Journal of Educational Management and Instruction
ISSN: 2797-8923 (e) I 2797-8931 (p)
2024, Vol. 4, No. 2, page 387-396
https://ejournal.uinsaid.ac.id/index.php/jemin/index

OPEN ACCESS

Enhancing mathematical critical thinking skills: Guided discovery learning model with *Om Jakaw Taksapa* media

Anisa Asriyanti* https://orcid.org/0009-0006-1598-5828
Noening Andrijati https://orcid.org/0009-0004-1477-7141

Faculty of Education and Psychology, Universitas Negeri Semarang, Indonesia

ABSTRACT

Critical thinking skills are essential for students as they enable rational decision-making and the selection of optimal alternatives, equipping them to navigate the challenges of globalization effectively. This study aims to analyze and compare the impacts of conventional teaching methods with guided discovery learning models, supplemented by Om Jakaw Taksapa media, on the critical thinking abilities of fifth-grade students at SDN Gugus Larasati, Central Java, Indonesia. A quasi-experimental design featuring a nonequivalent control group framework was employed. The study population comprised fifth-grade students from SDN Gugus Larasati in Semarang City, with a cluster random sampling technique used to select a total sample of 61 students. Data collection methods included interviews, observations, and tests. The data were analyzed through quantitative techniques and inferential statistics. The results demonstrated that the t-value exceeded the critical t-value (t-count = 2.733 > t-table = 2.131) and the significance level was below 0.05 ($p = 0.015 < 0.05$), indicating a statistically significant effect. The guided discovery learning model, enhanced by Om Jakaw Taksapa media, exerted a more substantial influence on students' critical thinking skills in the context of speed-related concepts compared to conventional methods. This research contributes to the advancement of educational science and underscores the importance of innovative teaching models and interactive media in fostering critical thinking. Additionally, it provides practical insights for educators to enhance classroom engagement and learning outcomes.

ARTICLE INFO

Keywords:
critical thinking skills; discovery learning model; guided discovery learning; *Om Jakaw Taksapa*

Article History:
Received: 08 July 2024
Revised: 12 November 2024
Accepted: 18 December 2024
Published: 27 December 2024

How to Cite in APA Style:
Asriyanti, A. & Andrijanti, N. (2024). Enhancing mathematical critical thinking skills: Guided discovery learning model with *Om Jakaw Taksapa* media. *Journal of Educational Management and Instruction, 4*(2), 387-396.

Introduction

Education plays a pivotal role in shaping individuals, with its primary objective being to prepare individuals holistically—balancing organic unity, harmony, and dynamism—to achieve life goals (Nurhuda, 2022). In the modern educational landscape, technology is prioritized to make learning more engaging and effective. In Indonesia, the independent curriculum is currently being implemented (Rahayu et al., 2022). This curriculum offers several advantages: it is simpler and more focused, allows teachers to adapt their teaching to students' stages of achievement and development, and emphasizes student-oriented, project-based learning (Nurani et al., 2022). A core competency

* Corresponding author: Anisa Asriyanti anisaasri25@students.unnes.ac.id
https://doi.org/10.22515/jemin.v4i2.9557

highlighted in the independent curriculum is the development of critical thinking skills, which fosters rational attitudes and behaviors (Rizkiana & Warmi, 2021).

Critical thinking skills encompass the ability to identify, analyze, and solve problems creatively and rationally (Manurung et al., 2023). These skills involve conducting evaluations, examining arguments, drawing conclusions through inductive or deductive reasoning, and making sound judgments (Linda & Lestari, 2019). Cultivating critical thinking enables students to engage deeply with concepts, comprehend material effectively, and solve higher-order problems. Furthermore, connecting academic content to students' real-life experiences is one of the most effective ways to nurture these abilities (Hasanah et al., 2023).

In elementary education, particularly in mathematics, critical thinking skills are essential. Mathematics serves as a foundation for science and plays a crucial role in understanding various disciplines (Fahrurrozi & Hamdi, 2017). The objectives of mathematics education at the elementary level include understanding mathematical concepts, using reasoning, communicating ideas through symbols, and fostering an appreciation of mathematics in daily life (Dwi Hastuti et al., 2019). However, mathematics learning has unique characteristics—it is deductive, consistent, hierarchical, logical, and abstract (Purwasih, 2020)—that can present challenges. Observations and interviews with fifth-grade teachers at SDN Gugus Larasati in Semarang City revealed several issues in mathematics learning: limited student participation, low interest and motivation, poor computational skills, and underdeveloped critical thinking abilities. Additionally, inappropriate teaching models and media often result in students becoming bored and failing to comprehend the material fully. The absence of active learning opportunities prevents students from independently discovering and understanding mathematical concepts.

