



The Influence of a Concrete Media-Assisted Guided Discovery Learning Model on Students' Learning Interests and Creative Thinking Abilities in Science Learning at Cluster VI, Sutera District

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ABSTRACT

This study addresses the low learning interest and limited creative thinking skills of fifth-grade students in science classes at Gugus VI, Sutera Subdistrict. These issues are associated with the lack of varied learning media, minimal student participation, and the dominance of teacher-centered instruction. The research aimed to determine the effect of the Guided Discovery Learning model supported by concrete media on students' learning interest and creative thinking abilities. A quasi-experimental design was used, specifically the posttest-only control group design. The population consisted of all fifth-grade students in Gugus VI, with SDN 25 Amping Parak as the experimental group and SDN 29 Teratak Panas as the control group. Data were collected through a learning interest questionnaire and a creative thinking test containing statements and essay questions. The data were analyzed using the Mann-Whitney U test in SPSS 27. The results showed a significant difference between students taught using Guided Discovery Learning with concrete media and those taught conventionally. The significance values of the questionnaire ($0.001 < 0.05$) and the test ($0.000 < 0.05$) indicated that the model effectively increased learning interest and creative thinking skills.

1. Introduction

Education plays a crucial role in fully developing students' potential, addressing their cognitive, affective, and psychomotor domains. Learning objectives can be achieved when students are actively, creatively, and innovatively involved in the learning process. According to Fathurrohman (2015), learning is a combination of interacting components, and without good integration, learning objectives are

difficult to achieve. In line with this, Trianto (2017) emphasizes that learning oriented toward student activeness is more capable of achieving educational goals because students are encouraged to construct their own knowledge.

However, the reality in the field still shows obstacles. Observations at Cluster VI, Sutera District, revealed low student interest, limited participation, and learning that is still centered on the teacher. This condition has an impact on weak learning outcomes and creative thinking skills. Slameto (2010) explains that learning interest refers to a sense of preference or attraction toward an activity that arises naturally, without any external pressure, and plays an essential role in ensuring learning success. Similarly, Winkel (2014) emphasizes that interest acts as a psychological drive that motivates individuals to engage in learning activities with energy and enthusiasm.

In the 21st-century learning context, students are expected to develop the 4C skills: critical thinking, collaboration, communication, and creativity. Among these, creative thinking is essential, as it enables students to generate original ideas, develop innovative solutions, and effectively tackle everyday problems. Haryanti & Saputra (2019) state that creative thinking ability is highly necessary for students to face the challenges of 21st-century life. In line with this, Mulyasa (2017) asserts that creativity is one of the important competencies that must be developed in learning because it is closely related to being prepared for changing times. Creative thinking can be understood as the capacity to produce original, diverse, and practical ideas when addressing problems. Munandar (2017) explains that creative thinking reflects fluency, flexibility, and originality in finding new ideas. Sari et al. (2022) add that the goal of creative thinking is to help students develop new ideas as the main key to facing future challenges. In line with this, Utami (2020) explains that creative thinking is an important asset for building meaningful learning because it trains students to solve problems from various perspectives.

To answer these challenges, a learning model oriented toward discovery activities is needed. Guided Discovery Learning is one such model that emphasizes discovery activities with teacher guidance. Suprihatiningsih (2014) notes that discovery learning comes in two forms: free discovery, where students explore independently, and guided discovery, where the teacher facilitates the process. Mustofa (2019) further points out that the Guided Discovery Learning approach can effectively boost students' interest and foster their creative thinking skills by encouraging them to construct knowledge actively, as it encourages them to actively construct their own understanding. In line with this, Hosnan (2016) states that this model is effective in encouraging critical and creative thinking skills if the teacher can provide systematic guidance in the learning process.

