

THE EFFECT OF THE GUIDED INQUIRY MODEL ON STUDENTS' MATHEMATICS LEARNING OUTCOMES BASED ON CREATIVITY LEVELS

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ABSTRACT Student achievement in mathematics in Indonesia remains relatively low, highlighting the need for learning models that can foster engagement and deeper understanding. This study investigates the effect of the Guided Inquiry learning model on mathematics achievement by considering the role of student creativity. A quasi-experimental design with a posttest-only control group was employed. The population consisted of all Grade VII students of SMP Negeri 2 Kedawung in the 2024/2025 academic year. Using random sampling, class VIIB was assigned as the experimental group and class VIIE as the control group. Data were collected through tests and questionnaires, and analyzed using normality tests, homogeneity tests, and two-way ANOVA with unequal cells. Balance between groups was established using students' odd-semester final examination scores prior to treatment. The findings revealed that: (1) the Guided Inquiry model was more effective than conventional instruction in improving mathematics achievement, (2) student creativity significantly influenced mathematics achievement, and (3) there was no interaction effect between the Guided Inquiry model and student creativity. These results suggest that the Guided Inquiry model can effectively improve students' mathematics achievement, while creativity contributes independently to learning outcomes.

Keywords: guided inquiry, mathematics achievement, student creativity, quasi-experiment

ABSTRAK Prestasi belajar matematika siswa di Indonesia masih relatif rendah, sehingga diperlukan model pembelajaran yang dapat meningkatkan keterlibatan dan pemahaman siswa. Penelitian ini bertujuan untuk mengkaji pengaruh model pembelajaran *Guided Inquiry* terhadap prestasi belajar matematika dengan mempertimbangkan peran kreativitas siswa. Penelitian ini menggunakan desain kuasi-eksperimen dengan rancangan *posttest-only control group*. Populasi penelitian adalah seluruh siswa kelas VII SMP Negeri 2 Kedawung pada tahun ajaran 2024/2025. Dengan teknik *random sampling*, kelas VIIB ditetapkan sebagai kelas eksperimen dan kelas VIIE sebagai kelas kontrol. Data dikumpulkan melalui tes dan angket, kemudian dianalisis dengan uji normalitas, uji homogenitas, dan ANAVA dua jalur dengan sel tak sama. Keseimbangan kelompok diuji menggunakan nilai ujian akhir semester ganjil sebelum perlakuan diberikan. Hasil penelitian menunjukkan bahwa: (1) model *Guided Inquiry* lebih efektif dibandingkan pembelajaran konvensional dalam meningkatkan prestasi belajar matematika, (2) kreativitas siswa berpengaruh signifikan terhadap prestasi belajar

matematika, dan (3) tidak terdapat interaksi antara model *Guided Inquiry* dan kreativitas terhadap prestasi belajar siswa. Temuan ini mengindikasikan bahwa model *Guided Inquiry* efektif dalam meningkatkan prestasi belajar matematika, sementara kreativitas berkontribusi secara independen terhadap hasil belajar.

Kata-kata kunci: guided inquiry, prestasi belajar matematika, kreativitas siswa, kuasi eksperimen

INTRODUCTION

Mathematics is one of the disciplines that must be mastered at every level of education, from elementary to tertiary levels (Permatasari, 2021). A deep understanding of this subject is crucial, considering that mathematics acts as a basis for learning other fields of science and serves to develop logical and analytical thinking skills that are indispensable in everyday life (Nasution et al., 2020). Learning outcomes refer to the achievements obtained by individuals in developing their abilities through processes involving cognitive, affective, and psychomotor aspects. A combination of the three, which are carried out to gain experience over a long enough period, results in changes in individuals related to the knowledge gained either directly or indirectly (Rahman, 2021). The various indicators of academic achievement are divided into three categories: cognitive, affective, and psychomotor (Nafiati, 2021). However, in general, the learning outcomes in mathematics in Indonesia do not meet expectations. According to OECD (2019), the results of the Programme for International Student Assessment (PISA) study in 2019 show that Indonesia ranked 70th out of 80 countries with an average math score of 379. This is a low score compared to the average PISA math score of member countries of the Organization for Economic Cooperation and Development (OECD), which has an average score of 489.