The application of effective learning models is crucial in addressing these challenges. Properly selected models not only enhance the learning process but also ensure better learning outcomes (Manasikana et al., 2022). They can increase students' enthusiasm for learning, making it easier for them to understand course material and fostering critical thinking when solving problems. To address the identified issues, this study explores the use of the guided discovery learning model supported by Om Jakaw Taksapa media.

Educators must adapt their teaching strategies to suit the subject matter and the needs of their students (Erlinda et al., 2019; Widya & Latri, 2022). Guided discovery learning allows educators to guide students through unstructured tasks, enabling them to independently discover and understand concepts (James et al., 2023). By leveraging their existing knowledge, students engage in a structured exploration process that results in deeper comprehension and meaningful learning (Maula, 2019). Alongside learning models, the use of innovative media plays a significant role in enhancing students' learning independence (Aulia et al., 2019). Learning media, which act as intermediaries between instructors and students, inspire motivation and engagement while facilitating meaningful learning experiences (Hasan et al., 2021). Om Jakaw Taksapa media—a three-dimensional visual learning tool—is designed to help students understand and recall formulas related to distance, speed, time, and unit conversions. This media takes the form of a house, featuring visual aids such as formulas, a length unit conversion table, and a "ladder" of length units.

Relevant studies support the application of guided discovery learning. For instance, Cholifah and Fada (2022) demonstrated that game-based guided discovery positively impacts students' critical thinking skills, while Rulita and Jazuli (2021) found that fraction wheel-assisted guided discovery improves these skills. Similarly, Angga Ardianto et al. (2019) reported that guided discovery models enhance learning outcomes, enabling students to uncover concepts independently and experience more meaningful learning. These findings indicate the efficacy of guided discovery learning in fostering critical thinking skills.

Studies also highlight the effectiveness of innovative media in improving learning outcomes. For example, Asrani et al. (2023) found that JKW triangle props enhance student understanding in mathematics, while Yonalisa Padahala et al. (2021) reported that students found unit conversion materials easier to grasp and the learning process more enjoyable. Om Jakaw Taksapa media combines elements from these studies, making it a valuable tool for improving comprehension in speed-related topics.

This research investigates the impact of guided discovery learning, supported by Om Jakaw Taksapa media, on the critical thinking skills of fifth-grade students in mathematics. By comparing guided discovery learning to conventional models, the study aims to analyze and describe their relative effectiveness in enhancing critical thinking skills in speed-related topics for students at Gugus Larasati Elementary School in Semarang City.

This study's novelty lies in its focus on the specific application of Om Jakaw Taksapa media and guided discovery learning in addressing time, distance, speed, and length conversion concepts. By evaluating the effectiveness of these tools, the study aims to provide insights into how guided discovery learning and innovative media can enhance critical thinking skills among elementary students.

Method

The method used in this research is quasi-experimental design research. Nonequivalent control group design is the design style that is being employed, where the experimental and control classes are not randomly selected but a homogeneous group is selected, then a pretest is conducted at the beginning before the study, and a posttest at the end of the study (Abraham & Supriyati, 2022). Figure 1 is the description of the Nonequivalent Control Group Design:

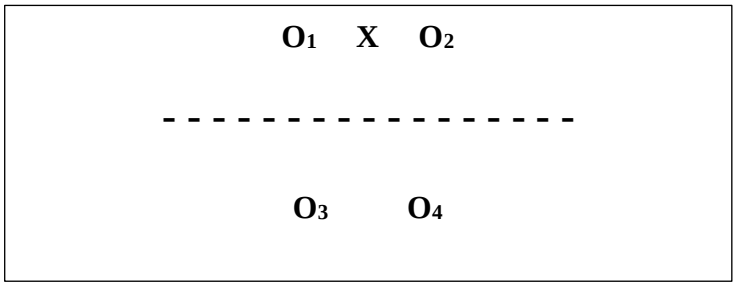

Figure 1. Nonequivalent Control Group Design

Based on the picture above, it can be explained that O_1 and O_3 are groups of students before being treated, X is treatment to students through learning using the guided discovery learning model assisted by om jakaw taksapa media. O_2 is a group of students after being treated through learning using a guided discovery learning model assisted by om jakaw taksapa media, while O_4 is a group of students who are not treated.