For greater effectiveness, this model needs to be supported by concrete media. Shoimah & Syafi'aturrosyidah (2021) suggest that concrete media are physical objects that students can directly see and touch. Santika et al. (2022) add that concrete media can stimulate students' thoughts, feelings, and attention, thus increasing their understanding of concepts and learning interest. Prastowo (2020)

also indicates that using concrete media helps students understand abstract concepts more easily because they can be connected to their real-life experiences. Drawing from this background, the present study seeks to examine the impact of implementing the Guided Discovery Learning model supported by concrete media on students' interest in learning and their creative thinking skills in science education at Cluster VI, Sutera District.

2. Methodology

This study uses a quasi-experimental design with a posttest-only control group approach. This design was selected because the researcher could not randomly assign students to the experimental and control groups; instead, existing classes were used. According to Sugiyono (2019), quasi-experimental research is widely used in education because it is more suitable for real classroom conditions in schools where randomization is difficult. This design is effective for comparing learning outcomes after a treatment by giving only a final test (posttest) to both groups (Arikunto, 2014).

The research population consists of all fifth-grade students in Cluster VI, Sutera District, for the 2024/2025 academic year. The population includes five elementary schools with relatively homogeneous characteristics in terms of curriculum and students' social backgrounds. According to Creswell (2016), homogeneity in population characteristics is important in experimental research for more valid comparison results. The study applied purposive sampling, determined by the number of students and their academic conditions. According to Riduwan & Akdon (2010), purposive sampling is used when the researcher has specific considerations for selecting a sample that is considered the most representative. Fifth-grade students at SDN 25 Amping Parak were assigned as the experimental group, while those at SDN 29 Teratak Panas served as the control group. The experimental group was taught using the Guided Discovery Learning model supported by concrete media, whereas the control group continued with conventional instruction through basic lecture and discussion methods. According to Hosnan (2016), innovative learning models like Guided Discovery Learning can provide a significant difference in learning outcomes compared to conventional, teacher-centered methods. The research instruments consist of two types, namely:

1. A creative thinking skills test consisting of 35 items in both multiple-choice and essay formats. This test was developed based on the indicators from Munandar (2017), which include: fluency, flexibility, originality, and elaboration. This instrument was tested for its validity and reliability before use to ensure that each question item could accurately measure students' creative thinking abilities.
 2. A learning interest questionnaire, structured as a Likert scale with four response options (strongly agree, agree, disagree, strongly disagree). This questionnaire contains statements that reflect aspects of students' interest, attention, involvement, and motivation in participating in science learning. The content
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validity of the questionnaire was obtained through expert review, while the reliability test showed an adequate level of consistency.

The research was carried out in several stages. During the preparation stage, learning materials and research instruments were prepared, and coordination was conducted with the school. In the implementation stage, the two classes received different treatments. In the experimental class, the teacher applied the Guided Discovery Learning model, focusing on students actively discovering concepts under teacher guidance, supported by concrete media. The concrete media included real objects related to the science material, such as simple teaching aids and items from the surrounding environment. Meanwhile, the control class continued with conventional, teacher-centered learning methods. Following the learning process, data were collected by administering a posttest, which included a learning interest questionnaire and a creative thinking skills test, to both groups. The data were processed and analyzed with SPSS version 27. Since the normality test indicated the data were not normally distributed, the Mann-Whitney U test was conducted to determine if there was a significant difference in posttest outcomes between the experimental and control groups.

3. Results and Discussion

Results

a. Description of Research Implementation

This study sought to examine the effect of applying the Guided Discovery Learning (GDL) model supported by concrete media on elementary students' learning interest and creative thinking abilities. A quasi-experimental design with a posttest-only control group approach was used to assess the outcomes effectively. The subjects of this study consisted of two groups: the experimental class at SDN 25 Amping Parak, which received instruction through the GDL model supported by concrete media, and the control class at SDN 29 Teratak Panas, which was taught using conventional teaching methods. The distinction between the two groups allowed for a clear comparison of outcomes resulting from different instructional approaches. The study was conducted over three days, from June 16 to 18, 2025, encompassing two learning sessions followed by a posttest. A detailed overview of the implementation process is provided in Table 1, outlining the sequence of activities and assessments administered to both groups.

