Learning Science is Easy and Fun Using Models Project-Based Learning

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Abstract
Science learning is an important foundation in students' intellectual development and analytical abilities. However, students often feel bored and lose interest in science learning. This research aims to analyze the effects of using project-based learning in elementary schools. This research uses the method quantitative with a classroom action research approach. Data sources were taken using questionnaires and written tests from twenty-eight students in one elementary school in Indonesia. All data were analyzed using SPSS 18 software with descriptive analysis (percent). The results of statistical analysis show that the use of the project-based learning model has a positive effect on student attitudes and learning outcomes. This fact can be seen from changes in students' attitudes who are more active in learning, have greater curiosity than usual, and do not get bored quickly in learning. This fact is also supported by an increase in student learning outcomes from pre-cycle, cycle one, and cycle two. Therefore, implementing the project-based learning model is an alternative solution that teachers can use in science learning which has been considered difficult and boring.

INTRODUCTION
Science learning is an important foundation in students' intellectual development and analytical abilities. However, students often feel bored and lose interest in learning science. This can happen because science learning material tends to be too complex and theoretical, making it difficult for students to understand the material (Muspiroh, 2016). The learning methods used by teachers do not involvement students actively, students tend to be listeners rather than discoverers of information (Mulyadi, 2022). Teachers also tend to use learning methods that watch every meeting, making students bored and not focused on learning (Harefa & Murnihati, 2020).

Several methods that are often used in science learning in elementary schools are the lecture method, question, and answer, or giving assignments. The use of this method is not wrong, but it seems that the teacher does not try to develop students' knowledge based on the experience they have had, does not motivate students to carry out investigations, does not guide students enough to discover, and does not guide students enough to solve problems related to everyday life, resulting in poor learning. The results tend not to be creative and enjoyable when methods that actively involve students are not applied (Pratiwi, 2021). The science learning process.


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should be able to help students become active in learning to seek and build their knowledge based on the experience and knowledge they have obtained and can make students directly involved in carrying out investigations so that science learning becomes meaningful for students (Hisbullah & Nurhayati, 2018).

The reality that researchers found when conducting observations in grade 6 elementary schools is following the explanation above, the science learning process is still teacher center, where the teacher is the only source of information. Teachers do not relate learning to real things around students, so students listen more to the teacher's explanations rather than building the knowledge and skills they need themselves (Kunter et al., 2013; Lawrence & Tar, 2018). Teachers do not create enough learning processes by conducting experiments or investigations, so that students become less active in the learning process, students easily get tired, bored, noisy, and less enthusiastic when science learning takes place. Students' lack of activity also affects student learning outcomes (Casey & Goodyear, 2015; Kori et al., 2016; Nicolaou et al., 2019). This can be seen from the students' scores which are still below the minimum completeness criteria with the minimum completeness criteria being 80, of the 21 students only 9 people have achieved the minimum completeness criteria, while 12 people are still below the minimum completeness criteria set by the school, the Semester I class VI exam score is 80.

Based on the problems that have been raised, improvements are needed to solve problems in science learning, one of which is by using the project-based learning model. The project-based learning model can help students search for and build their knowledge and skills because students directly carry out and prove the learning experiences they already know (Amelia et al., 2023). Project-based learning model is innovative learning that is student-centered and determines the teacher as a motivator and facilitator, where students are allowed to work autonomously to construct their learning (Al-Tabany, 2014).

Learning model Project Based Learning is a learning model that involves students in problem-solving activities and provides opportunities for students to work on their learning. The focus of learning lies on the core principles and concepts of a scientific discipline, involving students in problem-solving investigations and other meaningful task activities, allowing students to work on constructing their knowledge, and reaching the peak to produce real products. This learning model is very suitable for increasing student learning creativity so that student's interest in learning increases and they do not become bored. This project-based model can make the class atmosphere fun and students will be enthusiastic about learning because this learning model requires students to produce a product (Nurfitriyanti, 2016).

Research on the use of model project-based learning has been widely studied by previous researchers. However, based on the author's reading, previous researchers only used qualitative methods. On this issue, the author uses an approach to classroom action research. Apart from that, there are no researchers who have examined the implementation of project-based learning.