This research was conducted in May-June 2024 at SDN Gugus Larasati Semarang City. The research population was fifth-grade students of SDN Gugus Larasati Semarang City, which consists of nine public elementary schools. There are four schools in Plalangan, three schools in Pakintelan, and 2 schools in Sumurrejo, with a total of 182 students. The sampling technique used is cluster random sampling, or drawing samples from a population that is large enough, so it is necessary to make several classes or groups. Then, a class or group whose characteristics are relatively the same is determined (Garaika & Darmanah, 2019). The results obtained were 3 schools included in SDN Gugus Larasati, namely SDN Pakintelan 01 as a trial class with 25 students, SDN Pakintelan 02 as an experimental class with 16 students, and SDN Pakintelan 03 as a control class with 20 students. The trial class was used to test the questions that would be used for the pretest

and posttest. Students in the experimental and control classes will thereafter get the pretest and posttest questions. In addition, the experimental class will be given treatment in learning mathematics with a guided discovery learning model assisted by om jakaw taksapa media, while the control class will be given learning using a conventional model.

The variable of this research is students' critical thinking skills. Tests, interviews, observations, and documentation were the methods of data collecting that were employed. The test technique used was giving pretest and posttest questions in the form of essay questions. The data analysis techniques used quantitative analysis and inferential statistical with the help of SPSS. The analysis prerequisite test uses statistical parametric tests. The analysis prerequisite test is used to analyze the normality and homogeneity test. Normality test uses liliefors Shapiro-Wilk test. The homogeneity test used SPSS software version 25. In addition, an independent sample t-test was conducted to test the similarity of the mean pretest and post-test scores. To test the hypothesis and find out how variable X affects variable Y, use a one sample t-test.

Results

The research began with the implementation of an initial test (pretest) in the experimental and control classes whose purpose was to ascertain the students' starting proficiency. After giving the pretest, treatment was carried out four times in both classes. The experimental class applied the guided discovery learning model assisted by om jakaw taksapa media, while the control class applied the conventional learning model without media assistance. After each class received treatment four times, then each class was given a final test (posttest). The results of this final test were used to test the effect of the application of the guided discovery learning model assisted by om jakaw taksapa media in terms of the acquisition of student posttest value. The distribution results of the students' pretest and posttest values are shown in Table 1.

Table 1. Statistical descriptive analysis result data

Data	N	Highest Value	Lowest Value	Mean	Completion
Pretest Eksperiment	16	87	53	67	44%
Posttset Eksperiment	16	93	80	80	87%
Pretest Control	20	93	40	71	40%
Posttest Control	20	90	73	73	50%

The data analysis's findings revealed that the experimental class pretest had the highest value of 87 and the lowest value of 53. Whereas the control class's highest value was 93 and its lowest was 40. The average pretest of the experimental class was 67 and the control class was 71. Meanwhile, the experimental class posttest had a highest value of 93 and a lowest value of 80. Conversely, the control class's highest value was 90 and its lowest was 73. The mean post-test of the experimental class was 80 and the control class was 73. Before hypothesis testing, the data were first analyzed with the normality test, homogeneity test, and mean similarity test.

Data analysis requirement tests

Data normality test

Data on student learning outcomes are taken from students' pretest and posttest scores which consist of cognitive tests in the form of description questions. Drawing conclusions and making decisions on the results of the normality test, namely if the significance value is more than 0.05, it can be concluded that the data is normally distributed, but if the significance value is less than 0.05, it is not normally distributed. Table 2 presents normality test results.

Table 2. Normality test results of pretest and posttest values

Class	Statistic	Df	Significance
Pretest Eksperiment	0,904	16	0,094
Posttset Eksperiment	0,911	16	0,121
Pretest Control	0,955	20	0,450
Posttest Control	0,949	20	0,355

The normality test uses the Shapiro-Wilk normality test. Based on the table, it can be seen that the sig value of the experimental class pretest is 0.094 > 0.05 and the experimental class posttest is 0.121 > 0.05. Sig value. control class pretest 0.450 > 0.05 and control class posttest 0.355 > 0.05. Based on these data, all research data are regularly distributed, as indicated by the significance value of more than 0.05.