Table 1. Research Implementation Schedule

Meeting	Experimental Class	Control Class
1	Monday, June 16, 2025 (08:00–09:30)	Monday, June 16, 2025 (10:20–12:00)
2	Tuesday, June 17, 2025 (10:20–12:00)	Tuesday, June 17, 2025 (08:00–09:30)
Posttest	Wednesday, June 18, 2025 (08:00–09:30)	Wednesday, June 18, 2025 (10:20–12:00)

Table 1 shows that the treatment was carried out in two sessions in both classes with a balanced time duration. The posttest was conducted in the third session to measure students' creative thinking abilities and learning interests after the treatment was given. The presentation of this schedule confirms that the research was conducted systematically and in a controlled manner, so that any differences in the results can be objectively linked to the applied learning model.

During the implementation of the study, the learning process in both groups was carried out based on the lesson plans that had been previously prepared and validated. In the experimental class, the Guided Discovery Learning model supported by concrete media was applied through several stages, including stimulation, problem formulation, data collection, data processing, verification, and generalization. Concrete media such as visual models, learning cards, and simple science manipulatives were used to facilitate students' direct engagement in the discovery process. Meanwhile, the control class received conventional instruction through lectures and question-and-answer activities without the use of concrete media.

Data collection took place after all designated learning materials had been delivered. The learning interest questionnaire and the essay test were administered on the final day of the scheduled meetings. All student responses were collected simultaneously and scored using a predetermined scoring rubric to ensure consistency and accuracy. The obtained data were then compiled and analyzed using SPSS 27 to produce a descriptive summary of the posttest results. As part of the learning activities in the experimental class, various concrete media were introduced to help students visualize the scientific concepts being studied. One of the primary instructional tools used during the lessons is presented in Figure 1, which illustrates the media for demonstrating changes in the states of matter.



Figure 1. Media for Demonstrating Changes in States of Matter

b. Descriptive Statistics

Descriptive analysis was carried out to provide an initial overview of students' learning outcomes and learning interest before further statistical testing. The summary of the posttest descriptive statistics for students' creative thinking ability can be seen in Table 2.

Table 2. Descriptive Statistics of Posttest Results (Creative Thinking Ability Essay)

Class	N	Min	Max	Mean	Std. Dev
Experimental	37	50	100	89.19	16.30
Control	37	50	100	79.19	17.18

The creative thinking posttest, administered in essay format, is summarized in Table 2. It provides descriptive statistics for both the experimental and control groups, including the number of participants, the minimum and maximum scores, the mean, and the standard deviation. As shown in the table, the experimental class achieved a mean score of 89.19, surpassing the control class's mean of 79.19. Both groups shared the same maximum score of 100 and minimum score of 50. The higher mean in the experimental group suggests that these students generally performed better. In terms of score distribution, the control group had a slightly larger standard deviation (17.18) than the experimental group (16.30), indicating more variability in their results. Overall, these findings provide preliminary evidence that the Guided Discovery Learning model supported by concrete media can more effectively enhance students' creative thinking abilities. Chart 1 illustrates the comparison of mean scores between the two groups.

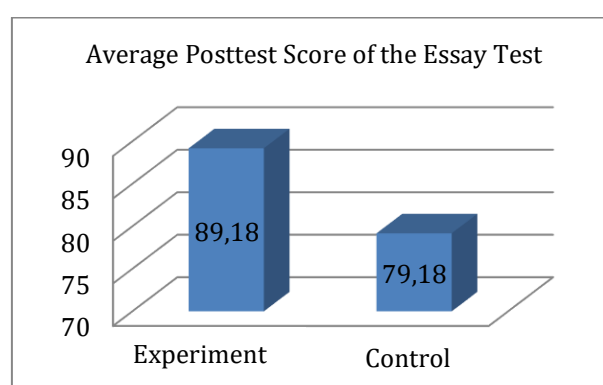


Figure 1. Average Posttest Scores for Essay Questions

Additionally, the descriptive statistics for the Learning Interest Questionnaire results are presented in Table 3.