The preliminary study conducted at SMP Negeri 2 Kedawung shows that the average mathematics learning outcomes are still relatively low at 69.27, with 67% of students not meeting the Learning Mastery Criteria (KKTP). Many students have not been able to understand basic mathematics concepts deeply, and they also show a lack of enthusiasm and creativity in learning. This indicates serious challenges in the mathematics learning process at school. Various factors may cause the issue of low learning outcomes, one of which is the teaching methods that have not successfully engaged students actively in the learning process (Gómez-Chacón et al., 2024; Sala Sebastià et al., 2021). Therefore, along with the development of the education curriculum in Indonesia, there is an urgent need to evaluate and improve teaching methods that can foster active participation and creativity among students. One step that can be taken is to implement learning using the guided inquiry model (Aswad, 2021).

Quantitative studies conducted in various junior high schools demonstrate that the implementation of innovative learning models, such as guided inquiry, can exert a favorable influence on student learning results. A study conducted by Atikah &

Jumrah (2019) at SMP Negeri 3 Patampanua revealed a substantial correlation between students' learning interests and their academic performance in mathematics. As posited by Yulia et al. (2021), the guided inquiry model necessitates the active involvement of students and their collaboration in groups to discuss material, under the guidance of the teacher. Innovative learning strategies that take into account the initial abilities of students so that better learning outcomes are obtained (Nur et al., 2020). Using methods that require students to participate in learning actively will result in successful learning. By using the guided inquiry strategy, students are required to become active participants in the learning process to generate ideas. According to Isrok'atun & Rosmala (2019), the inquiry learning model is student-centered learning, in which students are the subject of learning. The guided inquiry learning activity is comprised of the following stages: 1) formulation of the problems, 2) formulation of the hypotheses, 3) data collection, 4) experiment, and 5) conclusion. In implementing guided inquiry learning, an active role from students is needed at every stage of the scientific thinking process, which not only requires an understanding of concepts but also encourages the emergence of creative ideas. One of the aspects that can be developed is student creativity.

Creativity comes from the word "creative", which is defined in the KBBI as the ability to create something, creative power, or properties that contain elements of creation. In more depth, creativity refers to the ability to develop new perspectives, ideas, and innovative ways of thinking used to solve problems that have never been faced before (Faizah et al., 2022). According to Telaumbanua et al. (2021), creativity is defined as the capacity to generate new or original ideas to solve new problems. The concept of student creativity encompasses a range of attributes, including flexibility, originality, elaboration, evaluation, and fluency. Non-skill characteristics, such as curiosity, imagination, and a propensity for diversity and risk-taking, have also been identified as integral components of creativity (Karmila, 2021). Students' creativity can foster mathematical ideas or concepts to face challenges. Through creativity, students can discover various approaches or innovative ideas to solve math problems. In the learning process, teachers must encourage students' creativity to improve learning outcomes. Teachers can help students think critically to find creative solutions to problems by creating an environment that supports the exploration of ideas and innovation.

Although many studies have discussed the impact of inquiry models on learning outcomes, few have examined their influence considering the interaction between learning models and students' creativity levels in mathematics subjects at the junior high school level. Consequently, further investigation is necessary to examine the impact of the guided inquiry model on mathematics learning results, with particular attention to aspects of student creativity. This research is hoped to make a valuable contribution to the advancement of learning methods at the junior high school level

and to provide new insights for educators in designing learning strategies that are more effective and enjoyable for students and that can produce better results.

METHODS

This study employed a quasi-experimental design using a posttest-only control group to compare two learning models. The population consisted of all seventh-grade students at SMP Negeri 2 Kedawung in the 2024/2025 academic year. Using simple random sampling, class VIIB was assigned as the experimental group, taught with the Guided Inquiry model, while class VIIE served as the control group, taught with conventional instruction. The design scheme is presented in Table 1.

Table 1. Posttest-Only Control Group Design

Group	Treatment	Final State
Experiment	X_1	Y_1
Control	X_2	Y_2

Description:

X_1 = student activities in the Guided Inquiry learning model

X_2 = student activities in conventional learning

Y_1 = posttest outcomes of the experimental group

Y_2 = posttest outcomes of the control group

Prior to treatment, equivalence between groups was tested using odd-semester final examination scores analyzed in SPSS at a 5% significance level.