Data homogeneity test

The homogeneity test was applied in order to identify whether there were similar variants in the experimental and control classes. Drawing conclusions and making decisions on the results of the homogeneity test is considered homogenous if the significance value is greater than 0.05. However, if the significance value is less than 0.05, the variance is not. Table 3 portrays homogeneity test results.

Table 3. Homogeneity test results of pretest values

Data	Levene Statistic	df1	df2	Significance
Based on Mean	3,410	1	34	0,074
Based on Median	3.163	1	34	0,084
Based on Median and with adjusted df	3,163	1	33,934	0,084
Based on trimmed mean	3.669	1	34	0,064

Taking into account the pretest normality test findings, the sig value based on mean is 0.074 > 0.05 and the post-test is 0.998 > 0.05. The sig value based on the median from the pretest results is 0.084 > 0.05 and post-test 0.839 > 0.05. Sig value based on median and with adjusted df from pretest results 0.084 > 0.05 and posttest 0.839 > 0.05. Sig value based on trimmed mean from pretest results 0.064 > 0.05 and posttest 0.950 > 0.05. These data allow for the conclusion that all of the research's data results are homogeneous because the significance value exceeds 0.05.

Table 4. Homogeneity test results of posttest values

Data	Levene Statistic	df1	df2	Significance
Based on Mean	0,000	1	34	0,998
Based on Median	0,042	1	34	0,839
Based on Median and with adjusted df	0,042	1	33,427	0,839
Based on trimmed mean	0,004	1	34	0,950

Taking into account the pretest normality test findings, the sig value based on mean is 0.074 > 0.05 and the post-test is 0.998 > 0.05. The sig value based on the median from the pretest results is 0.084 > 0.05 and post-test 0.839 > 0.05. Sig value based on median and with adjusted df from pretest results 0.084 > 0.05 and posttest 0.839 > 0.05. Sig value based on trimmed mean from pretest results 0.064 > 0.05 and posttest 0.950 > 0.05. These data allow for the conclusion that all of the research's data results are homogeneous because the significance value exceeds 0.05.

Data similarity test

The mean similarity test is used to determine whether the experimental class and control class students have relatively the same average score or initial ability or not. Decision making based on the test criteria is if the significance result (2-tailed) is more than 0.05, then the two data variances are declared not to have an average difference, however if the two-tailed test significance result is less than 0.05, the two data variances are said to have an average. The outcomes of the mean similarity test using the independent sample t-test are displayed in Table 5.

Table 5. Independent sample t-test results of pretest values

Data	F	Sig.	T	Df	Sig. (2-tailed)
Equal variances assumed	3,410	0,074	-823	34	0,417
Equal variances not assumed			-856	33,448	0,398

Based on this, it can be seen that the significance values in the sig. (2-tailed) the column is more than 0.05, so it can be assumed that there is no difference in the mean pretest results of students in the experimental control classes, which means that the initial conditions of the two classes before being given treatment are the same.

Table 6. Independent sample t-test results of posttest values

Data	F	Sig.	t	Df	Sig. (2-tailed)
Equal variances assumed	0,000	0,998	2,107	34	0,043
Equal variances not assumed			2,111	32,528	0,043

It is evident from this table that the significance values in the sig. (2-tailed) the column is less than 0.05, so it can be concluded that there is a difference in the means of students' post-test results in the experimental class and the dick class.

Hypothesis Test

The hypothesis test is to ascertain whether or not there are differences in students' abilities for critical thinking between the use of conventional models and guided discovery learning models with the use of om jakaw taksapa media. Using the one-sample t-test, Table 7 presents the results of hypothesis test.

Table 7. One sample t-test results

	Test Value = 73					
					95% Confidence Interval of the Difference	
	T	Df	Sig. (2-tailed)	Mean Difference	Lower	Upper
Critical Thinking Skills	2.733	15	.015	6.688	1.47	11.90

It is evident from this table that the t-count value is 2.733, with a definition value of 15. With the significance value and definition, evidently the t-table is 2.131 by the large t-table on the distribution of statistical t-table values, so it is evident that the value of t-count > t-table where 2.733 > 2.131. In addition, it can also be seen that the significance value or sig. (2-tailed) < 0.05 where 0.015 < 0.05. Therefore, by the criteria of the hypothesis that has been set, it can be concluded that there are differences in students' critical thinking skills on speed material in grade V elementary school students of Larasati Gugus Semarang City in terms of the application of conventional models with guided discovery learning models assisted by om jakaw taksapa media.