Table 3. Descriptive Statistics of Learning Interest Questionnaire Results

Class	N	Range	Min	Max	Mean	Std. Dev
Experimental	37	56	73	129	96.19	17.17
Control	37	40	55	95	74.19	13.09

The descriptive analysis of students' learning interest questionnaire scores, including the range, minimum and maximum values, mean, and standard deviation, is summarized in Table 3. Table 3 highlights the difference in learning interest between the experimental and control classes. The experimental class recorded a mean score of 96.19, significantly higher than the control class's mean of 74.19. Their minimum and maximum scores (73 and 129) were also above those of the control group (55 and 95). This demonstrates that the Guided Discovery Learning

model supported by concrete media effectively boosted students' learning interest. Although the standard deviation of the experimental group (17.17) was higher than that of the control group (13.09), indicating some variability among students, the overall trend points to increased engagement. Chart 2 illustrates the comparison of average scores, emphasizing the positive impact of this learning model.

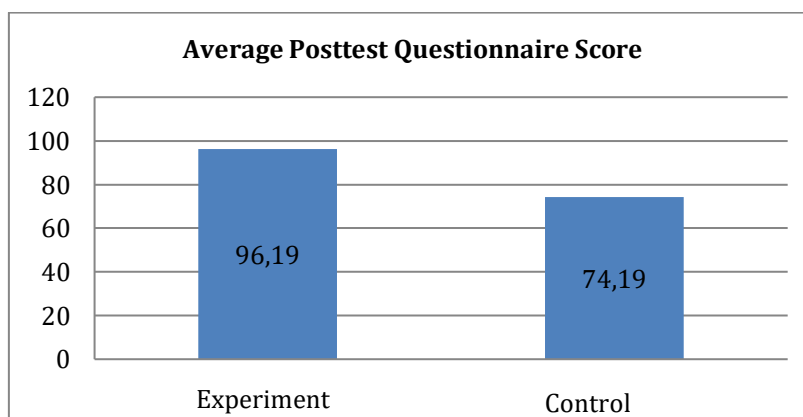


Figure 2. Average Posttest Scores for the Questionnaire

c. Homogeneity Test

The results of the homogeneity test for both variables can be seen in Table 5, which presents Levene's Test values for learning outcomes and learning interest.

Table 5. Homogeneity Test (Levene's Test)

Variable	Sig.	Information
Learning Outcomes	0.682	Homogeneous
Learning Interest	0.072	Homogeneous

A significance value (p-value) greater than 0.05 indicates that the data variances are homogeneous. Since the data were non-normally distributed yet showed homogeneity, the Mann-Whitney U test was determined to be the most suitable method for analysis.

d. Hypothesis Test (Mann-Whitney U-Test)

1) Learning Outcomes (Essay Test)

The results of the Mann-Whitney U-Test for learning outcomes are presented in Table 6, which includes the values of the test statistic, Z-score, and significance level.

Table 6. Hypothesis Test Results for Learning Outcomes

Test Statistic	Value
Mann-Whitney U	416.000
Wilcoxon W	1119.000
Z	-3.027
Asymp. Sig (2-tailed)	0.002

With a significance value of 0.002, which falls below 0.05, there is a clear difference in creative thinking skills between the experimental and control groups. As a result, the null hypothesis (H0) is rejected in favor of the alternative hypothesis (H1), indicating that implementing the Guided Discovery Learning model with concrete media positively contributes to improving students' creative thinking abilities.

2) Learning Interest (Questionnaire)

The hypothesis test results for students' learning interest using the Mann-Whitney U-Test are shown in Table 7, which provides the test statistic values and significance level.

