

Application of Discovery Learning Model to Improve Learning Outcomes of Grade VI Students State Elementary School 5 Merak Batin

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DOI : <https://doi.org/10.61796/ijss.v1i4.29>



Sections Info

Article history:

Submitted: November 01, 2024

Final Revised: November 15, 2024

Accepted: November 30, 2024

Published: November 30, 2024

Keywords:

Discovery learning
Learning outcomes
Students
Elementary school

ABSTRACT

Objective: This study aims to evaluate the effectiveness of the Discovery Learning model in enhancing learning outcomes and motivation among sixth-grade students at State Elementary School 5 Merak Batin in the subject of Social Sciences (IPS). **Method:** The research employed a classroom action research approach conducted over two cycles. Each cycle included planning, implementation, observation, and reflection phases. Data collection involved student performance evaluations and interviews to gauge changes in motivation and interest. **Results:** The implementation of Discovery Learning significantly improved student learning outcomes, with learning completeness increasing from 68.15% in Cycle I to 80.75% in Cycle II. Interviews revealed that students found the method engaging, resulting in heightened motivation and interest in the subject. Discovery Learning's structured yet exploratory approach fostered active participation and deeper understanding of the material. **Novelty:** This study underscores the value of the Discovery Learning model as an innovative alternative to traditional lecture-based instruction, particularly in fostering motivation and improving learning outcomes in Social Sciences. The findings contribute to a growing body of evidence supporting student-centered learning strategies in primary education.

INTRODUCTION

According to [12], learning is the process of changing behavior from something that is not understood to something that can be understood through practice or training. The main problem faced by teachers, both novice and experienced teachers, is classroom management. For a teacher with minimal experience, they often complain about how to manage a classroom effectively and create a pleasant learning atmosphere. As experienced by the author, as a novice teacher who teaches in grade VI, he often finds it difficult to carry out Teaching and Learning Activities. During teaching and learning activities, when the teacher explains the material using the lecture method, students appear less serious about following the lesson. From the data from the results of the students' daily test evaluation, 70% of students received scores below the Minimum Completion Criteria. This does not meet the competency standards, namely that at least 75% of all students obtain a score of 65.

The results of self-introspection and discussions with teachers of SDN 5 Merak Batin identified several weaknesses in the learning that had taken place, including: only using the lecture method in delivering lessons, not using media optimally in delivering materials, not being able to condition students to actively learn. If narrowed down, the weaknesses are mainly in the ability to manage the class in applying the right models and methods.

Learning is a process of changing individual behavior that occurs due to interaction with the environment. As an experience. Discovery Learning is designed to help students develop: 1) the ability to be able to investigate problems; 2) Directing students to learn to discover (independent learning) by involving real experiences or simulations; 3) Making students as learning actors in the classroom: 4) Encouraging students to participate more actively when the learning situation takes place: 5) This learning model will also have a positive impact on students to strengthen their concepts, because they gain confidence in working with others [12].

Discovery occurs when students are involved primarily in using their mental processes to discover some concepts and principles. Discovery is done through observation, classification, measurement, prediction, determination, and inference activities. The process above is called the cognitive process or the mental process of assimilating concepts and principles in the mind.

From several opinions above, the author concludes that the discovery learning model is a method, way or technique used by educators where in this method students are guided to explore knowledge and experience by themselves without being provided in full by the educator. Students are also required to be more active and creative.

According to Sinaga [12], mathematics is identified as diverse, including mathematics as a branch of exact science and organized systematically and logically. Thus, learning mathematics means learning about the concepts and structures contained in the subject being studied and looking for their relationships.

The learning process in class VI of SD Negeri 5 Merak Batin shows obstacles in achieving optimal learning outcomes. Most students are less active in participating in learning, show low interest in learning, and have difficulty understanding the material being taught. This causes student learning outcomes to not meet the expected standards.

The learning methods used tend to be conventional with lectures dominating, so that students are less involved in the process of exploration and independent problem solving. As a result, students often only receive information passively without the opportunity to develop critical and creative thinking skills.

In facing these challenges, it is necessary to implement a more interactive and student-centered learning model. One approach that is considered relevant is the Discovery Learning model, which provides opportunities for students to be actively involved in discovering concepts through exploration and discussion. This model is expected to increase learning motivation, student involvement in learning, and ultimately, their learning outcomes. This study aims to identify the effectiveness of implementing the Discovery Learning model in improving the learning outcomes of grade VI students of SD Negeri 5 Merak Batin, as well as exploring challenges and solutions that may arise in its implementation.