Discussion

This research comprised six sessions: a pre-test, four treatment sessions, and a post-test, conducted in both experimental and control classes. The experimental group consisted of Grade V students from SDN Pakintelan 02, while the control group comprised students from SDN Pakintelan 03. The study began with a pre-test administered to both groups to assess the students' initial abilities. Following the pre-test, each class underwent four treatment sessions. The experimental class utilized the guided discovery learning model supported by Om Jakaw Taksapa media, while the control class employed conventional learning methods without media assistance. After the treatment sessions, a post-test was conducted to evaluate the impact of the learning models on students' outcomes and to analyze differences in critical thinking skills between the two groups.

The data analysis revealed a significant improvement in the critical thinking skills of the experimental group compared to the control group. This finding underscores the effectiveness of the guided discovery learning model, particularly when supported by Om Jakaw Taksapa media, in enhancing the critical thinking abilities of Grade V students studying speed material at SDN Gugus Larasati, Semarang City. The results align with Coendraad's (2021) assertion that the guided discovery learning model fosters active student participation in class activities and deepens students' understanding as they engage in the process of discovery themselves.

The study's findings corroborate prior research. Mariza and Fachrurazi (2021) demonstrated that the guided discovery learning approach enhances students' understanding of concepts such as distance, time, and speed. Their study also highlighted positive student responses, with participants expressing enjoyment in learning through this model and reporting ease in grasping the material. Similarly, research by Sudiarta et al. (2021) found that guided discovery learning significantly improved students' problem-solving abilities in mathematics. Their study indicated that the implementation of the guided discovery model was highly effective and had a discernible impact on mathematical problem-solving skills.

This research further affirms the value of combining the guided discovery learning model with Om Jakaw Taksapa media. The experimental group demonstrated substantial improvements in learning outcomes and critical thinking skills compared to the control group. These results align with Coendraad's (2021) view that guided discovery learning enables students to actively participate in lesson planning, promotes a deeper understanding of the material, and fosters a sense of satisfaction and curiosity. This approach also trains students to learn independently and encourages collaboration and interaction among peers.

The hypothesis that students' critical thinking abilities in speed-related mathematics differ significantly when taught using the guided discovery learning model with Om Jakaw Taksapa media compared to conventional methods was confirmed. The results clearly showed that the experimental group achieved better critical thinking outcomes than the control group. This suggests that integrating guided discovery learning with innovative media positively impacts students' critical thinking skills.

In summary, the application of the guided discovery learning model, supported by Om Jakaw Taksapa media, proved to be more effective in fostering critical thinking abilities among Grade V students at SDN Gugus Larasati, Semarang City. The experimental group's ability to independently identify and solve problems in speed, distance, and time materials underscores the value of this approach in cultivating critical thinking. By encouraging active engagement and concept discovery, this learning model enhances not only academic outcomes but also the students' capacity for independent and rational thought.

Conclusion

The data analysis revealed significant differences in the pretest and posttest results between the experimental and control groups. Students exposed to the guided discovery learning model assisted by Om Jakaw Taksapa media showed enhanced critical thinking skills compared to those taught using conventional methods. These findings highlight the effectiveness of integrating the guided discovery learning model with innovative media in improving students' critical thinking abilities in mathematics. Consequently, this model offers a viable alternative for educators, provided the material aligns with the guided discovery approach. Teachers are encouraged to leverage this model, supported by various media, to create interactive and engaging lessons that effectively foster critical thinking skills. However, successful implementation requires thorough preparation, including mastering the model's syntax, understanding the material, designing interactive teaching resources, and crafting thought-provoking questions.

Despite these promising outcomes, this study has limitations that should be addressed in future research. The findings are context-specific and may not generalize to other subjects, grade levels, or educational settings. Researchers are encouraged to replicate and expand upon this study by incorporating different variables and exploring diverse contexts to uncover new insights. Additionally, future investigations could focus on enhancing the guided discovery learning model by integrating other innovative media and pedagogical strategies to further improve learning outcomes and critical thinking development. Such efforts will contribute to the ongoing advancement of educational practices and the promotion of higher-order thinking skills in students.

