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# EFFORTS TO IMPROVE SCIENCE LEARNING OUTCOMES THROUGH THE APPLICATION OF THE DISCOVERY LEARNING MODEL

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## ABSTRACT

This research is PTK (Classroom Action Assessment) which aims to find out the results of learning science class students through the application of Discovery Learning models. (1) In the implementation of the first cycle, the number of students who achieved mastery learning individually was 12 people or 54.54%, while 10 other people or 45.46% had not achieved learning completeness. Based on the KKM that has been set at school, each student is said to have completed learning if the proportion of student answers and learning abilities is  $\geq 75$  (individual completeness), and a class is said to have been completed if  $\geq 80\%$  of students have completed (classical completeness). So it can be concluded that the classical mastery of student learning for cycle I has not been achieved. The results of student learning in cycle I obtained a result of 54.54% which was included in the less category. (2) in the application of the Discovery Learning learning model cycle II there is an increase in student activity in learning science in class VI MIN 49 Bireuen The application of the Discovery Learning learning model can improve student learning outcomes in science learning in class VI MIN 49 Bireuen. It can be seen in the data of cycle II that there was an increase of 19 people or 86.36% while 3 people or 13.64% had not yet achieved learning mastery.

**Keywords:** Learning Outcomes, Science Material, Discovery Learning.

## INTRODUCTION

One of the educational institutions that implement the educational process is the Elementary School (SD) or Madrasah Ibtidaiyah (MI). Elementary schools or Madrasah Ibtidaiyah as basic educational institutions should be able to become a solid foundation for students to be able to climb to the next level of educational institutions armed with

knowledge, abilities and skills. Thus, Elementary Schools and Madrasah Ibtidaiyah must be able to provide basic knowledge, abilities and skills from an early age.

In order to improve the quality of education, one of the efforts made by the government is to improve the curriculum that is adapted to the times. The current curriculum is the 2013 curriculum. The demands of the 2013 curriculum require students to think HOTS, while in class VI, teachers still rely on teacher books and student books as the only source of learning. In addition, integration between content has not been seen in learning so that learning still feels fragmented.

Based on observations made in learning Natural Sciences (IPA), students still cannot understand the material so that it has an impact on student learning outcomes. apart from these factors, the learning carried out by students still tends to be less contextual so that students have difficulty completing material related to everyday life,

Learning should be activity-oriented and provide direct experience to students so that learning will become more meaningful, so that students can apply it in real life. But in reality, in the learning process that is applied in schools it tends to only listen to the teacher's explanation, so that students become bored and bored. All learning activities are only centered on the teacher, not yet centered on student activities. because learning is verbalistic and abstract, students find it difficult to understand what the teacher explains. This is what ultimately causes learning outcomes to be low.

Learning so far felt less interesting and boring. This is because learning activities are only carried out in classrooms and do not utilize other learning resources, such as the environment. Students are never invited to carry out observation activities to observe learning objects. Learning is only informative and knowledge transfer. The teacher's explanation is too abstract, so students find it difficult to understand what is explained. These things ultimately resulted in low student learning outcomes.

In order for student learning outcomes in Natural Sciences (IPA) to reach the set value, the teacher is required to apply a learning model that can make students active in the learning process. So that learning is not verbalistic and abstract, one solution that can be applied is to use the Discovery Learning model.

The discovery model is a learning that involves students in the process of mental learning through exchange of opinions, by discussing, reading for themselves and trying it for themselves, so that children can learn on their own.

## **RESEARCH METHODOLOGY**

The research conducted was Classroom Action Research, namely research conducted by teachers in their own classes through self-reflection, with the aim of improving their performance as teachers, so that student learning outcomes increase (Wardhani, 2011).

The essence of PTK lies in the action in natural situations to solve practical problems in learning. Classroom Action Research departs from practical problems faced by teachers in the classroom. The implementation procedure can start with situation analysis, action planning, action implementation, reflection, and evaluation of the impact of the action. This procedure can be repeated until the results are obtained according to the quality expected.

This research procedure includes:

1. Carry out teaching and learning activities according to learning material

2. Fill in the observation sheet for the implementation of research learning activities that have been made for the application of the Discovery Learning learning model

This study used two cycles, with each cycle consisting of 1 meeting.