**METHODS**

This research uses the method quantitative with a classroom action research approach (Meesuk et al., 2020; Putra et al., 2022). Data sources were taken using questionnaires and written tests from twenty-eight students consisting of thirteen male students and 15 female students at one elementary school in Indonesia. Data sources were taken using questionnaires and written tests from twenty-eight students in one elementary school in Indonesia. Questionnaires are used to see the implementation of classroom action research by observers and written tests are needed to see students' science learning outcomes in elementary schools. All data
RESULT AND DISCUSSION

The results of research in cycle 1 showed that the value of student learning outcomes in the cognitive domain of cycle I showed that the average value of cognitive learning outcomes in cycle I obtained by students was 63.5 at the first meeting and 71.5 at the second meeting. If we look at the percentage, the cognitive domain learning completeness in cycle I only reached 10% at the first meeting and 50% at the second meeting. More clearly, it is depicted in Table 1 below.

Table 1. Improvement in Science Learning Outcomes in Cycle I Meetings 1 and 2

<table>
<thead>
<tr>
<th>Data</th>
<th>Science Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cycle I meeting 1</td>
</tr>
<tr>
<td>Total score</td>
<td>63.5 (10%)</td>
</tr>
</tbody>
</table>

Table 1 above shows that there was an increase in learning outcomes after using the project-based learning model by 8 points with the level of completion in cycle 1 meeting 1 which was initially only 10% to 50% in cycle 1 meeting 2. This shows that there is a positive influence on learning outcomes for students. The positive influence on learning outcomes after learning using the project-based learning model is influenced by the enthusiasm and enthusiasm of students in making projects given by the teacher. Learning using the project-based learning model can attract students' attention to learning and students become more active and more focused in learning students can plan, develop concepts, manage various sources, be active and critical in searching for information, and be creative in solving problems collaboratively by sharing ideas with group members (Faridi et al., 2021; Ranse et al., 2015; Sugiharto et al., 2019).

The results of the second cycle research show that student learning outcomes have increased and have reached the class average score in the final test of cycle II reaching 82.5 at the 1st meeting and learning completion has only reached 70%, 14 people have completed it, while at the 2nd meeting the score has reached 89 and the students' learning completion was only 90%, namely 18 people who completed it, this shows that there is an increase in learning outcomes compared to cycle one. More details can be seen in Table 2 and Figure 1 below.

Table 2: Improvement in Science Learning Outcomes in Cycle 1, Meetings 1 and 2 and Cycle 2, Meetings 1 and 2

<table>
<thead>
<tr>
<th>Data</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Cycle I meeting 1</td>
</tr>
<tr>
<td>Total score</td>
<td>63.5</td>
</tr>
</tbody>
</table>

Based on the results of the analysis carried out in Table 2, it can be seen that there was an increase in the average student learning outcomes from cycle 1, meeting 1, from 63.5 to 71.5 in cycle 1, meeting 2, and continued to increase slowly in cycle 2, meeting 1, to 82.5 and at the end of cycle 2 it increased to 89. The increase in learning outcomes experienced by students cannot be separated from the increase in students' motivation, creativity and interest in learning, responsibility, communication skills with other people, social skills, cooperation, and problem-solving abilities. In addition, students involved in project-based learning are given authentic projects that aim to help students make concepts that have been taught and how these concepts apply to the real world (Shin, 2018).

Increasing students' ability to solve problems logically and reflectively is the result of critical thinking skills (Malin & Rind, 2022). Increasing students' abilities is very beneficial when they face problems. In addition, cooperative learning allows students to talk about problems together. This shows that teachers can create an ideal
learning environment. This is in line with expectations Safaruddin et al., (2020) namely an authentic learning environment, where students will learn more easily. Project-based learning models can build such an environment (Ulger, 2018). Critical thinking skills can be achieved through the teacher’s ability to plan, create and organize the learning environment correctly (Febriani et al., 2023).

By implementing project-based learning, a fun learning environment can help achieve the desired learning goals according to Nuryati et al., (2020) consisting of i) challenges for students to solve real problems; ii) the level of student participation increases in the learning process; iii) student performance becomes more consistent for the project; iv) students can complete projects easily; and v) students are highly motivated to compete to produce the best project. These five things increase students' critical thinking abilities after using project-based learning (Guo et al., 2020).

CONCLUSION

Science Learning Results for sixth-grade elementary school students were active in learning from cycle I to cycle II because it can be seen from the increase in student learning outcomes, namely the class average score in the pre-cycle amounting to 73.66 then in cycle I, it became 78.50 and in cycle II it became 87.00. The number of students able to reach minimum Completeness Criteria was above 80 in the pre-cycle there were 9 students, in the first cycle there were 12 students, and in the second cycle, there were 19 students. So in cycle II, more than 85% of students achieved the criteria Minimum Completeness Criteria above 80.

REFERENCES


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