TEACHING SCIENCE THROUGH DEMONSTRATIONS: AN INNOVATIVE APPROACH TO IMPROVE STUDENTS' ENVIRONMENTAL SCIENCE LITERACY

Erma Suryani Sahabuddin¹*, Liskawati², Syamsiah³

¹,²,³Jurusan Pendidikan Guru Sekolah Dasar, Universitas Negeri Makassar, Jl. Tamamlate I, Fakultas Ilmu Pendidikan, Makassar 90222, Indonesia

ABSTRACT

The issue in this study is the poor scientific learning results in class V at UPT Public Elementary School, 127 Inpres Komara I, Polut District, Takalar Regency. This study's aim was to describe how the demonstrative learning model was used to enhance fifth-grade students' scientific learning results at UPT Public Elementary School 127 Inpres Komara I in Takalar Regency's Polut District. This research strategy is qualitative. This kind of study is called classroom action research, and it entails planning, carrying it out, monitoring it, and reflecting on it. The demonstration learning paradigm and science learning outcomes are the main topics of this study. Teachers and fifth-grade children at UPT Public Elementary School, 127 Inpres Komara I, Polut District, Takalar Regency, served as the study's subjects. 7 boys and 6 girls who participated in the even semester of the 2022–2023 academic year: observation data collection methods, assessments, and paperwork. The three data analysis approaches used in this study are data reduction, data presentation, and conclusion. The analysis of the research's findings reveals a significant growth in each cycle. Cycle I test scores with sufficient qualifications increased in cycle II with appropriate qualifications. The data analysis results showed that demonstration learning might enhance student learning outcomes in science in class V UPT Public Elementary School 127 Inpres Komara I, Polut District, Takalar Regency.

Keywords: Demonstration, Learning Outcomes, Science Learning.

INTRODUCTION

The Elementary School is a crucial educational component of formal education operations in Indonesia. As a foundation of knowledge for furthering one's education, elementary schools have a tremendous impact (Pinatih, 2021). Natural sciences, sometimes known as science, is one of the courses taught at this level of school (Legvart et al., 2021; Mandumpal et al., 2022; Sajidan et al.,
2022). According to Permendikbud Number 57 of 2014 Article 5 Paragraph 2 concerning the fundamental ideas of science lessons in elementary schools, Group A general subjects, as mentioned in Paragraph (1), is a curriculum that aims to develop students' attitude competence, knowledge competence, and skills competence as the basis and strengthening of abilities in the life of society, nation, and state. According to the Permendikbud above, what is indicated by paragraph (1) is the grouping of general subjects, one of which is Natural Sciences (Suranto, 2015). According to the aforementioned statement, the natural sciences are a subject area in the 2013 Curriculum that is crucial for the development of three components, namely knowledge, attitudes, and skills, since these three qualities are required for students to participate in the learning process (Nurbaeti, 2020; Nurlaila et al., 2016; Oktaviani et al., 2017).

One of the primary themes in elementary school curricula is the Natural Sciences teaching unit (Botes & Barnett, 2022; Legvart et al., 2021; Liebig et al., 2022; Lin et al., 2023; Wada & Scarfone, 2023). Therefore, it has to be taught in stages to produce a meaningful scientific learning process with high student accomplishment outcomes, therefore instructors must be creative and original in constructing learning models (Wijoyo, 2021). The interactions between students, instructors, the school environment, and other learning resources are incorporated into the learning activities to give learning experiences that include both mental and physical processes in order to develop fundamental competences (Humphrey & Wiles, 2021). Different, student-centered learning models may be used to achieve the desired learning experience. (Aulia et al., 2019; Damanik & Bukit, 2013; Sajidan et al., 2022).

