

The Implementation of the Students Experiment Learning Method to Improve Science Learning Outcomes on the Topic of Living Beings and Their Environment in Fourth Grade of Madrasah Ibtidaiyah

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Received: 13-04-2025

Revised: 24-05-2025

Accepted: 21-06-2025

KEYWORDS

Students Experiment;
Science (IPA);
Learning Outcomes;
Living Things and Their
Environment.

ABSTRACT

This study aims to: (1) determine the implementation of the Students Experiment learning method in Science subjects, specifically on the topic of living beings and their environment in the fourth grade of MI Muhammadiyah Sidokerto; (2) assess whether the use of the Students Experiment method can improve students' learning outcomes in the fourth grade of MI Muhammadiyah Sidokerto. The research design used is Classroom Action Research (CAR), which aims to solve a particular problem and present the results in a comprehensive description. The subjects of this CAR study are fourth-grade students of MI Muhammadiyah Sidokerto. This study consists of two cycles, namely Cycle I and Cycle II, where each cycle comprises four stages: planning, implementation, observation, and reflection. The research findings are as follows: The implementation of the Students Experiment learning method in Science subjects on the topic of living beings and their environment in the fourth grade of MI Muhammadiyah Sidokerto, involving 30 students, was carried out by the teacher explaining the steps students needed to follow. Then, students were asked to observe the growth process of plants and later present their observations in front of the class. The implementation of the Students Experiment learning method in Science subjects on the topic of living beings and their environment for fourth-grade students of MI Muhammadiyah Sidokerto was proven to improve learning outcomes. This improvement was evidenced by the increase in learning outcomes from Cycle I to Cycle II compared to the pre-cycle phase. In the pre-cycle phase, the average learning outcome score was only 64.00. In Cycle I, the average learning outcome increased to 71.10, and in Cycle II, it further improved to 77.16. The number of students who met the Minimum Mastery Criteria (KKTP) (>70) in the pre-cycle phase was only 10 students or 33%. In Cycle I, this number increased to 18 students or 60%, and in Cycle II, it further rose to 27 students or 83%. The improvement in learning outcomes from the pre-cycle phase to Cycle II indicates that students have successfully reached the KKTP (>70) and achieved the performance indicator (>75%) targeted by the researcher.

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Introduction

Education is the best investment in improving the quality of human resources. Likewise, sustainable development in all levels of society, including densely populated areas, is always

supported by a human development approach, which is marked by the highest possible level of education for the community. Moreover, development is directed towards creating reliable, resilient, and persistent human resources who continuously grow and remain motivated to learn (Bunu & Purwaningsih, 2019:45).

The creative and innovative efforts of educational institutions to continuously explore their uniqueness and excellence make them increasingly needed and sought after by education service users. The emergence of prestigious schools with international-standard curricula and the establishment of both public and private schools offering various advantages in facilities—often at relatively affordable costs—have intensified competition in the education sector (Wijaya, 2017:38).

The success of educational goals largely depends on the learning process experienced by students. The learning process undertaken by an individual is influenced by their perception of learning activities. Learning is a stage of behavioral change that is relatively positive and permanent as a result of interaction with the environment, involving cognitive processes (Danarjati, Murtiadi, & Ekawati, 2014:41).

According to Law No. 14 of 2005, teachers are professional educators with the primary responsibility of educating, teaching, guiding, directing, training, assessing, and evaluating students in early childhood education, primary education, and secondary education. Student success is generally determined by the teacher (Ahmad & Hodsay, 2020:61).

Teaching methods and media are commonly used by teachers to deliver lessons, ensuring that the material is effectively conveyed and easily understood by students. This allows learning objectives to be achieved and makes the learning process more meaningful. One of the teaching methods and media used is the Students Experiment method. According to Mr. Isnaini, S.Ag., the head of the madrasah, many challenges are currently faced by both teachers and students in the teaching and learning process. Teachers are required to be more creative and innovative to create an enjoyable and meaningful learning experience for students.