## **FINDING AND DISCUSSION**

Preliminary observation activities are carried out before the implementation of class action. Preliminary observations are important to do to determine the initial conditions of the class to be treated. Preliminary observations are important as a reference in planning actions to be carried out during classroom action research. The results of these observations are written in the report on the results of preliminary observations.

Based on the observations made, the results obtained were data on student learning outcomes in science learning, from 22 students it was found that the number of students who fulfilled the KKM was 10 people or around 45%, while students who were still under the KKM were 12 people or around 55%,

The results of the initial observations made in the class obtained the facts that:

1. Students and teachers use more textbooks/prints
2. Learners tend to be passive in the learning process
3. The media only uses pictures in books
4. Teachers focus more on mastering cognitive knowledge.

### **Cycle I**

#### **1. Planning**

The initial stage in classroom action research is planning. At this stage the teacher plans matters relating to the implementation of the learning to be carried out.

At this stage of cycle I, the teacher discusses the lesson plan with the observer who will observe the course of learning. In addition to discussing lesson plans, the activities carried out by the teacher and observers at this stage include discussing the implementation of learning using the Discovery Learning learning model, the learning media to be used, and the arrangement of student seating positions during learning activities. Based on the material discussed in the lesson is about animal breeding.

#### **2. Implementation**

##### **a) Preliminary Activities:**

The activity begins with saying greetings, praying, and taking attendance. For apperception activities the teacher associates the previous material with the material to be studied.

##### **b) Core Activities:**

Stage 1 of giving stimulation (stimulation): students listen to videos of animal breeding. Then students and teachers do question and answer. Stage 2 problem statement/identification: students are divided into several groups, discuss to find out about the types of animal breeding

Stage 3 data collection: students analyze the types of animal breeding, use learning resources, books, the internet to find information,

Stage 4 of data processing: students make mind maps about animal breeding, write down the results of the analysis, while the teacher makes observations to assess students' attitudes and skills.

Stage 5 verification: students present the results of their group discussions and the teacher provides reinforcement of the results of the presentation.

Stage 6 draws conclusions (generalization): students conduct questions and answers under the direction of the teacher, present the results of an analysis of animal breeding.

c) Closing Activities:

Students together with the teacher reflect on the learning that has been done takes place, solving problems on evaluation questions, paying attention to information that plans learning activities for the next meeting. The class was closed with a prayer together.

### 3. Observation

Observations are made to provide an assessment of the implementation of learning by observers. Assessment of the implementation of learning is carried out using the observation sheet of the implementation of learning.

Table 1 observation sheet of the implementation of cycle I learning

| Kegiatan                                      | Deskripsi Kegiatan                                                                             | Keterangan               |                          |
|-----------------------------------------------|------------------------------------------------------------------------------------------------|--------------------------|--------------------------|
| Kegiatan Pendahuluan                          |                                                                                                | Tampak                   | Tidak Tampak             |
| Orientasi                                     | 1. Kemampuan guru saling memberi dan menjawab salam serta menyampaikan kabarnya masing-masing. | <input type="checkbox"/> |                          |
|                                               | 2. Kemampuan guru mengecek kehadiran dengan melakukan presensi                                 | <input type="checkbox"/> |                          |
|                                               | 3. Kemampuan guru mengajak berdoa                                                              | <input type="checkbox"/> |                          |
| Apersepsi                                     | 1. Kemampuan guru melakukan tanya jawab dengan siswa                                           | <input type="checkbox"/> | <input type="checkbox"/> |
|                                               | 2. Kemampuan guru mengaitkan materi yang dipelajari dengan pengalaman peserta didik            |                          |                          |
| Motivasi                                      | 1. Guru mengajak siswa melakukan tepuk semangat                                                | <input type="checkbox"/> |                          |
|                                               | 2. Guru memberi informasi tentang tujuan dan manfaat pembelajaran.                             | <input type="checkbox"/> |                          |
| Model <i>Discovery Learning</i>               |                                                                                                |                          |                          |
| Kegiatan Inti                                 |                                                                                                |                          |                          |
| Tahap 1<br>Pemberian Rangsangan (stimulation) | 1. Kemampuan guru menampilkan media pembelajaran                                               | <input type="checkbox"/> | <input type="checkbox"/> |
|                                               | 2. Kemampuan guru melakukan tanya jawab dengan siswa                                           |                          |                          |

