

Poe Learning Improves Primary School Students 'Science Learning Achievement

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Abstract

This research is motivated by the low motivation and achievement of students, as well as the implementation of science learning which is still less meaningful. This requires teachers to innovate learning. Researchers innovate by conducting learning research that emphasizes direct experience using the Predict Observe and Explain (POE) learning model. This study aims to determine the effect of the application of POE learning on student activities, student learning achievement of class V SDN Sidorejo I Tuban about the concept of the water cycle, this study also aims to determine the effect of the application of POE learning on teacher activities. This type of research is classroom action research which consists of 2 cycles. This study uses the research model of Kemmis and Mc. Taggart consists of four stages: planning, action, observation, and reflection. The subjects of this study were fifth grade students of SDN Sidorejo I Tuban. Research data obtained through observation and test results. The results showed that the activities of teachers and students increased. Students' learning mastery increased from 67.64% in the first cycle to 91.17% in the second cycle. It can be concluded that the application of POE learning can improve student learning outcomes. Researchers suggest that teachers need to develop more meaningful POE learning.

Keywords: POE learning, science learning achievement

1. Introduction

Natural Sciences in Elementary Schools instill and develop scientific attitudes, scientific attitudes and values, knowledge and skills in students as well as a sense of love and admiration for the majesty of God Almighty. The purpose of science, in general, is to help students understand science concepts and their relation to everyday life. Have the skills to develop knowledge about the natural surroundings and apply various science concepts to explain natural phenomena that must be verified in the laboratory. Thus, IPA is not only a product but also a process. For this reason, there are three things related to the objectives of science in elementary schools, which are as follows. (1) Science is not only results-oriented but also process-oriented. (2) The goal of science learning must be comprehensive and (3) science learning will be more meaningful if it is carried out continuously and involves students actively.

The results of observations that have been carried out by researchers show that the results of learning science about the concept of the water cycle of the fifth-grade students of SDN Sidorejo I Tuban are still low, the process of knowledge transformation between teachers and students is only carried out in one direction, teachers dominate learning, students are only obsessed with knowledge, students have not allowed building and scientific knowledge that they already have. This causes the students' thought processes in cognitive, affective, and psychomotor constructions to be reduced. To avoid this, a change is required in the process of delivering science material to students in schools. In learning the teacher must be creative and innovative.. The POE learning method is an option that can be used to create an active, creative, fun, and quality learning atmosphere. These problems encourage researchers to research with a learning model

POE to improve science learning achievement for fifth-grade students of SDN Sidorejo I Tuban. The formulation of the problem: how to improve science learning achievement through the POE learning model for fifth-grade students of SDN Sidorejo I Tuban?

This study aims to determine the use of the POE learning model to improve science learning achievement regarding the concept of the water cycle in class V SDN Sidorejo I, Tuban District, Tuban Regency Academic Year 2019/2020.

POE Learning Model stands for prediction, observation, and explanation (Suparno, 2007: 102). Learning with the POE model uses 3 main steps from the scientific method, namely:

Prediction or make is a process of making predictions about an event. In making guesses the student has already thought about the reasons why he made such assumptions. In this process, students are given the broadest freedom to formulate assumptions because the teacher should not limit students' thinking so that many ideas and concepts emerge from the students' minds. The more assumptions arise from students, the teacher will be able to understand how students' concepts and thoughts about the problem pose. In this prediction process, the teacher can also understand what misconceptions happen to students. This is important for teachers in helping students to construct correct concepts.

Observe is doing research, observing what happens. In other words, students are invited to do experiments, to test the correctness of the predictions they convey. At this stage students make experiments, to test the predictions they express. Students observe what happens, the most important thing in this step is confirmation of their predictions.

Explain, namely giving an explanation, especially about the suitability between the assumptions and the experimental results from the observation stage. If the results of the predictions are in accordance with the results of observations and after they get an explanation of the correctness of the predictions, the students will be more convinced of the concept. However, if the prediction is not correct, students can seek an explanation for the inaccuracy of their prediction. Students will experience a change in the concept from an incorrect concept to a correct one. Here, students can learn from mistakes, and usually learn from mistakes that will not be easily forgotten.