Based on discussions with the fourth-grade teacher of MI Muhammadiyah Sidokerto, Mr. Hekmatyar, S.Pd., the low learning outcomes of students in Science subjects, particularly on the topic of living beings and their environment, are due to the lack of teacher references regarding effective teaching methods. As a result, students struggle to grasp the learning material. Additionally, the monotonous delivery of lessons makes students less active, ultimately leading to lower academic performance in the fourth grade of MI Muhammadiyah Sidokerto.

A study conducted by Ery Khaeriyah, Aip Saripudin, and Riri Kartiyawati (2018), titled "The Application of the Experiment Method in Science Learning to Improve Early Childhood Cognitive Abilities," found that implementing the experiment method in science learning—through activities such as color recognition, color mixing, and introducing children to natural phenomena—helped enhance their cognitive abilities and scientific knowledge. The study concluded that using experimental methods and different media significantly improved children's cognitive development compared to traditional teaching approaches (Khaeriyah et al., 2018).

Similarly, a study conducted by Nur Hasanah from UIN Sumatera Utara (2018), titled "The Effect of the Experiment Method on Student Learning Outcomes in Science Subjects for Fifth Grade Students at MIS Suturuzhulam Tembung," stated that using the experiment method led to better learning outcomes. The experiment method allowed students to engage in hands-on activities, encouraging them to independently explore scientific processes. This involvement enabled students to identify problems, collect data, control variables, design experiments, and solve problems, making learning more meaningful and effective (Hasanah, 2018).

Given these findings, how can the implementation of the Students Experiment method improve the learning outcomes of Science subjects, particularly on the topic of living beings and

their environment, in the fourth grade of MI Muhammadiyah Sidokerto for the 2023/2024 academic year?

Method

This study employs Classroom Action Research (CAR) using the Kurt Lewin model. Kurt Lewin describes action research as a spiral process that includes fact-finding, planning, action-taking, evaluation, and revision before proceeding to the next cycle.

The research subjects consist of 30 fourth-grade students from the Zubair bin Awwam class at MI Muhammadiyah Sidokerto, Plupuh, Sragen, comprising 15 male and 15 female students. Data collection techniques include observation sheets and interviews, while the research instruments involve teacher activities, student activities, and student behavior observation.

The data analysis technique used is a combination of quantitative and qualitative descriptive analysis. Quantitative analysis involves presenting data using numerical values, which are then explained clearly and in detail through qualitative descriptions. This technique is applied to assess students' Science learning outcomes on the topic of living beings and their environment. Furthermore, quantitative analysis is utilized to compare learning outcomes before and after implementing the Students Experiment method across Cycle I, Cycle II, and subsequent cycles until the Minimum Mastery Criteria (KKTP) is achieved.

Result

Natural Science (Ilmu Pengetahuan Alam - IPA) refers to a field of study that examines natural phenomena based on established laws. Science education aims to cultivate interest and enhance the intelligence and understanding of individuals who study it. Specifically, the study of natural sciences explores the mysteries of nature and its contents, which are limitless (Arief, 2022:11). According to Sudirman, the experiment method is a teaching approach in which students conduct experiments, allowing them to experience and verify the concepts being studied firsthand (Sulaiman, 2018:171).

This research was conducted in two cycles, with each cycle consisting of two meetings and four phases: (1) Planning, (2) Implementation, (3) Observation, and (4) Reflection. Before implementing the cycles, a pre-cycle phase was carried out to assess the initial learning conditions in the Science subject on the topic of Living Beings and Their Environment.