Learning in natural science is founded on principles, which may help students develop a scientific mindset towards scientific ideas (Fernandes & de Faria, 2023). As a result, rather than memorization of a list of scientific ideas, primary school students learn science via straightforward studies. Through observation, debate, and easy research, these activities will provide students studying science first-hand experience. By posing questions and generating conclusions, such learning may help students develop their scientific attitudes and develop their ability to think critically (Dunn et al., 2014; Ennis, 1993; Kurnianto & Haryani, 2020). In addition, science is a human endeavour to comprehend the cosmos by accurate observations, the application of techniques, and justification through inference (Darmawan, dkk, 2020). In accordance with this, the National Education Standards Agency proposed the following goals for learning science in elementary schools: 1) Developing faith in the majesty of God Almighty based on the existence, beauty, and orderliness of His natural creation; and 2) Developing an understanding of how the universe works. 2) Gaining knowledge and comprehension of practical science principles that may be applied to everyday life, 3) fostering curiosity, a positive outlook, and awareness of the interplay between science, the environment, technology, and society, 4) Improve and expand one's numeracy abilities. 5) Raise awareness of the need to contribute to conserving the environment; 6) Raise awareness of the need to preserve nature and all of its order as one of God's creations; 7) Obtain science information,
According to the learning goals, early exposure to science is crucial for developing trustworthy and qualified people resources. It is crucial to provide a learning environment where students may deepen and broaden their grasp of the topics, they are taught in order to have a beneficial influence on the development of knowledge, skills, and understanding as well as student learning outcomes in science. It is essential to provide instruction that does not centre learning activities on teacher activities if scientific learning goals are to be met. In other words, the instructor may plan and oversee the teaching process. In order to achieve excellent learning in accordance with the primary school's vision, purpose, and objectives, they are learning by selecting and utilising learning models that may boost student interest and motivation. The teacher is a determinant of the success of the learning process. Teachers must thus be able to use an effective and efficient learning model when planning scientific lessons in order to satisfy learning goals and the Minimum Completeness Criteria that have been established at the school.

Based on preliminary study carried out by researchers on November 20, 2022 in class V at UPT Public Elementary School, 127 Inpres Komara I, Polut District, Takalar Regency. According to information gathered, many students still did not understand the material according to the achievement of the minimum completeness criteria (KKM) that had been set, which was 75, because class V teachers did not use the learning model and still used the lecture method, especially in science subjects. From the 13 students in grade V, it is clear that the minimum completion standard of 75 has not been met. Of these, only 5 students scored 75 or higher or around (38.46%) the percentage of completion, and 8 students scored 75 or lower or around (61.53%) the percentage of incompleteness. Science courses were rated poorly in class V at UPT Public Elementary School 127 Inpres Komara I in the Takalar Regency.

Researchers saw or observed students while they learned science in order to reinforce the data. Based on the findings of these observations, it was determined that teacher factors and student factors were to blame for the children in class V at UPT Public Elementary School 127 Inpres Komara I, Polut District, Takalar Regency's lack of knowledge of scientific subject. One may infer the following from the instructor's factors: 1) The teacher does not utilise a learning model, just employs the lecture approach, and does not include media into the learning process while delivering scientific material. 2) The instructor does not encourage students who are primarily involved in the learning process and do not use media in their learning. 3) The teacher does not encourage students who are mostly passive in the learning process and do not use media in their learning. As for the student elements, they are as follows: 1) students need to be more actively engaged in the learning process, 2) students need to be more motivated to participate in the learning process actively, and 3) students feel bored and uninterested throughout the learning process.

If this issue is resolved later, it will have less of an effect on the learning process and student comprehension, particularly when it comes to science.
makes it the responsibility of instructors to adapt learning models to the fundamental skills they seek to instill in their pupils. For the aforementioned issues, one learning model that may be used as an alternative is the Demonstration learning model in the study of natural sciences. To ensure that pupils comprehend practical topics, teachers often use the demonstrative learning paradigm. Some research findings have also examined Sumarni's demonstration model study from 2016 titled "Application of the Demonstration Learning Model to Improve Class IV Science Learning Outcomes." The findings also demonstrated the Demonstration Model's capacity to enhance student learning. All students should be engaged in the learning process when the demonstrative learning approach is used in scientific instruction. Particularly in the study of science, learning outcomes fulfill the minimal completion criterion standards (KKM). In response to these issues, the researcher is considering performing classroom action study under the title Application of Demonstration Learning Models to Improve Student Learning Outcomes in Class V Science Subject UPT Public Elementary School 127 Inpres Komara I.

