah)*, *4*(3), 183-190.

Sennen, E., Pelian, M. Y., & Helmon, A. (2020). Efektivitas model problem solving terhadap kemampuan berpikir kritis berbasis HOTS dalam pembelajaran matematika SD. *Jurnal Literasi Pendidikan Dasar*, *1*(2), 14-20. https://doi.org/10.36928/jlpd.v1i2.2084

Sidiq, A. (2020). Efektivitas model pembelajaran problem solving dan discovery learning terhadap kemampuan berpikir kritis siswa sekolah dasar. *Jurnal Basicedu*. *4(2), 361-370.*

Sormin, E. R., & Pasaribu, L. H. (2023). Peningkatan Kemampuan Berfikir Kritis Siswa terhadap Pembelajaran Matematika dengan Metode Problem Solving. *PRISMA*, *12*(1), 295-304.

Sulistiya, Y., Damayani, A. T., & Agustini, F. (2024). Pengaruh *Problem Based Learning* melalui tutor sebaya terhadap keterampilan berpikir kritis materi KPK dan FPB kelas V SD Negeri 1 Kedalon. *Jurnal Cerdas Mendidik*, *3*(2), 172-183.

 © 2026 Fhonna et al. · CC BY-SA 4.0

Tanfiziah, R., Asih, I., Sukirwan, S., & Yuhana, Y. (2022). Meningkatkan kemampuan berpikir kritis matematis melalui model *Problem Based Learning* (PBL) berbasis daring pada siswa sekolah dasar. *Tunas: Jurnal Pendidikan Guru Sekolah Dasar, 7*(2), 48-54.

Utami, G., Saputro, B. A., & Untari, M. F. A. (2020). Analysis of errors in resolving FPB and KPK story questions based on Polya procedures for fourth grade elementary school students. *Jurnal Ilmiah Sekolah Dasar, 4*(4), 642-654.

 © 2026 Fhonna et al. · CC BY-SA 4.0