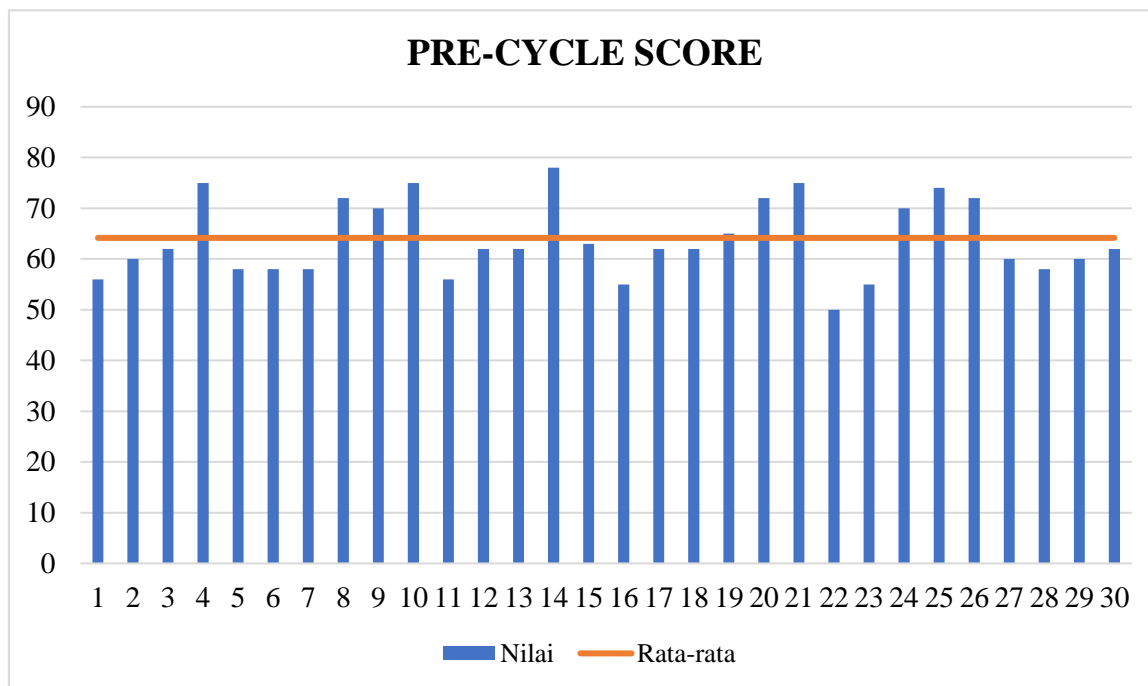
The research aims to improve Science learning outcomes for fourth-grade students at MI Muhammadiyah Sidokerto, Plupuh, Sragen, in the 2024/2025 academic year using the Students Experiment method. The study follows a Classroom Action Research (CAR) approach and is conducted in two cycles, with each meeting lasting two lesson hours (2×35 minutes).

Based on classroom observations during Science lessons, particularly on the topic of Living Beings and Their Environment, several areas need improvement in the teaching approach of fourth-grade teacher(s) at Zubair bin Awwam class, MI Muhammadiyah Sidokerto: (1) Lack of motivation provided by the teacher during lessons. (2) Monotonous teaching methods, leading to passive student engagement and boredom. (3) Inadequate use of appropriate teaching methods and media to facilitate learning.

Observations also revealed several issues on the students' side, including: (1) Lack of active participation and interest during lessons, as students were less enthusiastic and did not pay close attention. (2) Disruptive behavior, where students tended to be noisy and engaged in personal activities rather than focusing on the lesson. (3) Easily getting bored, as teachers did not utilize engaging learning media, leading to low student performance in the subject. These factors contribute to the low learning outcomes of fourth-grade students in Science. Thus, the Students

Experiment method is expected to enhance engagement, interactivity, and comprehension among students, ultimately improving their learning achievements.

The low learning outcomes of students can be seen from the average pre-cycle score of 64.16, which is still below the minimum mastery criterion (KKTP; 70). In the pre-cycle stage, only 10 students (33%) achieved scores above the KKTP. This fact indicates that the learning process previously implemented was less effective in improving student achievement.