RESEARCH METHOD

Research on Mathematics learning through the discovery model (Discovery Learning) is a Classroom Action Research (CAR) that focuses on classroom situations

commonly known as Classroom Action Research. Classroom action research is research conducted by teachers in their own classrooms through self-reflection, with the aim of improving their performance as teachers, so that student learning outcomes increase.

Each cycle consists of four main activities which are combined into one unit, namely planning, implementation (act), observation, and reflection (reflect). This research was selected and collaborated with class teachers of SDN 5 Merak Batin. This research was conducted to determine the effectiveness of the discovery model using classroom action research procedures. The data sources for this research are qualitative data and quantitative data. Qualitative data is obtained from observation results, while quantitative data is obtained from test results given in each cycle and is in the form of scores (numbers). In this study, the aspects observed in this observation are:

1. Student activity in responding to problems, activity in experimental activities.
2. Students' courage in expressing opinions, answering questions from teachers.
3. Students' cooperation in carrying out tasks in their groups, courage to express opinions in completing group activity sheets.
4. Collection of student assignments according to the specified schedule.

Research consists of 2 cycles, with each cycle consisting of 4 stages, namely: Planning, Implementation, Observation, Reflection. In implementing this improvement, various assessment instruments are used. The indicators of achievement by the learning action of the discovery model and various methods are measured quantitatively based on the accuracy of student answers. While the indicators of the mechanism or process of change are measured quantitatively descriptively.

In classroom action research, there are two types of data that can be collected by researchers, namely:

1. Quantitative data that can be analyzed descriptively, for example, looking for the percentage of learning success, average student grades, etc.

The data obtained were calculated using quantitative techniques with the following steps:

- a. Test result data can be calculated using the following formula:

$$\text{Achievement} = \frac{\sum \text{Score answered correctly}}{\text{Maximum score}} \times 100\%$$

Maximum score

$$\text{Value} = \frac{\sum \text{Score answered correctly}}{\text{Maximum score}} \times 100\%$$

Maximum score

Test scores are students' cognitive learning outcomes, which are a comparison between students' learning outcomes before the pre-cycle actions and students' learning outcomes after cycles I and II.

- b. The observation data is calculated using the formula:

$$\text{Achievement} = \frac{\sum \text{Score obtained}}{\text{Maximum score}} \times 100\%$$

Maximum score

- c. The values obtained from the observation results are psychomotor and effective learning outcomes. Calculating class success (classical learning completion), namely the percentage of students who have completed learning

according to success indicators, is calculated using the formula:

Student Learning Completion

$$\frac{\sum \text{Students who completed their studies}}{\text{The number of students in one class}} \times 100\%$$

The number of students in one class

- d. Making a recapitulation of student learning outcomes before and after the action (Before Cycle, Cycle 1 and Cycle 2)
- e. Calculating the increase in student learning achievement from before the action to after the action (Cycle 1 and Cycle 2) using the formula:

$$\text{Increase} = \frac{\sum \text{Value after action} - \sum \text{Value before action}}{\sum \text{Value before action}} \times 100\%$$

$$\sum \text{Value before action}$$

The indicator of success in this study is if overall students in one class achieve learning completion of 75% by obtaining a minimum score of 6.5 and active student involvement in the teaching and learning process.

2. Qualitative data is data in the form of information in the form of sentences that provide an overview of student expressions regarding the level of understanding of a subject (cognitive), student views or attitudes towards new learning methods (affective), student activities in following lessons, attention, enthusiasm in learning, self-confidence, learning motivation and the like. Qualitative assessments can be converted into quantitative assessments using a scale of 100.

The procedure used is in the form of a cycle. This cycle does not only take place once but several times until the expected goals are achieved in Mathematics learning in class VI of SDN 5 Merak Batin. In each cycle consists of four main activities, namely planning, implementation (act), observation, and reflection.

Classroom action research in mathematics learning using models Discovery Learning and these various methods consist of three cycles, namely: cycle I, II and cycle III, each of which consists of four steps, namely:

1. Planning is planning a program of actions that will be carried out to improve student activity and learning outcomes in mathematics learning.
2. Action (acting) is learning carried out by researchers as an effort to increase student activity and learning outcomes in mathematics learning.
3. Observation is the observation of students during learning.
4. Reflection is an activity of reviewing and considering the results obtained from observations so that revisions can be made to the next learning process.