The research instruments consisted of two parts: (1) a learning outcomes test and (2) a student creativity questionnaire. The learning outcomes test comprised five essay items aligned with the achievement indicators of the taught material. The items were pre-tested to ensure validity. The creativity questionnaire consisted of 30 Likert-scale items developed based on indicators of learning creativity, validated by experts, and tested for reliability.

The data collection procedure began with a preliminary study to determine initial conditions and to assign the experimental and control groups randomly. Baseline equivalence was then confirmed. The experimental group received instruction using the Guided Inquiry model, while the control group received conventional instruction. After the treatment, a posttest was administered to measure learning outcomes, and the creativity questionnaire was distributed to assess students' creativity levels. Data analysis employed two-way analysis of variance (ANOVA) with unequal cells. This technique was used to examine the effects of the independent variables (learning model and creativity) on the dependent variable (mathematics learning outcomes), both individually and in interaction. Preliminary tests of normality and homogeneity were conducted before hypothesis testing. If the null hypothesis was rejected, post-hoc tests were performed.

The hypotheses tested were:

- H_{0A} : There is no effect of learning models (Guided Inquiry vs. conventional) on mathematics learning outcomes.
- H_{1A} : There is an effect of learning models on mathematics learning outcomes.
- H_{0B} : There is no effect of student creativity on mathematics learning outcomes.
- H_{1B} : There is an effect of student creativity on mathematics learning outcomes.
- H_{1B} : There is an effect of student creativity on mathematics learning outcomes.
- H_{0AB} : There is no interaction effect between learning model and creativity on mathematics learning outcomes.
- H_{1AB} : There is an interaction effect between learning model and creativity on mathematics learning outcomes.

The classification of learning creativity is shown in Table 2.

Table 2. Classification of Learning Creativity

Classification	Interval
High	$X \geq \bar{X} + SD$
Medium	$\bar{X} - SD \leq X \leq \bar{X} + SD$
Low	$X < \bar{X} - SD$

(Source: Arikunto, 2001)

FINDING AND DISCUSSION

This study was conducted at SMP Negeri 2 Kedawung with a sample of 62 seventh-grade students, divided into two groups: the experimental group of 31 students in class VIIB, taught using the Guided Inquiry method, and the control group of 31 students in class VIIE, taught using conventional methods.

Equivalence Test

Before the treatment, an equivalence test was carried out using the t-test on students' semester examination scores. Table 2 presents the results of the t-test calculation with a significance level of 5%.

Table 2. Equivalence Test Calculation Results

Class	Number of subjects	Sig.	t_{count}	t_{table}	Decision
Experiment	31	0,396	-0,854	2,00	H_0 accepted
Control	31	0,397			

According to the t-test results using SPSS, the obtained values were $t_{\text{count}} = -0.854$ and $t_{\text{table}(0.025;29)} = 2.000$. Since $t_{\text{count}} < t_{\text{table}}$, H_0 is accepted. Thus, it can be assumed that the experimental and control classes had equivalent abilities prior to the treatment.

Prerequisite Tests

A validity test was also conducted on the student creativity questionnaire. Tables 3 and 4 present the validity test results for the questionnaire and for the learning outcomes test, respectively.

Table 3. Validity Test Results of Student Creativity Questionnaire

No.	r_{xy}	r_{table}	Decision	No.	r_{xy}	r_{table}	Decision
1.	0,247	0,355	Invalid	16.	0,480	0,355	Valid
2.	0,311	0,355	Invalid	17.	-0,215	0,355	Invalid
3.	0,446	0,355	Valid	18.	0,444	0,355	Valid
4.	0,600	0,355	Valid	19.	0,578	0,355	Valid
5.	0,610	0,355	Valid	20.	0,390	0,355	Valid
6.	0,488	0,355	Valid	21.	0,452	0,355	Valid
7.	0,474	0,355	Valid	22.	0,445	0,355	Valid
8.	0,246	0,355	Invalid	23.	0,416	0,355	Valid
9.	0,514	0,355	Valid	24.	0,398	0,355	Valid
10.	0,053	0,355	Invalid	25.	0,555	0,355	Valid
11.	0,482	0,355	Valid	26.	0,425	0,355	Valid
12.	0,074	0,355	Invalid	27.	0,220	0,355	Invalid
13.	0,650	0,355	Valid	28.	0,144	0,355	Invalid
14.	0,290	0,355	Valid	29.	0,151	0,355	Invalid
15.	0,398	0,355	Valid	30.	0,089	0,355	Invalid

Based on the validity test, 20 items were found to be valid, while 10 items were invalid. Therefore, the final questionnaire consisted of 20 valid items to measure student creativity. The reliability test, calculated using SPSS, produced a coefficient of 0.832, indicating that the creativity questionnaire was reliable in the high category.