Learning activities will be meaningful for students if they are carried out in a comfortable environment and provide a sense of security for students. The learning process is individual and contextual, meaning that the learning process occurs within individuals according to their development and their environment. The meaning of learning as a result of teaching events is marked by the occurrence of a relationship between new aspects, concepts, information, or situations with the relevant components in students' cognitive structures. The learning process is not just memorizing concepts or facts but is an activity to connect concepts to produce a complete understanding so that the concepts learned will be well understood and not easily forgotten.

Learning outcomes are important things that will be used as benchmarks for student success in learning and the extent to which the level of success in learning. Learning outcomes according to Sudjana (2004: 22) are abilities that students have after receiving their learning experiences. Meanwhile, according to Davis (in Abdullah, 2007: 4) said that in every learning process there are always tangible results that can be measured. The tangible results that can be measured are expressed as a person's learning achievement or learning outcomes. Then Howard Kingsley in (Sudjana, 2004: 22) divides learning outcomes into three types, namely: a) skills and habits b) knowledge and direction c) attitudes and ideals. Meanwhile, according to Bloom (Sudjana, 2004: 22), learning outcomes are achieved through three-domain categories including cognitive, affective, and psychomotor. a) Cognitive domain, about intellectual learning outcomes which consists of 6 aspects, namely knowledge, understanding, application, analysis, synthesis, and assessment. b) Affective domain, about attitudes and values which consist of 5 aspects of ability, namely: receiving, responding, assessing, managing, and living. c) Psychomotor domain, about motor skills which consist of 4 aspects of ability, namely: imitation, manipulation, articulation, and experience.

To find out student learning outcomes on competency mastery, a learning outcome assessment tool is needed. The aim is to assess the level of achievement of student competencies which is carried out at the time of learning and at the end of learning.

The level of learning outcomes can be expressed in the form of numbers or symbols. According to (Sudjana, 1989: 39) the level of learning outcomes achieved by students is influenced by two factors, namely factors from within the student and factors from outside the student. Internal factors include students' abilities, learning motivation, interest, and attention, learning attitudes and habits, persistence, socioeconomic, physical, and psychological factors. Factors that come from outside the student or environmental factors, especially the quality of teaching.

2. Research Methods

This study uses a research model design from Kemmis & Mc Taggart (in Arikunto, 2006: 16-22), this method includes a series of interrelated cycles, consisting of planning, implementation (action), observation (observation), and reflection as shown in Figure 1 The research implementation is planned in two cycles.

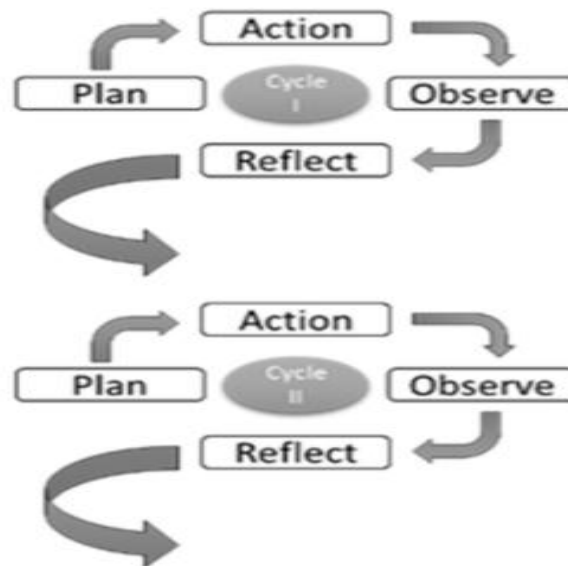


Figure 1 The research implementation is planned in two cycles.

The research location was conducted at SDN Sidorejo I, Tuban. The research was carried out from October 2019 to November 2019. The research subjects were class V SDN Sidorejo I, Tuban District, Tuban Regency in the odd semester of the 2019/2020 academic year, totaling 34 students, consisting of 22 male students and 12 students. girls.

The research data were collected using observation techniques, field notes, interviews, and document study.