|                                                                |                                                                                                                                                                                                                                                                                                                         |                          |                                                          |
|----------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|----------------------------------------------------------|
| Tahap 2<br>Pernyataan/identifikasi masalah (problem statement) | <ol style="list-style-type: none"> <li>1. Kemampuan guru membagi siswa menjadi beberapa kelompok</li> <li>2. Kemampuan guru mengarahkan siswa berdiskusi dengan teman satu kelompok untuk memahami konsep materi pembelajaran</li> </ol>                                                                                | <input type="checkbox"/> | <input type="checkbox"/>                                 |
| Tahap 3<br>Pengumpulan data (Data collection)                  | <ol style="list-style-type: none"> <li>1. Kemampuan guru membimbing siswa dalam mencari informasi dari sumber belajar</li> <li>2. Kemampuan guru dalam membimbing siswa dalam menganalisis permasalahan yang diberikan</li> </ol>                                                                                       |                          | <input type="checkbox"/><br><br><input type="checkbox"/> |
|                                                                | <ol style="list-style-type: none"> <li>3. Kemampuan guru melakukan pengamatan untuk menilai sikap dan keterampilan siswa</li> </ol>                                                                                                                                                                                     |                          |                                                          |
| Tahap 4<br>Pengolahan data (Data processing)                   | <ol style="list-style-type: none"> <li>1. Kemampuan guru membimbing siswa dalam membuat kesimpulan dari hasil diskusi</li> <li>2. Kemampuan guru dalam membimbing siswa menulis hasil analisis secara berkelompok</li> <li>3. Kemampuan guru melakukan pengamatan untuk menilai sikap dan keterampilan siswa</li> </ol> | <input type="checkbox"/> | <input type="checkbox"/><br><br><input type="checkbox"/> |
| Tahap 5<br>Pembuktian (Verification)                           | <ol style="list-style-type: none"> <li>1. Kemampuan guru untuk memberikan kesempatan siswa dalam mempresentasikan hasil diskusinya secara berkelompok</li> <li>2. Kemampuan guru untuk memfasilitasi kelompok lain dalam memberikan tanggapan terhadap kelompok yang mempresentasikan</li> </ol>                        | <input type="checkbox"/> |                                                          |

|                                                   |                                                                                                                                                                                                                                               |                                                                                                                          |  |
|---------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------|--|
| Tahap 6<br>Menarik kesimpulan<br>(Generalization) | 1. Kemampuan guru mengarahkan siswa dalam tanya jawab<br>2. Kemampuan guru memberikan ulasan materi<br>3. Kemampuan guru mengarahkan siswa menyimpulkan materi                                                                                | <input type="checkbox"/><br><br><br><input type="checkbox"/><br><br><input type="checkbox"/>                             |  |
| Kegiatan Penutup                                  | 1. Kemampuan guru melakukan refleksi<br>2. Kemampuan guru mengarahkan siswa dalam mengerjakan soal evaluasi<br>3. Kemampuan guru menyampaikan rencana pembelajaran berikutnya<br>4. Kemampuan guru menutup pembelajaran dengan doa dan salam. | <input type="checkbox"/><br><br><input type="checkbox"/><br><br><input type="checkbox"/><br><br><input type="checkbox"/> |  |
| <b>Jumlah</b>                                     |                                                                                                                                                                                                                                               | <b>18</b>                                                                                                                |  |
| <b>Nilai %</b>                                    |                                                                                                                                                                                                                                               | <b>69,23 %</b>                                                                                                           |  |
| <b>Kategori</b>                                   |                                                                                                                                                                                                                                               | <b>Cukup</b>                                                                                                             |  |

After the learning activities in lesson plan 1 took place, the teacher gave an evaluation which was attended by 22 students. Student scores in lesson plans 1 can be seen in the table below.