Table 4. Learning Outcomes Test Validity Results

No.	r_{xy}	r_{table}	Decision
1.	0,655	0,355	Valid

No.	r_{xy}	r_{table}	Decision
2.	0,595	0,355	Valid
3.	0,378	0,355	Valid
4.	0,739	0,355	Valid
5.	0,388	0,355	Valid

All five test items were valid, with correlation coefficients greater than the critical r_{table} value of 0.355.

The prerequisite tests also included normality and homogeneity analyses.

Table 5. Normality Test

	Statistic	Sig.
One-Sample Shapiro-Wilk Test	0,981	0,449

The One-Sample Shapiro–Wilk Test at the 5% significance level showed that the data were normally distributed (Sig. = 0.449 > 0.05).

Table 6. Homogeneity Test

	Statistic	Sig.
Levene's Test	1,948	0,101

The homogeneity test using Levene's Test at the 5% significance level indicated that the two sample groups came from a homogeneous population (Sig. = 0.101 > 0.05).

Hypothesis Testing

Since the two groups were equivalent, normally distributed, and homogeneous, the hypothesis testing stage was carried out using two-way ANOVA with unequal cells at the 5% significance level.

Table 7. Summary of ANOVA Results

Source	Sum of Squares (SS)	df	Mean Square (MS)	F	F_critical	Decision
Learning Model (A)	597.203	1	597.203	14.395	4.010	H_0 rejected
Student Creativity (B)	857.647	2	428.823	10.337	3.159	H_0 rejected
Interaction (A×B)	105.269	2	52.634	1.269	3.159	H_0 accepted
Error	2323.192	56	41.486	–	–	–

As demonstrated in Table 7, the outcomes of the two-way variance analysis with unequal cells can be interpreted as follows.

The calculation results in the first row (A) show that $F_A=14,395$ and $F_{table}=4,010$. Because $F_A > F_{table}$ then H_{0A} is rejected. This means that there is an impact of guided inquiry and conventional learning strategies on math learning outcomes. The results of the calculation in the second row (B) show that $F_B =10,337$ and $F_{table}=3,159$. Because $F_B > F_{table}$ then H_{0B} is rejected. This means that there is an impact of student creativity on math learning results. The calculation results on the third row (AB) show that $F_{AB}=1,269$ and $F_{table}=3,159$. because $F_{AB} > F_{table}$ then H_{0AB} is accepted. This finding indicates an absence of interplay between the guided inquiry learning model and student creativity, as measured by the outcomes of student learning.

The decision derived from the test, as determined by the two-way analysis of variance with unequal cells, supports rejecting the null hypothesis, also referred to as H_{0AB} . This indicates the absence of a joint influence between the guided inquiry learning methods and the conventional learning methods with creativity on student learning outcomes. Therefore, it is not possible to continue the comparison of means between cells in the same column or between cells in the same row. Furthermore, the findings indicate the rejection of both H_{0A} and H_{0B} hypotheses. Consequently, additional post-analysis tests were conducted in this study to ascertain the disparities between rows. The ensuing table (Table 8) offers a synopsis of the cell means and marginal means.

Table 8. Summary of Cell Means and Marginal Means

Learning Model	Student Creativity			Marginal Mean
	High	Medium	Low	
Guided Inquiry	90.000	83.167	78.900	84.022
Conventional	80.875	73.875	76.000	77.583
Marginal Mean	86.437	78.521	77.450	