References

Abraham, I., & Supriyati, Y. (2022). Desain Kuasi Eksperimen Dalam Pendidikan: Literatur Review. *Jurnal Ilmiah Mandala Education*, *8*(3), 2476–2482. https://doi.org/10.58258/jime.v8i3.3800

Angga Ardianto, Dodik Mulyono, Sri Handayani. (2019). Pengaruh Model Discovery Learning Terhadap Hasil Belajar Matematika Siswa Kelas VII SMP. *Jurnal Inovasi Matematika*, *1*(1), 31–37. https://doi.org/10.35438/inomatika.v1i1.136

Asrani, Irsan, & Onde, M. L. O. (2023). *Meningkatkan Hasil Belajar Siswa Pembelajaran Matematika Menggunakan Model Pembelajaran Index Card Match (ICM) Berbantuan Alat Peraga Segitiga JKW di Sekolah Dasar*. 400–407. https://jurnal-umbuton.ac.id/index.php/Prosa/article/view/4288

Aulia, L. N., Susilo, S., & Subali, B. (2019). Upaya peningkatan kemandirian belajar siswa dengan model problem-based learning berbantuan media Edmodo. *Jurnal Inovasi Pendidikan IPA*, *5*(1), 69–78. https://doi.org/10.21831/jipi.v5i1.18707

Cholifah, T. N., & Fada, S. (2022). Model Guided Discovery Learning Berbasis Game Untuk Meningkatkan Kemampuan Berpikir Kritis Siswa Sekolah Dasar. *Jurnal Educatio FKIP UNMA*, *8*(4), 1276–1285. https://doi.org/10.31949/educatio.v8i4.3286

Coendraad, R. (2021). Pengaruh Guided Discovery Learning Terhadap Kemampuan Pemecahan Masalah Turunan Dan Integral Mahasiswa Pendidikan Teknik Bangunan Universitas Palangka Raya Tahun 2020/2021. *Jurnal Ilmiah Kanderang Tingang*, *12*(02), 185–195. https://doi.org/10.37304/jikt.v12i02.133

Dwi Hastuti, I., Surahmat, Mp., Sutarto, Ms., & Lingkar Selatan Perumahan Elit Kota Mataram Asri Blok No, J. O. (2019). *PEMBELAJARAN MATEMATIKA SEKOLAH DASAR Penerbit : Lembaga Penelitian dan Pendidikan (LPP) Mandala*.

Erlinda, N., Hidayat, & Siman. (2019). Effect Of Teams Games Tournament (TGT) Learning Methods And The Interest Of Learning On The Results Of Learning In Social Study Class Vii Student Madrasah Tsanawiyah State 2 Medan. *IOSR Journal of Research & Method in Education (IOSR-JRME)*, *9*(4), 49–54. https://doi.org/10.9790/1959-0904034954

Fahrurrozi, & Hamdi, S. (2017). Metode Pembelajaran Matematika. In *Universitas Hamzanwadi Press*.

Garaika, & Darmanah. (2019). *Metodologi Penelitian*. CV HIRA TECH.

Hasan, M., Milawati, Darodjat, Harahap, Tuti Khairani Tahrim, T., Anwari, A. M., Rahmat, A., Masdiana, & Indra, I. M. (2021). *Media Pembelajaran*. Klaten: Tahta Media Group.

Hasanah, M., Silangit, S. Z. P., Jamil, R. P., & Amanda, W. N. (2023). Analisis Tingkat Kemampuan Berpikir Kritis Siswa Sma Nurul Iman Tanjung Morawa. *Pedagogi: Jurnal Ilmiah Pendidikan*, *9*(1), 16–22. https://doi.org/10.47662/pedagogi.v9i1.540

James U. L. Mangobi, Sulangi, V. R., & Kondoahi, R. C. (2023). Penerapan Model Guided Inquiry pada Pembelajaran Materi Penjumlahan dan Pengurangan Bentuk Aljabar. *GAUSS: Jurnal Pendidikan Matematika*, *6*(2), 31–43. https://doi.org/10.30656/gauss.v6i2.7811

Linda, Z., & Lestari, I. (2019). Berpikir Kritis Dalam Konteks Pembelajaran. In *Erzatama Karya Abadi* (Issue August).