Table 2. List of Learning Test Results for Cycle I Science Learning on Animal Breeding Materials

| No. | Kode Nama | KKM | NILAI | KETERANGAN   |
|-----|-----------|-----|-------|--------------|
| 1   | S-001     | 75  | 70    | Belum Tuntas |
| 2   | S-002     | 75  | 80    | Tuntas       |
| 3   | S-003     | 75  | 60    | Belum Tuntas |
| 4   | S-004     | 75  | 80    | Tuntas       |
| 5   | S-005     | 75  | 50    | Belum Tuntas |
| 6   | S-006     | 75  | 80    | Tuntas       |
| 7   | S-007     | 75  | 80    | Tuntas       |
| 8   | S-008     | 75  | 80    | Tuntas       |
| 9   | S-009     | 75  | 80    | Tuntas       |
| 10  | S-010     | 75  | 60    | Belum Tuntas |
| 11  | S-011     | 75  | 90    | Tuntas       |
| 12  | S-012     | 75  | 80    | Tuntas       |

|                                  |       |       |    |              |
|----------------------------------|-------|-------|----|--------------|
| 13                               | S-013 | 75    | 60 | Belum Tuntas |
| 14                               | S-014 | 75    | 90 | Tuntas       |
| 15                               | S-015 | 75    | 90 | Tuntas       |
| 16                               | S-016 | 75    | 90 | Tuntas       |
| 17                               | S-017 | 75    | 60 | Belum Tuntas |
| 18                               | S-018 | 75    | 50 | Belum Tuntas |
| 19                               | S-019 | 75    | 80 | Tuntas       |
| 20                               | S-020 | 75    | 60 | Belum Tuntas |
| 21                               | S-021 | 75    | 70 | Belum Tuntas |
| 22                               | S-022 | 75    | 60 | Belum Tuntas |
| Rata-rata                        |       | 72,72 |    |              |
| KKM                              |       | 75    |    |              |
| Jumlah Siswa yang tuntas belajar |       | 12    |    |              |

Based on the table above shows the number of students who achieved mastery learning individually as many as 12 people or 54.54%, while 10 other people or 45.46% had not achieved learning mastery. Based on the KKM that has been set at school, each student is said to have completed learning if the proportion of student answers and learning abilities is  $\geq 75$  (individual completeness), and a class is said to have been completed if  $\geq 80\%$  of students have completed (classical completeness). So it can be concluded that the classical mastery of student learning for cycle I has not been achieved. The results of student learning in cycle I obtained a result of 54.54% which was included in the less category

#### 4. Reflection

Reflection is an activity to remember and look back at all activities in the learning cycle activities that have been carried out, to perfect the next cycle.

##### a. Teacher Activity

Teacher activities in cycle I still have deficiencies including: the teacher has not been able to guide students in data collection.

##### b. Student Activity

Student activities during learning activities in cycle I also still have drawbacks including: during learning activities students look quite active in discussions, but there are still some students who still seem hesitant and shy in expressing their opinions.

##### c. Student learning outcomes

Based on the test results in cycle I, it can be seen that there are still students who have not reached the KKM and achieve classical completeness scores. Therefore, researchers must continue learning in cycle II to correct deficiencies in cycle I.

#### Cycle II

##### 1. Planning

Cycle II was carried out to improve learning outcomes in cycle I, because the increase in cycle I was not significant with the plans that had been prepared. At this stage, the teacher

and the observer plan matters relating to the implementation of the learning that will be carried out.

## 2. Implementation

### a) Preliminary Activities

The activity begins with saying greetings, praying, and taking attendance. For apperception activities the teacher associates the previous material with the material to be studied.

### b) Core Activities

Stage 1 of giving stimulation (stimulation): students watch a video about the preservation of endangered animals and plants. Followed by students asking and answering with the teacher.

Stage 2 of problem statement/identification: students are divided into several groups, silently reading a text about steps to conserve endangered animals and plants. The discussion was continued to analyze the contents of the text about the preservation of endangered animals and plants.

Stage 3 of data collection: students analyze steps to conserve endangered animals and plants using learning resources, books, the internet to find information and write down the results of the analysis. The teacher makes observations to assess students' attitudes and skills.

Stage 4 of data processing: students write down the results of group discussions and the teacher makes observations to assess students' attitudes and skills.

Stage 5 verification: students present the results of their group discussions and the teacher provides reinforcement of the results of the presentation

Stage 6 draws conclusions (generalization): students conduct questions and answers with the direction of the teacher, present the results of an analysis of steps to conserve endangered animals and plants.