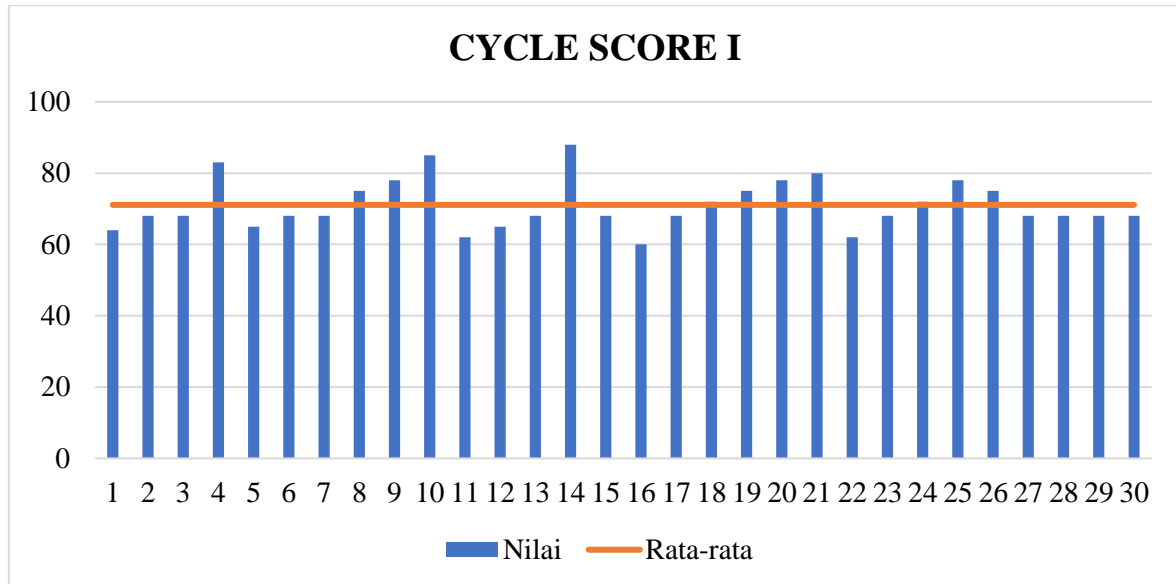
The first cycle of learning activities applied the Students Experiment method in the Natural Science subject with the topic Living Beings and Their Environment. The process began with identifying the problem, designing a teaching module incorporating the Students Experiment method, preparing student activity sheets, and developing a test to assess learning outcomes.

Before starting the lesson, the teacher checked students' tidiness and readiness, explained the learning objectives, showed pictures for students to observe, and posed questions to stimulate curiosity. After the explanation, the teacher divided students into groups and assigned them to plant soybean, mung bean, peanut, long bean, and corn seeds. Students then observed the growth of these plants for approximately seven days, recorded their observations, and later presented their findings in a discussion session. Meanwhile, other students and the teacher provided feedback and evaluations.

The teaching and learning process was conducted well according to the planned structure, although some aspects were not fully implemented, such as time management, which deviated from the planned stages. However, the observational data in the table indicates that the learning process ran smoothly, and the learning objectives were successfully achieved. This shows that the teacher's classroom management skills were effective.

The successes and challenges in the first cycle were as follows: The teacher was not yet fully accustomed to creating a learning environment aligned with the Students Experiment method, as some planned indicators were not entirely implemented. Students were also unfamiliar with the Students Experiment learning method, as some components observed by evaluators were not maximized. Despite these challenges, students appeared enthusiastic and engaged in the learning process. However, students were still unable to carry out the activities effectively, leading to insufficient comprehension of the Living Beings and Their Environment material.

To address the shortcomings and maintain the successes achieved in the first cycle, a new classroom action plan was developed for the second cycle. The plan included: Checking students' readiness and encouraging active participation to ensure they pay more attention to the learning process while implementing the Students Experiment method. Providing additional explanations and reinforcement of the material by actively involving students in the learning process. Giving feedback on previously taught material to help students better understand the subject matter. Maximizing time management so that learning objectives can be effectively achieved.



