IMPROVING THE LEARNING OUTCOMES OF IPAS MATERIAL ON CHANGES IN THE FORM OF OBJECTS THROUGH THE APPLICATION OF EXPERIMENTAL METHODS IN GRADE IV ELEMENTARY STUDENTS

Siti Nurul Hidayah[1], Rohmatul Khasanah[2], Tariq Tazaka[3], Rizki Latifatun Nisa[4], Fatmawati Nur Hasanah[5]
UIN K.H. Abdurrahman Wahid Pekalongan
siti.nurul.hidayah@mhs.uingusdur.ac.id[1], rohmatul.khasanah@mhs.uingusdur.ac.id[2], tariq.tazaka@mhs.uingusdur.ac.id[3], rizki.latifatun.nisa@mhs.uingusdur.ac.id[4], fatmawati.nur.hasanah@uingusdur.ac.id[5]

ABSTRAK

Tujuan penelitian ini untuk mengetahui apakah metode eksperimen dapat meningkatkan hasil belajar siswa kelas IV SDN Klidang Wetan tahun pelajaran 2023/2024 pada pelajaran IPAS materi perubahan wujud benda. Jenis penelitian ini adalah Penelitian Tindakan Kelas (PTK) yang dilaksanakan dalam 3 (tiga) tahapan yaitu pembelajaran pra siklus, pelaksanaan perbaikan siklus I dan siklus II. Dalam setiap silkus perbaikan terdapat 4 (empat) tahap yakitu perencanaan, pelaksanaan, observasi dan rekleksi. Penelitian ini melibatkan siswa kelas IV yang berjumlah 29 orang siswa. Pengumpulan data menggunakan intrumen observasi, tes soal pilihan ganda dan dokumentasi.. Metode analisis data dengan menggunakan analisis deskriptif kuantitatif. Hasil penelitian ini menunjukan bahwa metode eksperimen dapat meningkatkan hasilbelajar dari tingkat ketuntasan sebesar 38% dalam pra siklus, meningkat menjadi 74% pada siklus I dan mencapai 100% pada siklus II. Hasil penelitian disimpulkan bahwa penerapan metode eksperimen dapat meningkatkan hasil belajar IPAS materi perubahan wujud benda melalui penerapan metode eksperimen pada siswa kelas IV SD Negeri Klidang Wetan tahun pelajaran 2023/2024.

Kata kunci: hasil belajar, perubahan wujud benda, metode eksperimen

ABSTRACT

The purpose of this study was to determine whether the experimental method can improve the learning outcomes of fourth grade students of SD N Klidang Wetan in the 2023/2024 lesson year in IPAS material on changes in the form of objects. This type of research is Classroom Action Research (PTK) which is carried out in 3 (three) stages, namely pre-cycle learning, implementation of cycle I and cycle II improvements. In each improvement silkus there are 4 (four) stages namely planning, implementation, observation and recollection. This study involved fourth grade students totaling 29 students. Data collection using observation instruments, multiple choice question tests and documentation. Data analysis method using quantitative descriptive analysis. The results of this study indicate that the experimental method can improve learning outcomes from a completeness rate of 38% in the pre-cycle, increasing to 74% in cycle I and reaching 100% in cycle II. The research results concluded that the application of experimental methods can improve the learning outcomes of IPAS material on changes in the form of objects through the application of experimental methods The *to fourth grade students of SD Negeri Klidang Wetan in the 2023/2024 academic year.*

***Keywords**: learning outcomes, changes in the form of objects, experimental methods*

INTRODUCTION

role of science learning at the elementary school level is to improve students' ability to understand scientific concepts. In Permendiknas No. 22 of 2002, the Science Curriculum pays attention to how to understand nature systematically. This makes science not only mastering the form of knowledge in the form of facts, concepts or principles but also the status of the discovery process. Science becomes a means for students to learn about themselves and also their environment and its application in everyday life. In reality, there are still difficulties experienced by students in learning science lessons, especially in abstract concepts such as material about changes in the form of objects. So to help students learn and understand science, an effective learning method is needed.

In the practice of learning Natural and Social Sciences (IPAS) material on changes in the form of objects at SD N Klidang Wetan, the teacher has applied the demonstration method in delivering material on changes in the form of objects. However, it seems that children still have not mastered the material as seen from their low learning outcomes after formative tests. In the previous learning process, it was seen that many students were bored and paid less attention to the lesson, told stories by themselves, the classroom atmosphere was not conducive, and the low student learning outcomes.