RESULTS AND DISCUSSION

The research was conducted in the odd semester in January 2024, carried out in 2 cycles in 2 meetings or each cycle consisting of 2 meetings. Each learning carried out in each cycle uses the discovery learning model.

Cycle I

1. Preparing decimal fraction material
2. The teacher enters the class and signals to the class leader to lead prayer before

studying.

3. The teacher greets
4. Teacher takes attendance of students
5. The teacher opens the media and sticks it on the board.
6. The teacher explains the method that will be used in this lesson.
7. Students are given questions about decimal fractions.
8. The teacher explains the decimal fraction material
9. The teacher divides students into groups, each group consisting of 4-5 students;
10. The teacher and students prepare the tools that will be used for the experimental activities;
11. The teacher gives instructions on the work that must be done by each group;
12. Students are given the opportunity to experiment with their groups based on their respective tasks;
13. The teacher distributes the prepared group worksheets;
14. Students fill out group worksheets based on the experimental activities carried out;
15. The teacher goes around giving directions to groups that need help;
16. The teacher records/conducts an evaluation of each group's performance assessment.
17. The teacher gives students the opportunity to ask questions about decimal fraction material that they do not yet understand;
18. The teacher gives other students the opportunity to answer questions from the student who asked;
19. The teacher and students ask questions to correct misunderstandings, provide reinforcement and conclusions about the activities that have been studied.

After the discovery learning activity is completed, students are asked to work on the evaluation questions that have been prepared. After completion, the students' work results are collected. Then the teacher tells the students to prepare to learn about decimal fractions. Observation results using the discovery model.

The results of the student test are used as a basis for calculating the percentage of learning completion after use with the application of the discovery model. Based on the results of the calculation of students' cognitive abilities, out of 25 students only 17 students have completed it, there are 8 students who have not completed it. From the evaluation results, classical completion was obtained at 68% or a class average score of 73.04. From the results of the classical learning completion test, it only reached 68%. This has not met the competency standard, which is at least 75% of all students in the class with a score of 65. So it needs to be improved again to complete the material that students have not mastered.

Cycle 2

1. Preparing decimal fraction material
2. The teacher enters the class and signals to the class leader to lead prayer before

studying.

3. The teacher greets
4. Teacher takes attendance of students
5. The teacher opens the media and sticks it on the board.
6. The teacher explains the method that will be used in this lesson.
7. Students are given questions about decimal fractions.
8. The teacher explains the decimal fraction material
9. The teacher divides students into groups, each group consisting of 4-5 students;
10. The teacher and students prepare the tools that will be used for the experimental activities;
11. The teacher gives instructions on the work that must be done by each group;
12. Students are given the opportunity to experiment with their groups based on their respective tasks;
13. The teacher distributes the prepared group worksheets;
14. Students fill out group worksheets based on the experimental activities carried out;
15. The teacher goes around giving directions to groups that need help;
16. The teacher records or conducts an evaluation of each group's performance assessment.
17. The teacher gives students the opportunity to ask questions about decimal fraction material that they do not yet understand;
18. The teacher gives other students the opportunity to answer questions from the student who asked;
19. The teacher and students ask questions to correct misunderstandings, provide reinforcement and conclusions about the activities that have been studied.
20. Activities carried out by teachers and students in confirmation activities are:
The teacher gives students the opportunity to ask questions about decimal fraction material that they do not understand; If there are questions, the teacher gives other students the opportunity to answer; The teacher and students ask and answer questions to correct misunderstandings, provide reinforcement and conclusions about activities that have been studied.

After the discovery learning activities and various methods are completed, students are asked to work on evaluation questions about decimal fractions that have been prepared. After completion, the results of the students' work are collected. Observation results using the discovery model.

From the results of the student test obtained from the evaluation questions are used as a basis for calculating the percentage of learning completion after the use of the discovery model. The data above shows an increase in student completion from the application of the discovery model in cycle 1 compared to cycle 2, namely 68% to 92% in cycle II with 23 students completing and 2 students not completing. From the evaluation results, classical completion was obtained at 92% or a class average of 80.52. Student

observations were carried out simultaneously with the implementation of the action using an observation sheet that had been made by the researcher.

