

Application Of Articulation Methods With Experiments To Improve The Science Learning Outcomes Of 4th Grade Students Sd Iv Negeri Banyuputih, Kalinyamatan, Jepara Regency

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Abstract: *This research was motivated by the low science learning outcomes in grade IV SD Negeri 4 Banyuputih, because teachers were less varied in using learning methods. The formulation of the problem is whether the application of the articulation method with experiments can improve science learning outcomes. This study aims to improve student learning outcomes using the articulation method with experiments on science learning. The type of research used was Classroom Action Research. The research subjects were 34 grade IV students. Data collection techniques using test and non-test techniques. The research instruments were test questions and observation sheets. The data analysis techniques used were (1) quantitative data analysis and (2) qualitative analysis. The results showed that there was an increase in the first cycle of students who completed as many as 30 students (88.23%) increased in the second cycle by 33 students (97.05%).) complete. Teacher's skills in the first cycle were categorized as good, and increased in the second cycle. Student activity in the first cycle of students who completed as many as 28 students (82.35%) increased in the second cycle of students who completed as many as 30 students (88.23%).*

Keywords: *Articulation Method with Experiments, Science Learning Outcomes*

Introduction

The development of science and technology that is increasingly rapid and global changes in various aspects of life that come quickly are the challenges of the nation in preparing future generations (Deliati & Muharmi, 2019). Learning activities are related to efforts to transform and master science and technology, attitudes and skills and their application (Sitepu & Nasution, 2017). Indonesian education currently uses the 2013 Curriculum. In the implementation of the 2013 Curriculum, learning is presented in the form of themes, but still contains basic competencies that contain subjects such as Indonesian, Natural Science, Social Studies, Civics and others. With the implementation of the 2013 Curriculum students are expected to be productive, creative, innovative and affective, through strengthening integrated attitudes, skills and knowledge. In realizing these expectations, of course, the role of a teacher is needed. Teachers play a large enough role in the success of education in Indonesia because they are the ones who transfer knowledge directly to students.

The success of a learning activity depends more on the quality of the activities carried out by students during learning (Elfrianto et al., 2020) Effective learning is learning that is right

on target. The target is students, students can achieve learning objectives that include the cognitive domains, affective domains and psychomotor domains (Zurika, 2018). These learning objectives are expected in every learning, including learning Natural Sciences (IPA). Science is a part of thematic learning that is taught to students from grade III to grade VI Elementary School. IPA is the science of nature or that studies events that exist in nature. According to Nuryani Rustaman et al (2011: 1.10) "There are some basic skills that must be done and we train to be proficient and able to study science well, namely observation and inference, measurement and estimation, asking questions and formulating problems, communication and interpretation, predictions and hypotheses. , operational definitions, identification and control of variables, as well as experiments and investigations.

The role of the teacher in developing basic science skills is very important. The teacher as a facilitator must provide direct learning experiences to students, be able to provide activities that stimulate students' curiosity, be able to create a meaningful learning atmosphere so that it impresses students. However, the fact is that teachers are not optimal in developing basic science skills.

Based on observations made in grade IV SD Negeri 4 Banyuputih when the teacher's learning process was less able to help and facilitate students in developing process skills. The teacher only delivers material with the lecture method without conducting proper experiments to prove the theories presented and there is no effort to consolidate the results of learning. Students are only asked to read what is in the textbook, without taking an active role in learning. Several things cause students' lack of interest in a lesson given by a teacher, such as not using teaching aids and less varied learning methods. In science learning, teachers still dominate and do not provide opportunities for students to experiment in finding and solving problems on their own. As a result, students become less active in learning science and science learning outcomes are low. The low science learning outcomes for fourth grade students of SD Negeri 4 Banyuputih are evidenced by the fact that there are still many whose achievements are below the KKM. Of the 34 grade IV students the scores were still below the KKM there were 24 (70.6%) students, while those who reached the KKM were 10 (29.4%) students.

Literature Review

Articulation learning model is a learning model that emphasizes the concept of active students. Students are divided into small groups in pairs, one student is tasked with interviewing other students about the material presented by the teacher, this is done alternately. Then each group delivers the results of group activities to the other groups (Yastiari, 2019). The articulation learning model is a learning model that emphasizes the ability of students to speak, such as stating words clearly and repeating them. Learning given by the teacher, must be continued by students and explain it to other students in their group pairs. The use of the articulation method in learning aims to increase student activity. students actively ask questions and provide information to their group partners. This method can be an alternative for students who do not dare to ask directly to the teacher, students can ask things they do not understand to their group of friends.