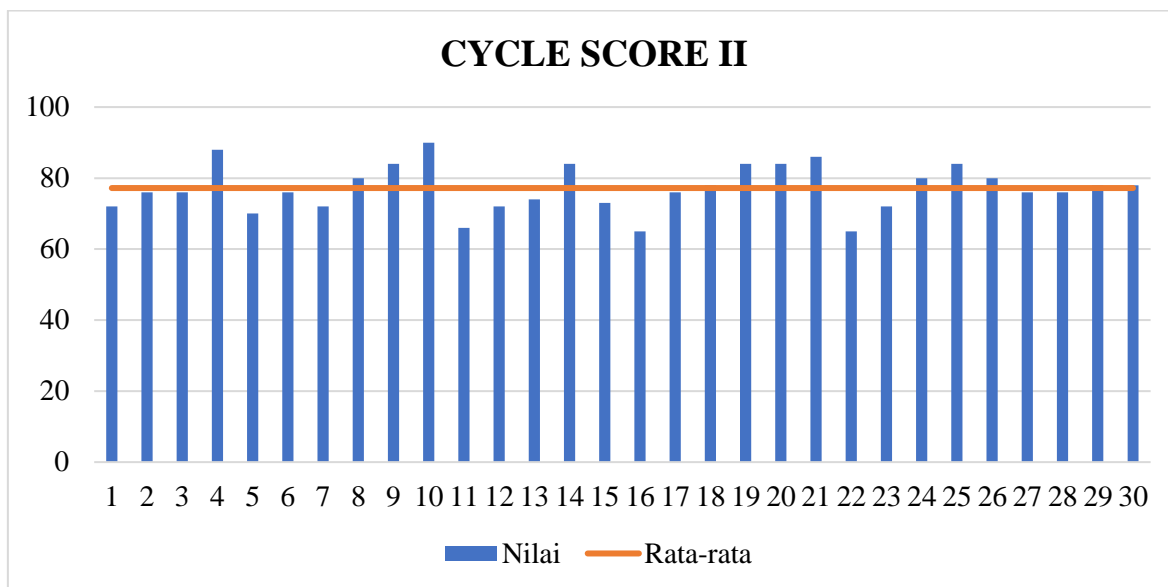
The average score for Natural Science in the first cycle was 60%. 18 students (60%) scored above the minimum mastery criterion (KKTP > 70). 12 students (40%) scored below the KKTP (< 70).

In the second cycle, the teacher again designed a teaching module incorporating the Students Experiment method, prepared student activity sheets, and developed a test to assess learning outcomes. Before starting the lesson, the teacher checked students' tidiness and readiness, explained the learning objectives, showed pictures for observation, and asked questions to stimulate students' curiosity.

After the explanation, the teacher divided students into groups and instructed them to plant soybean, mung bean, peanut, long bean, and corn seeds. Students observed the plant growth for approximately seven days, recorded their findings, and then presented their observations and discussion results. Meanwhile, other students and the teacher provided feedback and assessments.

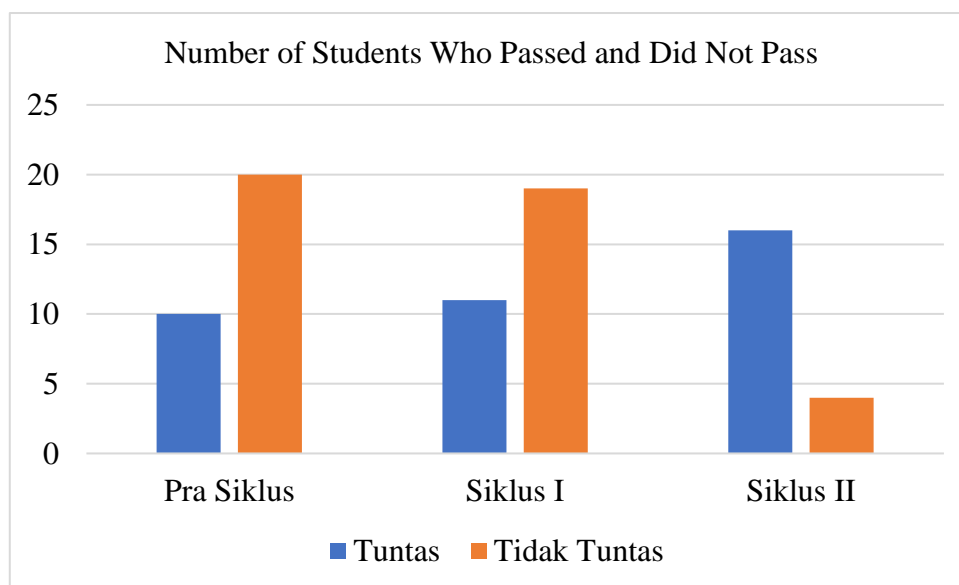
The teaching and learning process in the second cycle was well-executed according to the plan. The teacher managed the class effectively, and students began to adapt to the Students Experiment method. They became more active, engaged, and curious, creating a more dynamic and enjoyable classroom atmosphere.