The results of the pre-cycle formative test in Natural and Social Sciences (IPAS) class IV SD Negeri Klidang Wetan Batang Regency still had 18 students who were not complete out of 29 students. The level of completeness only reached 38% or 11 children. This condition makes the author want to improve student learning outcomes above by trying to improve learning.

One of the recommended learning methods for learning science is the experimental method. The process of critical thinking and analysis becomes the main focus of science learning because the goal is to find the answers to the problems asked. The approach used in the experimental method includes a type of approach where students become the subject and center of learning so that students must be active (student center).

The emphasis in the experimental method is on hands-on activities that can

be done outside or inside the classroom. In the implementation of the practice, students make observations of the results of the experiment. The advancement of science and technology demands that everything requires experimentation or proof. Therefore, this method is very relevant to be the choice of teacher learning methods in the classroom. The experimental method is carried out through experiments, making observations on the process and recording the results. The results of these observations will later be evaluated by the teacher.

The material of the process of changing the form of objects is still abstract for grade IV students. The experimental method is considered relevant because in practice it is in the form of experimental activities using concrete objects so as to make students easily understand the process of changing the form of the object.

Based on this, the authors are interested in applying this experimental method in teaching IPAS lessons on the material of changes in the form of objects to grade IV students at SD N Klidang Wetan with the aim of making their learning outcomes improve.

Researchers found a problem that was raised as a background, namely the demonstration method that the teacher had applied in pre-cycle learning had not yet obtained significant results. Because after the formative test, the level of completeness of grade 4 students is still low. Apparently, the demonstration of the substance form experiment conducted by the teacher was not clear to students.

Alternative problem solving is to improve the Learning Implementation Plan (RPP), conduct a review of strategies, select appropriate methods, models and learning media. The method is considered relevant to be used in teaching IPAS the scope of material changes in the form of objects. This method is designed to train students to directly observe the process of changing the form of objects because it uses concrete objects. This experimental activity is considered to be able to improve student understanding.

Based on the above background, learning improvement research activities in class IV SD N Klidang Wetan have the aim of knowing whether the experimental method improves the learning outcomes of fourth grade students of SD N Klidang Wetan in the 2023/2024 subject year in the IPAS scope of material changes in the form of objects.

As a form of Classroom Action Research (PTK), this research made class IV students of SD N Klidang Wetan totaling 29 people, 15 girls and 14 boys as research subjects. The implementation took place at SD N Klidang Wetan which is located in Klidang Wetan Village RT 02 RW 01 Batang. Time Learning improvement research is carried out according to the number of 2 cycles and the schedule for implementing cycle 1 is October 28, 2023 and cycle 2 on November 01, 2023.

The analysis technique uses data analysis methods using quantitative descriptive analysis. Data in the form of documents of student learning outcomes assessment results. Quantitative data is taken from the results of formative tests at the end of the learning process.

Formative tests are used as a measuring tool for student learning outcomes. This formative test is in the form of a written test, namely 10 multiple choice questions with Learning Achievement Criteria (KKTP) IPAS material on the form of substances and their changes as follows:

Table 1. Learning Achievement Criteria (KKTP) IPAS Class 4 Material Forms of Substances and Their Changes

Interval	Kriteria	Intervensi
0-67	Needs guidance (not yet complete)	Remedial
68-78	Sufficient (complete)	Enrichment
79-89	Good (completed)	Enrichment
90-100	Very good (completed)	Enrichment

Students are said to be complete if they have reached the Criteria for Achieving Learning Objectives (KKTP) in the sufficient category (interval 68-78), good category (interval 79-89) and very good category (interval 90-100). Meanwhile, students are said to be incomplete if they are still in the category of full guidance (interval 0-67).

Four stages as a class action research (PTK) procedure, namely the planning, action, observation, and reflection stages. The learning cycle consists of pre-cycle learning, improvement in cycle I and improvement in cycle II. Because the results of pre-cycle learning using the demonstration method have not achieved satisfactory results, cycle I learning improvements are made. Then

because the learning results of cycle I did not show significant improvement, cycle II was carried out until finally the learning objectives were achieved.