METHOD

The methodology in this research is qualitative. Classroom action research is the methodology employed. Action research that is carried out in a classroom is known as classroom action research. Action research in the classroom involves four key phases: (1) planning; (2) implementation; (3) observation; and (4) reflection. The study was conducted at UPT Public Elementary School 127 Inpres Komara I during the even semester of the 2022–2023 academic year in March 2023 over a period of two weeks. The participants in this research were all of the fifth-grade students and instructors of UPT Public Elementary School 127 Inpres Komara I in the Takalar Regency's Polut District. Thirteen fifth-grade children were employed as participants for this research, including one instructor, five females, and eight male pupils. Referring to the following table, the following factors are used to assess the effectiveness of the learning process:

Table 1. Indicators of the success of the learning process according to the Decree of the Ministry of National Education.

<table>
<thead>
<tr>
<th>Success Rate</th>
<th>Qualification</th>
</tr>
</thead>
<tbody>
<tr>
<td>(85 – 100) %</td>
<td>Very Good</td>
</tr>
<tr>
<td>(76 – 84) %</td>
<td>Good</td>
</tr>
<tr>
<td>(60 – 75) %</td>
<td>Enough</td>
</tr>
<tr>
<td>(0 – 59) %</td>
<td>Less</td>
</tr>
</tbody>
</table>

Source: adapted from (M.Tampubolon, 2014)

If 76% of students get grades of 75 or above, then the study has been effective from the perspective of learning outcomes, and there is no need to go on to the next cycle. The following table shows categories for completeness.
FINDINGS AND DISCUSSION

Findings

Results from this study will be used to explain how to utilise the demonstrative learning approach to enhance student learning outcomes in science class V at UPT Public Elementary School 127 Inpres Komara I. The table below shows the findings of the descriptive study of the acquisition value of student learning outcomes in cycle I after using the demonstrative learning model in scientific learning:

Table 3 shows the results of the first cycle of science instruction at UPT Public Elementary School, 127 Inpres Komara I, Polut District, Takalar Regency.

<table>
<thead>
<tr>
<th>Description</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>13</td>
</tr>
<tr>
<td>The highest score</td>
<td>90</td>
</tr>
<tr>
<td>Lowest value</td>
<td>40</td>
</tr>
<tr>
<td>Grade point average</td>
<td>70.76</td>
</tr>
</tbody>
</table>

According to Table 3, the 13 students that participated in the demonstration learning model for the description of student learning outcomes had an average grade of 70.76, with the best score being 90 and the lowest being 40.

In the first cycle exam, the average score for scientific learning outcomes is 70, which is in the good category. As a consequence, class V students at UPT Public Elementary School 127 Inpres Komara I, Polut District, Takalar Regency, performed well on the first cycle exam.

Table 4. Percentage of Class V UPT Public Elementary School students in Cycle I who completed all of their science learning outcomes

<table>
<thead>
<tr>
<th>KKM</th>
<th>Category</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 – 75.00</td>
<td>Not Completed</td>
<td>7</td>
<td>53.85</td>
</tr>
<tr>
<td>76.00 – 100</td>
<td>complete</td>
<td>6</td>
<td>46.15</td>
</tr>
<tr>
<td>Amount</td>
<td></td>
<td>18</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Appendix Data 18
The information above demonstrates that of the 13 students in class V at UPT Public Elementary School 127 Inpres Komara I, Polut District, Takalar District, seven students (53.85%) did not complete their study results in science subjects, while six students (46.15%) did. This indicates that in the first cycle, the application of the Demonstration learning model in science subjects did not result in the completion of learning outcomes because there are still 24% and higher students whose learning outcomes are fully expected. The number of students whose learning outcomes are less than 76%, or only 46.15%, indicates that this is not the case.

The results of the descriptive analysis of the acquisition value of student learning outcomes after applying the Demonstration learning model in learning science can be seen in the table below: After implementing the learning process in cycle II, which consisted of two meetings, a learning achievement test was conducted.