Table 7. Learning Interest Hypothesis Test

Test Statistic	Value
Mann-Whitney U	235.500
Wilcoxon W	938.500
Z	-4.890
Asymp. Sig (2-tailed)	<0.001

The results reveal a significant difference in learning interest between the experimental and control groups, as indicated by a significance value of <0.001, below the 0.05 threshold. This leads to the rejection of the null hypothesis (H0) and the acceptance of the alternative hypothesis (H1), showing that the Guided Discovery Learning model with concrete media effectively increases students' learning interest.

Discussion

The study revealed that using the Guided Discovery Learning model supported by concrete media significantly enhanced students' learning interest as well as their creative thinking skills. This approach made learning more engaging, encouraged students to explore ideas actively, and helped them understand concepts more easily through hands-on experiences. As a result, students became more motivated and showed better ability to analyze problems and generate creative solutions. Furthermore, this learning model fostered a classroom environment where students felt more confident to express their ideas.

Creative Thinking Ability

A higher average posttest score was observed in the experimental class compared to the control class. This difference was confirmed as statistically significant by the Mann-Whitney U test, which yielded a significance value of 0.002, below the 0.05 threshold. This result suggests that the Guided Discovery Learning model promotes divergent thinking, encourages the generation of original ideas, and supports the development of creative responses among students. Additionally, these findings indicate that the model contributes meaningfully to improving overall learning effectiveness.

Learning Interest

The learning interest questionnaire results also revealed a clear difference between the experimental and control groups. With a Mann-Whitney U test significance value of <0.001 , the findings confirm that the Guided Discovery Learning model supported by concrete media effectively boosts students' motivation, curiosity, and active engagement in learning. Furthermore, these results demonstrate that the model creates a more stimulating learning atmosphere that encourages sustained interest. In addition, the increased enthusiasm shown by students indicates that this approach helps build positive attitudes toward the learning process.

Theoretical and Practical Implications

The results of this study carry both theoretical and practical significance. From a theoretical perspective, the findings support constructivist theory, which emphasizes that knowledge is actively constructed through direct experience. Practically, teachers can use this model as an alternative strategy for science education to cultivate students' learning interest while simultaneously training their creative thinking skills. A closer examination reveals that the improvement in students' learning interest and creative thinking in the experimental group is strongly linked to the features of the Guided Discovery Learning (GDL) model, which emphasizes students' active role in the learning process. The use of concrete media allows students to learn directly through real-world experiences. Consequently, learning becomes more meaningful, enjoyable, and relevant to their daily lives.

These findings are consistent with previous research. Rohmah (2021) showed a significant effect of GDL on science learning outcomes, while Pramowardhani (2020) demonstrated the effectiveness of GDL with audiovisual media in boosting student creativity. Utami (2020) suggests that GDL increases active student participation, problem-solving skills, and critical thinking abilities. Syaodih (2014) notes that concrete media encourages active student engagement, sparks curiosity, and enriches the learning experience by involving multiple senses. In essence, this research provides strong empirical evidence that concrete media-assisted GDL is an effective learning approach that is suitable for implementation in elementary schools.

4. Conclusion

Based on the research findings, it can be concluded that implementing the Guided Discovery Learning (GDL) model supported by concrete media positively influenced science learning at Cluster VI, Sutera District. This is evidenced by the notable differences in creative thinking ability and learning interest between the experimental and control groups. Students in the experimental class achieved higher average posttest scores and demonstrated greater creativity in generating ideas, thinking flexibly, and producing original and well-developed responses. Similarly,

their learning interest increased significantly, as reflected in the higher questionnaire scores compared to the control class.

Overall, these results suggest that the GDL model with concrete media serves as an effective alternative strategy for enhancing the quality of elementary science education. It makes learning more engaging and meaningful while encouraging students to be active, critical, and creative learners. This approach is highly relevant for broader application, supporting the development of learning interest and creative thinking skills in alignment with the demands of 21st-century education.

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