The first hypothesis indicates that H_{0A} is rejected, suggesting that the guided inquiry learning method and the conventional learning method have a significant effect on mathematics learning outcomes. The marginal mean of the student group taught using the guided inquiry method is 84.022, while that of the group taught using the conventional method is 77.583. A comparison of the marginal means reveals that the mathematics learning outcomes of students taught with the guided inquiry method are higher than those taught with the conventional method. The guided inquiry approach provides more organized learning based on the teacher's plan, ensuring that all phases are completed and that students are not confused about the activities to be carried out (Sani, 2022). This finding is consistent with research conducted by Cahyani (2017), which showed that guided inquiry and modified free inquiry models produce different effects on student learning outcomes. The results are reinforced

by classroom conditions, where students taught with guided inquiry were more enthusiastic and actively engaged in the learning process compared to those taught conventionally. In the guided inquiry strategy, the teacher presents a problem, and students are tasked with solving it through activities such as data analysis and drawing conclusions, encouraging them to play an active role in the learning process. Within groups, each member contributes to diagnosing real-world problems. This strategy emphasizes student-centered problem-solving, where students take the initiative in addressing real-world issues, while the teacher acts as a facilitator, providing guidance through questions that lead students toward solutions.

The second hypothesis indicates that H_0B is rejected, showing a significant effect of student creativity on mathematics learning outcomes. This finding suggests differences in achievement among students with high, medium, and low levels of creativity. The marginal mean for students with high creativity is 86.437, compared to 77.45 for students with low creativity. Thus, students with higher creativity achieve better results in mathematics than those with lower creativity. This finding is in line with Murtiyasa and Hayuningtyas (2020), who also reported that student creativity significantly influences mathematics achievement.

The third hypothesis indicates that H_0AB is accepted, meaning there is no joint effect between the learning model (guided inquiry or conventional) and creativity on mathematics learning outcomes. In both learning models, students with higher creativity achieve better results than those with lower creativity. However, this study did not find a combined effect of learning model and creativity. In contrast, previous studies, such as those by Atikah and Jumrah (2019) and Telaumbanua et al. (2021), reported that creativity enhances the success of active learning models. A possible reason for the difference lies in the lack of alignment between the learning models. Furthermore, students' unfamiliarity with the guided inquiry method may have influenced the results. This model requires students to actively explore, formulate hypotheses, and draw conclusions independently, with minimal teacher guidance. For students unaccustomed to such approaches, the process can be confusing or even lead to cognitive dissonance, preventing them from maximizing their creativity. In addition, classroom conditions also play a crucial role. Time limitations hindered the comprehensive implementation of inquiry stages, while the lack of adequate learning aids and an unsupportive classroom environment (e.g., noisy or uncondusive conditions) limited students' opportunities to develop their creative ideas. Therefore, the effectiveness of a learning model is not determined solely by the instructional approach but is also heavily influenced by students' readiness to adopt new methods and by the quality of the learning environment that supports the process.

CONCLUSIONS AND RECOMMENDATIONS

Based on the findings and discussion of this study, it can be concluded that both the guided inquiry and conventional learning methods influence students' mathematics

performance. However, students taught using the guided inquiry model achieved better learning outcomes than those taught using conventional methods. The study also found that student creativity positively affects mathematics performance, with students who have high levels of creativity outperforming those with lower levels of creativity. In contrast, no evidence was found of an interaction effect between the guided inquiry learning model and student creativity on mathematics achievement.

In line with these results, the researcher recommends the guided inquiry learning model as an effective approach for teaching mathematics, as it fosters problem-solving skills that can be applied in real-world contexts. Educators are encouraged to adopt this model to promote active learning and enhance creative thinking in mathematics education.