1. Observation techniques and field notes are used to assess the learning process and improve student learning outcomes. During the observation, the researcher and the observer used an observation sheet which consists of 3 forms, namely the student activity observation sheet and the teacher's ability observation sheet in implementing learning remedial actions and the observation sheet using the POE learning model.
 - i. Student activity observation sheets are used to observe student activities as long as they are given corrective action in the teaching and learning process to describe the water cycle and human activities that can influence it using the POE learning model. In the student activity observation sheet, there is a statement containing student activities that need to be observed and given a rating scale.
 - ii. The teacher's ability observation sheet is used to observe the teacher's ability to take corrective actions on human activity material that can influence it using the POE learning model. In the teacher's observation sheet, there is a statement that contains teacher activities that need to be observed and given a rating scale.
 - iii. The observation sheet on the use of the POE learning model in improving basic competency learning describes the water cycle and human activities that can affect it.
2. Interview techniques are used to determine student responses to the learning process. Interviews can be conducted when the learning activity ends. In addition to interviews to find out students' responses, a questionnaire was also used, namely a list of questions containing students'

responses to basic competency science learning to describe the water cycle and human activities that can influence it.

- Document study is used to determine the increase in student learning outcomes from one cycle to the next. The instrument used is an evaluation sheet that contains item items arranged based on item according to indicator with competency standards, basic competencies, and indicators. Used to measure the achievement of student competencies in describing the concept of the water cycle and human activities that can influence it. Data from the evaluation of student learning outcomes, namely describing the water cycle and human activities that can influence it, were analyzed using the Benchmark Reference Assessment (PAP) system. Benchmarking Assessment (PAP) is an assessment that is referred to as instructional objectives that must be mastered by students (Sudjana, 2005: 8). Thus, the degree of student success is compared with the goals that should be achieved not with the group average.

The standard of assessment uses the Minimum Completeness Criteria (KKM) in Science subjects in Class V SDN Sidorejo I, Tuban District, Tuban Regency, where a student is called complete learning if the student's final score reaches > 68 and the formula for the average student's final test score can be obtained as follows:

$$\text{Final score} = \frac{\sum \text{score obtained}}{\sum \text{score maximum}} \times 100$$

4. Result and Discussion

4.1 Cycle I

The implementation of teaching and learning activities for the cycle I was carried out on Tuesday, October 21, 2019, in class V with a total of 34 students. In this case, the researcher acts as a teacher. The teaching and learning process refers to the lesson plans that have been prepared. Observation (observation) is carried out in conjunction with the implementation of teaching and learning in the classroom. At the end of the process of teaching and learning activities, students are given a test to determine the level of student success in the teaching and learning process that has been carried out.

Table 1 Recapitulation of student test results in cycle I

No	Description	Cycle result
1	Average test scores	73,44
2	The number of students who have completed their studies	23
3	The percentage of learning completeness	67,64 %

Based on the data table above, it can be explained that by applying the POE learning model in science lessons, the water cycle material produces an average value of student learning outcomes is 73,44, completeness of learning reaches 67,64% or there are 23 students out of 34 students who have completed learning. These results indicate that in the first cycle classically students have not finished learning, because students who get a value of >75 are only 73.44% smaller than the desired percentage of completeness of 80 %. This is because there are still many students who forget the subject matter that has been taught

4.2 Cycle II

The implementation of cycle II teaching and learning activities was carried out on Tuesday, October 28, 2019, in class V with 34 students. In this case, the researcher acts as a teacher. The learning process refers to the Learning Implementation Plan by paying attention to the revision in cycle I, so that mistakes or deficiencies in cycle I do not happen again in cycle II. Observation (observation) is carried out simultaneously with the implementation of the teaching and learning activities process

At the end of the process of teaching and learning activities, students are given the second test with the aim of knowing the level of student success in the teaching and learning process carried out. The instrument used is tested two, which can be seen in the recap results below.

Table 2 Recapitulation of student test results in cycle II

No	Description	Cycle result
1.	Average test scores	85,62
2.	The number of students who have completed their studies	31
3.	The percentage of learning completeness	91,17%

5. Conclusion

From the results of learning activities that have been carried out for two cycles, and based on all the discussion and data analysis that has been carried out, it can be concluded that the POE model of cooperative learning has a positive impact in improving student learning outcomes which are marked by an increase in student learning completeness in each cycle, namely cycle I (67.64%) and cycle II (91.17%)

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