The chart of learning improvement activities can be concluded:

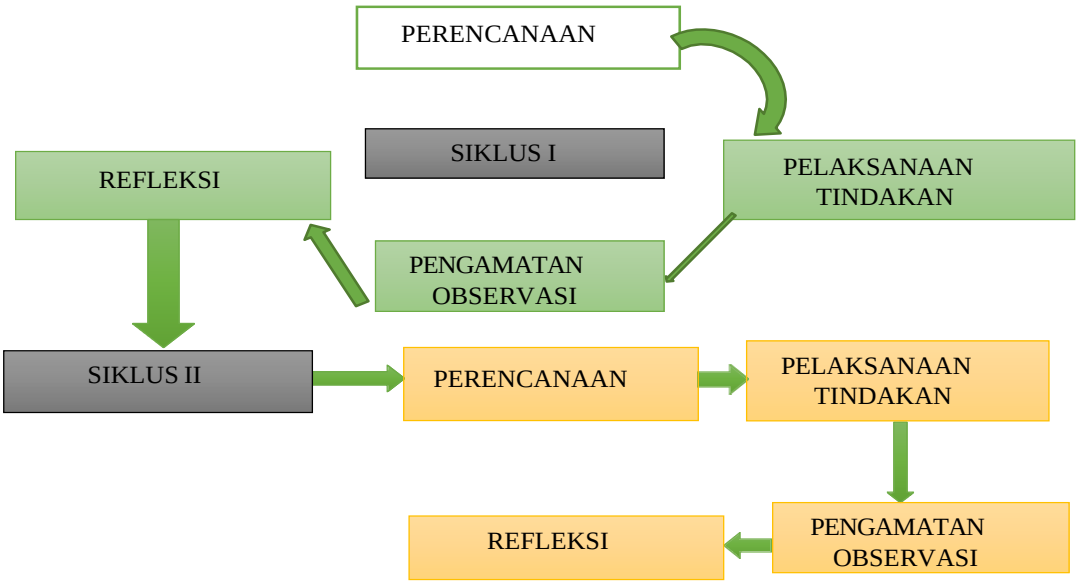

Figure 1. Learning improvement activity chart

DISCUSSION

In this study, the implementation of classroom action research (PTK) applying experimental methods to improve the results of fourth grade students of SD N Klidang Wetan in IPAS material on changes in the form of objects through three stages, namely the pre-cycle, cycle I and cycle II stages.

Cycle I appeared to improve the shortcomings that arose in the pre-cycle, so in this cycle I learning improvement, researchers applied experimental methods to improve the learning outcomes of fourth grade students of SD N Klidang Wetan Batang in IPAS subjects on material Changes in the form of objects.

In cycle I learning, the learning improvement process has not fully run according to what the researchers expected. There are several problems that occur in cycle I, namely the results of the first cycle formative test have improved but not significantly. Grade IV students in cycle I also have not mastered all types of processes of changing the form of objects because each group only carries out one type of experiment. Experimental activities are still dominated by clever children and lack of cooperation so that in the next improvement all groups must do all types

of experiments on the form of objects so that children master all material changes in the form of objects with the aim that their learning outcomes increase.

The results of the analysis of the formative test of learning improvement cycle I show the completeness of student learning outcomes as much as 76% which has not been completed as much as 24% so that it is still below the expected learning completeness criteria.

Improvement of learning cycle II aims to improve the learning process that has been carried out in cycle I by making improvements, namely the application of the experimental method is carried out optimally in accordance with its stages, the teacher provides full guidance and direction in the learning process, the teacher assigns each group to carry out all types of experiments on changes in the form of objects in turn, students are asked to make observation reports on all types of experiments on changes in the form of objects carried out in groups and however, each group presents only one type of experiment, then the teacher supervises and guides so that all students participate in experimental activities and so that experimental activities are not only dominated by clever students.

The improvement in student learning outcomes was seen in the improvement of cycle II learning. the results of the analysis of scores showed that the percentage of completeness reached 100% of 29 students. 10 students are in the sufficient category (interval 67-78), 7 students are in the good category (interval 79-89) and 12 students are in the very good category (interval 90-100). A comparison of the results of the formative test analysis can be seen in the following table.

Table 2. Results of Formative Test Analysis of Pre-Cycle, Cycle I and Cycle II

No	Aspects studied	Pre Cycle	Cycle I	Cycle II
1	Number of students who completed	11	22	29
2	Number of students who have not completed	18	7	0
3	Percentage of completeness	38%	76%	100%
4	Percentage not yet complete	62%	24%	0%

From the table above, it can be seen that there is an increase in the number of students who are complete from pre-cycle, cycle I and cycle II learning.

Initially, only 11 students were completed in the pre-cycle. Then it became 22 students in cycle I and increased again to 29 students in cycle II. So that the percentage of learning completeness was seen to increase from 38% to 76%, then increased again to 100%.

From pre-cycle to cycle I, there was an increase in completeness of 38% and an increase in completeness of 24% from cycle I to cycle II. Thus it can be stated that by applying the experimental method can make student learning outcomes in class IV students of SD N Klidang Wetan Batang increase, namely in the subject of IPAS material on changes in the form of objects.