Manasikana, O. A., Af'ida, N., Mayasari, A., & Siswant, M. B. E. (2022). *MODEL PEMBELAJARAN INOVATIF DAN RANCANGAN PEMBELAJARAN UNTUK GURU IPA SMP*. LPPM UNHASY Tebuireng Jombang.

Manurung, A. S., Fahrurrozi, F., Utomo, E., & Gumelar, G. (2023). Implementasi Berpikir Kritis dalam Upaya Mengembangkan Kemampuan Berpikir Kreatif Mahasiswa. *Jurnal Papeda: Jurnal Publikasi Pendidikan Dasar*, *5*(2), 120–132. https://doi.org/10.36232/jurnalpendidikandasar.v5i2.3965

Mariza, M., & Fachrurazi, F. (2021). Meningkatkan Hasil Belajar Matematika Siswa pada Materi Jarak, Waktu dan Kecepatan melalui Model Guided Discovery Learning di SD Negeri 24 Peusangan. *Jupendas: Jurnal Pendidikan Dasar*, *8*(2), 26–31. http://jfkip.umuslim.ac.id/index.php/jupendas/article/view/719

Maula, I. (2019). Pembelajaran Matematika Guided Discovery. In *Perpustakaan Nasional: Katalog Dalam Terbitan (KTD)* (Vol. 1, Issue 1).

Nurani, D., Anggraini, L., Misiyanto, & Mulia, R. K. (2022). Buku Saku Serba-Serbi Kurikulum Merdeka Kekhasan Sekolah Dasar. *Direktorat Sekolah Dasar*, 2–5.

Nurhuda (2022). *Landasan Pendidikan*. Ahli Media Press: Malang.

Purwasih, S. M. (2020). Pemanfaatan Dakota dalam Meningkatkan Hasil Belajar Matematika pada Materi FPB dan KPK. *Jurnal Pendidikan Matematika*, *11*(1), 126–133. http://ojs.uho.ac.id/index.php/jpm

Rahayu, R., Rosita, R., Rahayuningsih, Y. S., Hernawan, A. H., & Prihantini, P. (2022). Implementasi Kurikulum Merdeka Belajar di Sekolah Penggerak. *Jurnal Basicedu*, *6*(4), 6313–6319. https://doi.org/10.31004/basicedu.v6i4.3237

Rizkiana, A. M., & Warmi, A. (2021). Analisis kemampuan berpikir kritis siswa dalam menyelesaikan soal pada materi persamaan linear satu variabel. *MAJU: Jurnal Ilmiah Pendidikan …*, *8*(1), 313–317. https://media.neliti.com/media/publications/502879-none-14d6af4e.pdf

Rulita, E., & Jazuli, A. (2021). *The Influence of Guided Discovery Learning Assisted by Fraction Wheel to Student Critical Thinking*. 1–5. https://doi.org/10.4108/eai.19-7-2021.2312481

Sudiarta, I. W., Diputra, G. N. O., Nayun, I. W., & Sutanaya, I. B. A. (2021). Efektivitas Pembelajaran Matematika Secara Daring Di Masa Pandemi Covid -19 Terhadap Kemampuan Berfikir Kritis Siswa. *Suluh Pendidikan*, *19*(1), 29–44. https://ojs.ikip-saraswati.ac.id/index.php/suluh-pendidikan/article/download/243/215

Widya Karmila Sari Achmad, Latri, M. D. (2022). Pengaruh Model Guided Discovery Learning terhadap Kemampuan Pemecahan Masalah Matematika Siswa Kelas IV SD Kartika XX-1 Kota Makassar. *Journal of Education*, *2*(1), 1–14. https://eprints.unm.ac.id/34092/

Yonalisa Padahala, A., Rakimin Husen, F., Marsalince Djaha, K., Lalang, D., Matematika dan Ilmu Pengetahuan Alam, F., & Tribuan Kalabahi, U. (2021). Penggunaan Alat Peraga

Konversi Satuan Panjang (Kosapa) Dalam Meningkatkan Hasil Belajar. *Jurnal Pengabdian Kepada Masyarakat (JPKM) - Aphelion*, *2*(1), 64–68. http://www.openjournal.unpam.ac.id/index.php/JPKA/article/view/12570