Students' activeness in responding to problems appropriately without being asked is greater than students' activeness after being asked. This shows that students are already confident. In terms of courage, there are more students who dare to express their opinions without being asked than students who dare after being asked. This shows that students are brave enough to ask and answer the questions asked. From the aspect of student cooperation, students who participate in expressing opinions in discussing LKK in groups have increased, this shows that cooperation with deskmates is better. From the aspect of collecting assignments, all students or groups have collected assignments according to the collection schedule, 2 students in a group per desk are fully responsible for collecting assignments.

From the results of the classical learning completion test, it has reached 92%. This has met the competency standards, namely at least 75% of all students in the class obtained a score of 65. The general description of the implementation of cycle II is good, because there has been an improvement and can be done by teachers consistently. After observing the learning that has been done in cycle II, the following reflections were obtained:

1. In this second cycle, student involvement activities increased from 83 % in cycle I to 100 % in cycle II. The average class value from the evaluation results increased from 73.04 in cycle I to 80.52. While the classical learning completion increased from 68% in cycle I to 92% in cycle II with 23 students completing learning and 2 students not completing. From the results of these observations, in cycle II the success indicator has been achieved.
2. Students have begun to adapt to the discovery model and various methods and students have also carried out learning quite well.
3. Cycle II was considered quite good and proved that there was an increase in student understanding and student involvement in the concept of energy and its changes with the use of discovery models and various methods.

The implementation of the Discovery Learning (DL) learning model in grade VI of SD Negeri 5 Merak Batin can have a significant impact on student learning outcomes. This model encourages students to be active in the learning process, allowing them to discover knowledge independently and build a deeper understanding. Research shows that the implementation of DL can improve learning outcomes in various aspects, including students' knowledge, attitudes, and skills [9]; [5]; [10].

One of the advantages of the Discovery Learning model is its ability to improve students' critical thinking skills. In the context of learning, students not only receive information passively, but are also involved in the exploration and problem-solving process. This is evident in research showing that the application of DL can improve critical thinking skills and student learning outcomes in various subjects, including science and mathematics [5]; [10]; [4]. Thus, students are expected to be more independent and creative in learning, which is the main goal of education [15].

Furthermore, the implementation of the DL model also contributes to increasing students' learning motivation. When students are actively involved in the learning process, they tend to be more motivated to learn and participate in class activities. Research shows that students who learn through the DL model show significant increases in motivation and learning outcomes compared to traditional learning methods [7]; [4]. This shows that the DL model is not only effective in improving learning outcomes, but also in creating a more enjoyable and interactive learning atmosphere.

In its implementation, the DL model requires careful planning and systematic implementation. Classroom action research conducted in various schools shows that the application of DL through the planning, implementation, observation, and reflection cycles can improve student learning activities and overall learning outcomes [2]; [13]; [3]. With this approach, teachers can adjust teaching methods according to student needs and the material being taught, so that learning outcomes can be optimally improved.

Thus, the implementation of the Discovery Learning model in SD Negeri 5 Merak Batin is expected to significantly improve student learning outcomes. By focusing on the development of critical thinking skills, learning motivation, and student activities, this model can be an effective alternative in improving the quality of education at the elementary level.

CONCLUSION

Fundamental Finding : The application of the Discovery Learning model, combined with various teaching methods such as lectures, experiments, and assignments, significantly improved student engagement and learning outcomes in mathematics, particularly on the topic of decimal fractions. Student activity increased from 83% in Cycle I to 100% in Cycle II, while the average learning outcomes rose from 73.04 to 80.52, with classical learning completion improving from 68% to 92%. **Implication :** These results highlight the effectiveness of Discovery Learning in fostering active participation and deeper conceptual understanding among students. This model, by encouraging exploratory and student-centered approaches, can serve as a viable alternative to traditional teaching methods, enhancing both engagement and academic performance. **Limitation :** The study was conducted in a single class and subject area, limiting the generalizability of its findings. Factors such as teacher facilitation skills and student adaptability may vary across different contexts, potentially affecting the outcomes. **Future Research :** Further studies could explore the application of Discovery Learning in other subjects and grade levels to validate its broader efficacy. Additionally, longitudinal research could examine its long-term impact on students' critical thinking and problem-solving skills.

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