According to Miftahul Huda (2013: 269) the benefits of the articulation method for students are as follows. 1) Students become more independent, 2) Students work in groups to complete learning material, 3) Rewards are more group-oriented than individual, 4) There is interaction between students in small groups, 5) There is interaction between small groups, 6)

each student has the opportunity to speak or appear in front of the class to present the results of group discussions. According to Aris Shoimin (2017: 28) the advantages and disadvantages of the articulation method include: 1) The advantages of the articulation method are a) All students are involved b) Train student readiness c) Suitable for simple assignments. d) Easier interaction. e) Easier and faster in shaping. f) Increase student participation. The disadvantages of the articulation method are a) It takes a lot of time. b) The material obtained is little. c) Many groups report and need to be monitored. d) Fewer ideas emerged. The steps for the articulation method according to Agus Suprijono (2012: 127) include: 1) The teacher conveys the competencies to be achieved. 2) The teacher delivers the material. 3) To determine the students' absorption, form groups of two. 4) Assign one of the students from the pair to tell the material that has just been received from the teacher and the partner listens while making small notes, then alternates roles. Likewise other groups. 5) Assigning students to take turns / randomly deliver the results of the interview with their partner's friends. Until some students have submitted the results of their interviews. 6) The teacher repeats / explains the material again if the students have not understood it. 7) Conclusion / closing.

The experimental method is a method or way in which teachers and students work together to do an exercise or experiment to determine the effect or effect of an action. The experimental learning method aims to prove to students the truth of the theories being studied, students can get direct answers from the results of the experiments conducted (Imas Kurniasih, 2017: 88). While Sagala in Liena Andiasari (2015: 23) argues that the experimental method is a way of presenting learning material where students conduct experiments by experiencing to prove themselves a question or hypothesis being studied. The experimental learning method aims to prove to students the truth of the theories being studied, students can get direct answers from the results of the experiments carried out.

The selection of appropriate learning methods is very helpful in providing good learning outcomes so that the objectives of the teaching can be achieved (Wulandari & Surjono, 2013). In teaching and learning interactions, teachers need to know the results achieved by students in every lesson (Wahyuni, 2010). Learning outcomes are the results and evidence of a person's learning which is shown by changes in behavior ((Setiawan, 2017). Learning outcomes are competency achievements obtained by students after the learning process (Sudjana, 2014: 2). According to Benyamin Bloom in Daryanto (2010) : 100) the types of learning outcomes are divided into three domains, namely the affective domain, the psychomotor domain and the cohesive domain.

Science is a human effort in understanding the universe through precise observations on the target, and using procedures, and is explained by reasoning so as to get a conclusion. Science learning is the study of natural events, all objects around the universe (Ahmad Susanto, 2013: 167). According to the National Education Standards Agency in Ahmad Susanto (2013: 171), one of the objectives of learning science in elementary schools is to develop knowledge and understanding of science concepts that are useful and can be applied in everyday life.

Method

This type of research is Classroom Action Research (PTK). The subjects in the study were all students of SD Negeri 4 Banyuputih, Kalinyamatan, Jepara Regency, totaling 34 students, consisting of 11 male students and 23 female students. Data collection techniques

used tests to determine student learning outcomes and non-tests to determine student learning outcomes and teacher skills and student activities.

Results and Conclusions

Student learning outcomes were obtained from multiple choice test questions of 15 items given in each cycle. The learning outcomes obtained are then processed to determine individual learning completeness in science learning for fourth grade students of SD Negeri 4 Banyuputih. Individual learning completeness has been limited by KKM ≥ 65 . Based on the KKM then processed to get classical learning completeness. Classical learning completeness in science learning is $\geq 70\%$. Science learning outcomes for fourth grade students of SD Negeri 4 Banyuputih, Kalinyamatan, Jepara Regency have increased in each cycle. This research was conducted until cycle II.

a. Cycle I

1) Student Learning Outcomes

In cycle I activities, student learning outcomes in science learning. Learning materials linking force with motion in events in the surrounding environment obtained data on student learning outcomes who have reached the Minimum Completeness Criteria (KKM) in science learning as many as 30 students (88.23%). The number who did not complete was 4 students (11.77%). Based on this data, it can be concluded that the application of the articulation method with experiments to improve science learning outcomes in the first cycle has achieved classical KKM, namely 88.23%. Classical KKM set is $\geq 70\%$.

2) Teacher skills

The results of the observation of teacher skills in applying the articulation method with experiments in science learning cycle I obtained data that in learning I and II the skills of teachers in applying the articulation method with experiments in science learning were categorized as good. In learning I the value obtained is 81 in the good category and in learning II the score is 86 in the good category. So from learning I and II cycle I obtained an average score of 83.5 teacher skills with good categories.

3) Student Activities

Student activities in science learning cycle I have reached the specified classical completeness, namely $\geq 70\%$. In the implementation of learning I, from 34 students there were 2 students (5.88%) with very good categories (A), 24 students (70.59%) with good categories (B), and 8 students (23.53%) with sufficient category (C). In the implementation of learning II of 34 students there were 2 students (5.88%) with the very good category (A), 26 students (76.47%) with the good category (B), and 6 students (17.65%) with the category enough (C).

b. Cycle II

1) Student Learning Outcomes

Completeness of student learning outcomes in cycle II the number of students who have achieved the Minimum Completeness Criteria (KKM) in science learning is 33 students (97.05%). The number who did not complete was 1 student (2.95%). Based on this data, it can be concluded that the application of the articulation method with experiments to improve science learning outcomes in cycle II has achieved classical KKM, namely 97.05%. Classical KKM set is $\geq 70\%$.