### c) Closing Activities

Students and teachers conclude learning material about the preservation of endangered animals and plants. Students and teachers reflect on the learning that has taken place. Students independently solve problems on evaluation questions. The teacher informs the learning activity plan for the next meeting. The class was closed with a prayer led by one of the students.

## 3. Observation

Cycle II observation was carried out by providing an assessment of the implementation of cycle II learning by observers. carried out using observation sheets.

After the learning activities in the lesson plan for cycle II took place, the teacher gave an evaluation which was attended by 22 students. Student learning test scores can be seen in the table below.

Table 3 List of Cycle II Learning Test Results for Natural Science Learning Materials on Preservation of Endangered Plants and Animals

| No. | Kode Nama | KKM | NILAI | KETERANGAN |
|-----|-----------|-----|-------|------------|
| 1   | S-001     | 75  | 80    | Tuntas     |
| 2   | S-002     | 75  | 80    | Tuntas     |
| 3   | S-003     | 75  | 80    | Tuntas     |

|    |       |    |    |              |
|----|-------|----|----|--------------|
| 4  | S-004 | 75 | 80 | Tuntas       |
| 5  | S-005 | 75 | 80 | Tuntas       |
| 6  | S-006 | 75 | 90 | Tuntas       |
| 7  | S-007 | 75 | 80 | Tuntas       |
| 8  | S-008 | 75 | 80 | Tuntas       |
| 9  | S-009 | 75 | 80 | Tuntas       |
| 10 | S-010 | 75 | 90 | Tuntas       |
| 11 | S-011 | 75 | 90 | Tuntas       |
| 12 | S-012 | 75 | 80 | Tuntas       |
| 13 | S-013 | 75 | 80 | Tuntas       |
| 14 | S-014 | 75 | 90 | Tuntas       |
| 15 | S-015 | 75 | 90 | Tuntas       |
| 16 | S-016 | 75 | 90 | Tuntas       |
| 17 | S-017 | 75 | 70 | Belum Tuntas |
| 18 | S-018 | 75 | 70 | Belum Tuntas |
| 19 | S-019 | 75 | 80 | Tuntas       |
| 20 | S-020 | 75 | 80 | Tuntas       |
| 21 | S-021 | 75 | 80 | Tuntas       |
| 22 | S-022 | 75 | 70 | Belum Tuntas |

Based on the table above shows the number of students who achieved mastery learning individually in cycle II there was an increase of 19 people or 86.36% while 3 people or 13.64% had not achieved learning mastery.

#### 4. Reflection

Reflection is an activity to remember and look back at all activities in the learning cycle activities that have been carried out, to perfect the next cycle:

##### a. Teacher Activity

Teacher activity in cycle II has experienced a significant increase in the quality of learning. In the learning that has been carried out, all Discovery Learning learning models have been seen.

##### b. Student Activity

There was an increase in student activity in cycle II, during the learning activities students looked very enthusiastic and enthusiastic. Students listen to explanations and answer questions posed by the teacher properly.

##### c. Student learning outcomes

Based on the learning outcomes of the second cycle, it shows that there is an increase in student learning outcomes according to the indicators of success set by the researcher.

## CONCLUTION

Based on data analysis from research findings, it can be concluded:

1. In the implementation of cycle I, the number of students who achieved mastery learning individually was 12 people or 54.54%, while 10 other people or 45.46% had not achieved learning completeness. Based on the KKM that has been set at school, each student is said to have completed learning if the proportion of student answers and learning abilities is  $\geq 75$  (individual completeness), and a class is said to have been completed if  $\geq 80\%$  of students have completed (classical completeness). So it can be concluded that the classical mastery of student learning for cycle I has not been achieved. The results of student learning in cycle I obtained a result of 54.54% which was included in the less category
2. In the application of the Discovery Learning learning model cycle II there was an increase in student activity in learning science in class VI MIN 49 Bireuen. The application of the Discovery Learning learning model can improve student learning outcomes in science learning in class VI MIN 49 Bireuen. It can be seen in cycle II data that there was an increase of 19 people or 86.36% while 3 people or 13.64% had not yet achieved learning mastery.

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