REFERENCES

- Arikunto, S. (2001). *Dasar-dasar evaluasi pendidikan* (Edisi revisi). Bumi Aksara.
- Aswad, H. (2021). Improving mathematics learning outcome using inquiry learning model at vocational school. In *Proceedings of the International Conference on Educational Studies in Mathematics (ICoESM)* (Vol. 611, pp. 427–433). Atlantis Press. <https://www.atlantispress.com/article/125965681.pdf>
- Atikah, N., & Jumrah. (2019). Pengaruh minat terhadap hasil belajar matematika siswa. *Journal of Mathematics Education*, 3(1), 3–10.
- Budiyono. (2016). *Statistika untuk penelitian* (M. S. Suyono, Ed.; 4th ed.). UNS Press.
- Cahyani, E. D. (2017). Pembelajaran matematika berbasis masalah dengan strategi inkuiri terbimbing dan inkuiri bebas termodifikasi ditinjau dari kemampuan awal siswa MTs. *Varia Pendidikan*, 28(2), 140–149. <https://doi.org/10.23917/varidika.v28i2.3029>
- Faizah, H., Susiloningsih, W., & Sugandi, E. (2022). Profil berpikir kreatif siswa pada mata pelajaran matematika SD kelas 4. *Inventa: Jurnal Pendidikan Guru Sekolah Dasar*, 6(1), 65–69. https://jurnal.unipasby.ac.id/index.php/jurnal_inventa/article/view/4552
- Gómez-Chacón, I. M., Bacelo, A., Marbán, J. M., & Palacios, A. (2024). Inquiry-based mathematics education and attitudes towards mathematics: Tracking profiles for teaching. *Mathematics Education Research Journal*, 36(3), 715–743. <https://doi.org/10.1007/s13394-023-00468-8>
- Isrok'atun, & Rosmala, A. (2019). *Model-model pembelajaran matematika* (B. S. Fatmawati, Ed.; 2nd ed.). Bumi Aksara.
- Karmila, D. (2021). Meningkatkan keterlibatan aktif siswa kelas VIII F SMPN 1 Pontianak melalui penerapan talking. *Indonesian Journal of Educational Development*, 2(1), 28–37. <https://doi.org/10.5281/zenodo.4781846>

- Murtiyasa, B., & Hayuningtyas, W. (2020). Pengaruh strategi pembelajaran tipe kooperatif dan kreativitas siswa terhadap hasil belajar matematika. *Jurnal Program Studi Pendidikan Matematika*, 9(2), 358–368. <https://doi.org/10.24127/ajpm.v9i2.2765>
- Nafiati, D. A. (2021). Revisi taksonomi Bloom: Kognitif, afektif, dan psikomotorik. *Humanika*, 21(2), 151–172. <https://doi.org/10.21831/hum.v21i2.29252>
- Nasution, M. K. M., Sitompul, O. S., Nasution, S., Aulia, I., & Elveny, M. (2020). Mathematic. *Journal of Physics: Conference Series*, 1566(1), 012030. <https://doi.org/10.1088/1742-6596/1566/1/012030>
- Nur, I. M., Sari, D. P., & Jalal, A. (2020). Meningkatkan kemampuan berpikir kreatif matematika siswa SMP melalui model pembelajaran aktif tipe snowball throwing. *Jurnal Pendidikan MIPA*, 14(4), 723–731. <https://doi.org/10.37630/jpm.v14i4.1980>
- OECD. (2019). *Programme for International Student Assessment (PISA) results from PISA 2018* (Vols. I–III, pp. 1–8). OECD Publishing.
- Permatasari, K. G. (2021). Problematika pembelajaran matematika di sekolah dasar/madrasah ibtidaiyah. *Jurnal Ilmiah Pedagogy*, 17(1), 68–84. <http://www.jurnal.staimuhblora.ac.id/index.php/pedagogy/article/view/96>
- Rahman, S. (2021). Pentingnya motivasi belajar dalam meningkatkan hasil belajar. In *Prosiding Seminar Nasional Pendidikan Dasar* (pp. 289–302).
- Sala Sebastià, G., Barquero, B., & Font, V. (2021). Inquiry and modeling for teaching mathematics in interdisciplinary contexts: How are they interrelated? *Mathematics*, 9(15), 1714. <https://doi.org/10.3390/math9151714>
- Sani, R. A. (2022). *Inovasi pembelajaran* (Y. S. Hayati, Ed.). Bumi Aksara.
- Sugiyono. (2016). *Metode penelitian dan pengembangan (Research and Development/R&D)* (2nd ed.). Alfabeta.
- Telaumbanua, N. A., Lase, D., & Ndraha, A. (2021). Kreativitas guru dalam menggunakan media pembelajaran di SD Negeri 075082 Marafala. *Hineni: Jurnal Ilmiah Mahasiswa*, 1(1). <https://doi.org/10.36588/hjim.v1i1.63>
- Yulia, P., Riskayani, M., & Erita, S. (2021). Efektivitas model pembelajaran process oriented guided inquiry learning (POGIL) terhadap kemampuan komunikasi matematis. *Jurnal Absis: Jurnal Pendidikan Matematika dan Matematika*, 3(2), 257–266. <https://doi.org/10.30606/absis.v3i2.700>