2) Teacher skills

In the second cycle of learning I and II the skills of the teacher in applying the articulation method with experiments in science learning were categorized as good. In

learning I the value obtained is 90 in the good category and in learning II the score is 90 in the good category. From learning I and II cycle II, the average score of teacher skills is 90 with good categories.

3) Student Activities

Student activities in the second cycle of science learning have reached the specified classical completeness, namely $\geq 70\%$. In the implementation of learning I, from 34 students there were 2 students (5.88%) with very good category (A), 27 students (79.41%) with good category (B), and 5 students (14.71%) with sufficient category (C). In the implementation of learning II of 34 students there were 3 students (8.82%) with the very good category (A), 27 students (79.41%) with the good category (B), and 4 students (11.77%) with the category enough (C).

In the first cycle there were 30 students (88.23%) and 33 students (97.05%) in the second cycle. Completeness of student learning outcomes has increased by 3 students (8.82%). The average teacher skills in cycles I and II have increased. The mean score of teacher skills is 83.5 with good category. In the second cycle the average score for the skills of the teacher was 90 in a good category. Teacher skills assessment has increased by 6.5. the value of student activities in science learning cycle I and cycle II. In the first cycle of learning I, 26 students (76.47%) completed student activities and increased in the second study as many as 28 students (82.35%) completed. In the second cycle of learning I, 29 students (85.29%) completed student activities and increased in the second study as many as 30 students (88.23%) completed. Student activity in cycle I of learning I to cycle II of learning II has increased by 4 students (11.77%).

The results of the research conducted in class IV SD Negeri 4 Banyuputih with the material of force and motion, after the implementation of the action, namely learning by applying the articulation method with experiments showed an increasing trend. The acquisition of science learning outcomes has increased due to the application of the articulation method with experiments in learning that can increase student activity in exchanging learning information and involve students in conducting experiments to prove the theory that has been learned, so that learning will be more meaningful and student learning outcomes increase.

The increase in learning outcomes is supported by the theory according to Aris Shoimin (2017: 27) "articulation is a learning model that requires students to act as message recipients as well as convey messages". According to Sagala in Liena Andiasari (2015) "The experimental method is a way of presenting learning material where students conduct experiments by experiencing to prove themselves a question or hypothesis being studied". The application of the articulation method with experiments can improve learning outcomes because it increases students' activeness in obtaining information about the material and students' activeness in conducting experiments, because students do experiments dir.

In this research cycle I and cycle II have met the criteria of research completeness. The completeness of learning outcomes is supported by appropriate and appropriate learning methods. Science learning that is carried out in each cycle uses learning methods that train basic science skills, one of which is by experimenting, according to what Nuryani Rustaman et al (2011: 1.10) said. Good, namely observation and inference, measurement and estimation, asking questions and formulating problems,

communication and interpretation, prediction and hypotheses, operational definitions, identification and control of variables, as well as experiments and investigations. In addition to the experimental method, the articulation method also affects the success of this study, with the articulation method students do not just stop after doing the experiment. Students will be directed to exchange information from what has been learned, so that they can evaluate each other if there is an inappropriate theory.

The skills of teachers in applying the articulation method with experiments in science learning have increased. By applying the articulation method the teacher acts as a facilitator. Students convey their own messages that are understood from the material that has been delivered by the teacher. besides that the teacher can also play a role in conducting experiments in science learning. This is supported by the theory of Imas Kurniasih (2017: 88) "The experimental method is a method or way in which teachers and students work together to do an exercise or experiment to determine the effect or result of an action".

Conclusion

Based on the results of this classroom action research, it can be concluded that the application of the articulation method with experiments can improve science learning outcomes for fourth grade students in the second semester of the 2018/2019 school year SD Negeri 4 Banyuputih, Kalinyamatan District, Jepara Regency. This can be seen in the first cycle: student learning outcomes that are complete as many as 30 students (88.23%). The teacher's skills in learning I are in good category with a value of 80 and in learning II are in good category with a value of 86, with an average value of teacher skills that is 83.5 in good category. There were 26 students (76.47%) who completed the first learning activity and 28 students (82.35%) completed the second study. In the second cycle: student learning outcomes that were complete were 33 students (97.05%). Teacher skills in learning I and II are categorized as good with a value of 90 with an average score of 90 in good categories. Student activities in learning I that were complete were 29 students (85.29%) and in learning II that were complete were 30 students (88.23%). This shows that the results of this study have achieved predetermined success

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