Table 5 Class V UPT Public Elementary School 127 Inpres Komara I, Polut District, Takalar Regency in Cycle II Student Learning Outcomes

<table>
<thead>
<tr>
<th>Description</th>
<th>Mark</th>
</tr>
</thead>
<tbody>
<tr>
<td>Subject</td>
<td>13</td>
</tr>
<tr>
<td>The highest score</td>
<td>100</td>
</tr>
<tr>
<td>Lowest value</td>
<td>60</td>
</tr>
<tr>
<td>Grade point average</td>
<td>82.30</td>
</tr>
</tbody>
</table>

Source: Appendix Data 19

According to Table 5, the 13 students who served as subjects for the description of student learning outcomes using the Demonstration learning model had an average class score of 82.30, with the best score being 100 and the lowest being 60.

The second cycle test's average result for the scientific learning outcomes is 82.30, which falls into the good category. In the second cycle exam, children from V UPT Public Elementary School 127 Inpres Komara IPolut District, Takalar Regency, scored in the excellent category for their scientific study.

If the student learning results from the second cycle test are examined, Table 6 shows the percentage of student learning completion as follows:

Table 6 Percentage of Class V UPT Public Elementary School 127 Inpres Komara I, Polut District, Takalar Regency in Cycle II Students Who Completed All Science Learning Outcomes

<table>
<thead>
<tr>
<th>KKM</th>
<th>Kategori</th>
<th>Frekuensi</th>
<th>Presentase (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>0.00 – 75.00</td>
<td>Not Completed</td>
<td>2</td>
<td>15.38</td>
</tr>
<tr>
<td>76.00 – 100.00</td>
<td>complete</td>
<td>11</td>
<td>84.61</td>
</tr>
<tr>
<td>Jumlah</td>
<td></td>
<td>13</td>
<td>100</td>
</tr>
</tbody>
</table>

Source: Data Lampiran 19
According to Table 6, there were two students (15.38%) who did not finish their study results in science subjects out of the 13 Class V UPT Public Elementary School 127 Inpres Komara I students in the Takalar Regency. There were 11 students (84.61%) who finished their study results in science subjects. Cycle II students who completed more than 76% of their learning objectives, or 84.61% of them, were considered to have successfully fulfilled the classical learning outcomes for science.

Discussion

According to the earlier explanation, the research subject in this study—students in class V at UPT Public Elementary School 127 Inpres Komara I—will be used to discuss how to apply the demonstration learning model to improve student learning outcomes in science subjects with the subject Earth and the Universe. The planning, execution, observation, and reflection phases of the II cycles were used in this class action research project.

When using the Demonstration learning model to teach scientific courses, learning activities in the first action cycle still need to function at their best. By the researchers’ established success measures, they are not. Therefore, it is important to focus on efforts to rectify current weaknesses and ensure that the achievements achieved in Cycle I actions are maintained in Cycle II activities in order to develop students' comprehension of the acts of Cycle II.

With the enhancements made to cycle II's activities and the presence of incentive, which is often used by the instructor, students may properly respond to questions on cycle II's final exam. The learning results of class V at UPT 127 Public Elementary School Inpres Komara I, Polut District, Takalar Regency, demonstrate the effectiveness of the implementation of instructional changes in cycle II. 13 students received a Good Qualification on the exam that was administered at the conclusion of the cycle. Two students have not yet attained the Minimum Completeness Criteria, and 11 students had attained the Minimum Completeness Standard of 76.

Thus, the researcher evaluates the demonstration learning model's application to see whether it is properly implemented in accordance with the learning processes (Hidayat, 2016). Science learning results for students in class V at UPT 127 Public Elementary School Inpres Komara I have been shown to have improved.

CONCLUSIONS

The framing of the issue, the results of the data analysis, and the discussion suggest that the demonstrative learning technique may be used to improve the natural science learning outcomes for class V at UPT Elementary School 127 Inpres Komara I in the Takalar Regency. Evidence for this may be seen in the progression of cycle I instructors with adequate credentials to excellent qualifications in cycle II, as well as in the growth of each cycle. Students' cycle I adequate actions improved to cycle II extremely excellent qualifications. The average class value has grown from cycle I, which is in the good qualification.
category to complete, and cycle II, which is in both the qualification category to be finished or declared to be successful, further demonstrating an improvement in learning outcomes.

REFERENCES