CONCLUSIONS

From the results of the improvement of learning in the subject of IPAS which has been carried out through the experimental method on 29 students of class IV SD N Klidang Wetan Batang in the 2023/2024 school year, it can be concluded that the experimental method can improve the learning outcomes of IPAS material on changes in the form of objects.

In pre-cycle learning, the percentage of completeness was only 38%, namely 11 students who were complete and 18 students were not complete. In the first cycle learning improvement, there was an increase in completeness to 76% where 22 students were complete and 11 other students were not complete. And in the improvement of learning cycle II, the percentage of completeness has reached 100% where all 29 students are declared to have been completed because they have reached the IPAS Learning Objective Achievement Criteria (KKTP), namely 10 students are in the sufficient category (interval 68-78), 7 students are in the good category (interval 79-89), and 12 students are in the very good category (interval 90-100). Thus, the application of the experimental method can improve the learning outcomes of science material on changes in the form of objects in grade IV students of SD N Klidang Wetan Batang in the 2020/2024 academic year.

Based on the above conclusions, researchers suggest that teachers who experience learning problems similar to those experienced by researchers, to apply experimental methods in carrying out learning in order to produce maximum learning achievement. Some other suggestions that need to be considered are the

need to use media or concrete objects around us in carrying out experiments according to the subject matter, guide and provide maximum direction to students in learning activities, create a pleasant teaching and learning atmosphere to attract students' interest in learning, and ask questions with language that is easy to understand.

REFERENCE

Herawati, L., Saefurohman, A.,& Juhji, J.(2019). Pengaruh metode eksperimen terhadap pemahamankonsep siswa MI pada materi sifat dan perubahan wujud benda. *Primary:* Jurnal Keilmuan dan Kependidikan Dasar, 11(1), 69-76.

Hamalik, O. (2008). Kurikulum dan Pembelajaran. Jakarta: Sinar Grafika

Hamdayana, J. (2014). Model dan Metode Pembelajaran Kreatif dan Berkarakter. Bogor: Ghalia Indonesia

Fadwa, K., Fitriani, S., Darnius, S., & Hasniyati, H. (2023). Pengaruh Metode Eksperimen terhadap Hasil Belajar Siswa pada Materi Perubahan Wujud Benda Tema 7 Subtema 3 di Kelas V SD Negeri 12 Banda Aceh. *Pesona Dasar:Jurnal Pendidikan Dasar dan Humaniora*, *11*(2), 105-115.

Miranty, P. (2018). Upaya Meningkatkan Hasil Belajar Siswa Pada Mata Pelajaran IPA Materi PerubahanWujud BendaMelalui Metode Eksperimen Di Kelas IV Mis Al-Hidayah DatukKabu No.37 Kecamatan PercutSei Tuan Kabupaten Deli Serdang Tahun Ajaran 2017/2018.Medan : UIN Sumatera Utara

Nawawi, H. (2013). Metode Penelitian Bidang Sosial. Yogyakarta: Gadjah Mada University Press Mutmainnah, H. (2020). Meningkatkan Pemahaman Konsep Perubahan Wujud Benda padaPembelajaran Ilmu Pengetahuan Alam Melalui Metode Eksperimen di Sekolah Dasar. JurnalInovasi Pendidikan dan Pembelajaran Sekolah Dasar, 4(1), 87-97.

Permatasari, F., Al Ghozali, M. I., & Purwati, R. (2022). Efektivitas Metode Eksperimen TerhadapHasil Belajar Siswa Pada Mata Pelajaran IPA Materi Perubahan Wujud Benda Kelas IV MIMa'arif Sutawinangun Kabupaten Cirebon. EduBase: Journal of Basic Education, 3(1), 111-116.

Sabri, A. (2010). Strategi Belajar Mengajar Micro Teaching. Jakarta: Ciputat Press

Sudjana, N. (2009). Penilaian Hasil Proses Belajar Mengajar. Bandung: Remaja Rasdakarya. Susanto, A.(2013). Teori Belajardan Pembelajaran di Sekolah Dasar.Jakarta: Kencana Prenadamedia Group

Wandini, R. R., Harahap, E. Y., Mutia, C. M., Adila, N. A., Amalia, A., & Sari, R. Y. (2022). Penerapan Model Eksperimen untuk Meningkatkan Hasil Belajar Siswa pada Materi Perubahan Wujud Benda. Jurnal Pendidikan dan Konseling

(JPDK), 4(3), 2032-2035