Observational data also confirmed that the learning process was smooth, engaging, and effective, with no boredom among students. This indicates that the teacher's classroom management skills had significantly improved and that learning objectives were successfully achieved.



Based on the evaluation results of Natural Science learning outcomes before the implementation of the Students Experiment method in Grade 4 Zubair bin Awwam at MI Muhammadiyah Sidokerto, the average score in the second cycle was 77.16. 27 students (87%) scored above the minimum mastery criterion (KKTP > 70). 3 students (17%) scored below the KKTP (< 70).

From the learning activities described, it can be concluded that the implementation of the Students Experiment method significantly improved students' learning outcomes. This improvement occurred because the Students Experiment method incorporates characteristics such as collaboration, responsibility, and hands-on experimentation, enabling students to solve problems and creating a fun, active, and engaging learning environment.



Discussion

The Students Experiment method has proven to be effective in enhancing students' understanding and skills in the concepts being studied. By allowing students to conduct experiments directly, they not only learn theoretically but also apply their knowledge in real-world situations. This method encourages students to think actively, observe, and analyze experiment results, which in turn enhances their problem-solving skills and critical thinking abilities.

Additionally, the experiment allows students to work in groups, improving their collaboration and communication skills. They also learn the importance of teamwork in achieving common goals and develop an appreciation for the opinions and ideas of others. Overall, the use of the Students Experiment method creates a more engaging and interactive learning experience, contributing to increased motivation and improved learning outcomes.

Conclusion

The implementation of the Students Experiment learning method in Grade IV MI Muhammadiyah Sidokerto Plupuh Sragen for the 2024/2025 academic year in Natural Science (IPA) lessons on the topic of Living Beings and Their Environment has proven to be quite effective in improving students' learning outcomes.

Before the implementation of this method (pre-cycle phase), the learning process in Natural Science was monotonous and lacked variety. Additionally, many students nowadays prefer to play social media and games, making them less interested in studying. As a result, their learning outcomes remained low.

To address this issue, the researcher collaborated with the class teacher to implement a learning method that could encourage students to be more active and foster curiosity through hands-on experiments in Natural Science lessons on Living Beings and Their Environment.

In Cycle I, after implementing the Students Experiment learning method, students appeared more enthusiastic and active compared to previous learning sessions before this method was applied. Besides using a different teaching approach, the students' naturally active characteristics also made it easier to conduct experiments. In Cycle I, the number of students who achieved the passing score (KKTP) was 18 students, or 60% of the class.

The Students Experiment method was used again in Cycle II, where both students and teachers had become more familiar with its application. As a result, the learning process became more structured and conducive, allowing students to carry out experiments more freely and assess the outcomes more effectively. In Cycle II, the number of students who achieved the passing score increased to 27 students, or 83%.

This improvement occurred because the Students Experiment learning method promotes collaboration, responsibility, and hands-on experimentation, enabling students to solve problems independently and creating a fun, active, and engaging learning environment.

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