
**EFFORTS TO IMPROVE SCIENCE LEARNING OUTCOMES THROUGH
JIGSAW LEARNING MODEL IN CLASS IV SDN SUMBERJO**

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ABSTRACT

This study aims to determine how the jigsaw learning model can improve science learning outcomes in grade IV at SDN Sumberjo. This research is a classroom action research using Kurt Lewin's model which includes 4 stages, namely planning, action, observation, and reflection. Data on student learning outcomes and questionnaires were analyzed quantitatively while student observation data were analyzed qualitatively. The results showed in the first cycle the percentage of student learning outcomes the average value of the pre-test was 61.25% with classical completeness criteria in class 50%. Then the percentage of student learning outcomes the average score on the posttest increased by 77.5% with the classical completeness criteria in the class, namely 75%. Furthermore, in the second cycle of action, it can be seen from the percentage of student learning outcomes, the average pre-test score is 85% with classical completeness in the class of 87.5%. Then the percentage of student learning outcomes the average score on the post test also increased by 96.25% with the classical completeness criteria in the class, namely 100%. The results of the analysis can be concluded that the jigsaw learning model is able to improve students' science learning outcomes.

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A. Introduction

Education is important and unavoidable for humans. Education has a positive impact and is able to create an educated young generation. Education is a series of learning for someone to have critical thinking so that they are able to understand, understand, and create something to create a better life (Dwiyanti et al., 2021). This is also supported by (Yasa, 2019) who says that education has a very important role in improving the quality of life of the nation and state and increasing the ability of human resources in the future. Therefore, the existence of both formal and non-formal education contributes greatly to the progress of the Indonesian nation.

Indonesia is a country that is trying to develop a better education system. Several forms of government concern for the quality of education, namely the circulation of regulations that seek to provide citizens with a proper education, namely in the 1945 Constitution article 31 paragraphs 2, 3, and 4. , facilitate, and finance it (Sirait, 2017). Another form of concern is the continuous updating of the educational curriculum that is adapted to the demands and developments of the times (Hasibuan, 2017). Indonesia has made several curriculum changes, where until now the applicable curriculum is the 2013 curriculum (Muhammedi, 2016). The essence of education in the 2013 curriculum is designed not only to focus on results but also processes (Ertin et al., 2021).

Education is always related to the learning process, namely the process of transferring knowledge from teachers to students through learning activities (Maskan et al., 2019). This is supported by the Minister of Education and Culture who said that learning is a process of interaction between teachers and students by involving various learning resources. Science subjects are one of the important subjects and have a close relationship with everyday human life. Science learning also needs to be considered, especially regarding the understanding of the material by students. Science learning is learning that is not only in the form of theory, but also practice, so it requires direct experience for students (Oktafiani et al., 2020). So far, most of the learning activities have focused on the teacher so that the application of science learning is considered less than optimal because the teacher has more roles than students (Ali, 2018). This is certainly contrary to the essence of the 2013 curriculum which emphasizes learning by focusing more on students.

The implementation of the 2013 curriculum must be balanced with the ability of teachers to choose the right learning model (Kurniaman & Noviana, 2017). This is because the right learning model can help students get optimal learning outcomes (Asyafah, 2019). One of the learning models that can be applied in the 2013 curriculum is the jigsaw learning model. The jigsaw learning model is a cooperative learning model, where 4-5 students study in small groups, then work together and take responsibility for learning certain material then convey it back to other group members (Hamdayama, 2017). This Jigsaw learning model is in accordance with the essence of the 2013 curriculum because the learning activities are more student-focused.

Based on the results of a preliminary study conducted in the fourth grade of SDN Sumberjo, the researcher found a problem when science learning in the class was still focused on the teacher. This makes students less active and enthusiastic in learning. Learning becomes less meaningful so that students have difficulty understanding science material. Therefore, researchers are encouraged to conduct research that aims to improve science learning outcomes, especially on metamorphosis material using the jigsaw learning model for fourth grade students at SDN Sumberjo, and to find out how teachers and students respond to the use of jigsaw learning models, especially improving student learning outcomes after taking action.

B. Method

This research uses a classroom action research approach (Classroom Action Research) with the type of participant class action research because the researcher wants to describe the data obtained naturally, namely by direct observation to the research subject and the researcher being directly involved in the research. This classroom action research design uses Kurt Lewin's model which in one cycle consists of four steps, namely planning (planning), action (acting), observation (observing), and reflection (reflecting) (Mu'alimin & Cahyadi, 2014). The research subjects used were fourth grade students of SDN Sumberjo in the 2021/2022 academic year. The research data were collected by using questionnaires, interviews, observations, tests, and documentation methods. The collected data is then analyzed using quantitative data analysis techniques. This quantitative data analysis technique consists of three stages, namely data reduction, data display, and drawing conclusions (Farhana et al., 2019).

C. Result and Discussion

Science content which is commonly known as Natural Science is one of the important subjects taught in elementary schools, because it is related to everyday life, especially the surrounding environment. However, until now, there are still many problems, namely how students are able to apply it in everyday life. Metamorphosis material is one of the materials contained in grade IV Elementary School.

This research was conducted in semester 2 of the 2021/2022 academic year at SDN Sumberjo, Pucuk District, Lamongan Regency. In order for learning to run well and meaningfully, an appropriate learning model is needed, one of which is in accordance with the characteristics of students (Janawi, 2019). Characteristics of students in grade IV SDN Sumberjo who still like to play in class, are not used to discussing, and are individual. From some of these characteristics, the researcher decided to use an appropriate learning model, namely the jigsaw learning model on the metamorphosis material for science content for grade IV Elementary School. The jigsaw learning model was chosen because in addition to being in accordance with the characteristics of students, this model also has several advantages including being able to improve students' mastery of the material, practice discussion skills, cooperation, and independence of students in seeking new knowledge or knowledge, increasing the ability to discuss among friends including in linguistic multiple intelligences in answering questions and assignments given by the teacher (Putra & Hartati, 2014). With these advantages, the jigsaw learning model allows for interesting learning designs, students will avoid boredom and prefer to focus during the learning process.

The following are the stages carried out during the research:

1. Precycle Action

In this precycle action, the researcher made initial observations to the school. In this pre-cycle action, the researcher used various techniques to collect data, namely, interviews with teachers, observations of learning in class, and documentation. Interviews with fourth grade teachers at SDN Sumberjo were conducted to find out information or problems experienced by students and student learning outcomes in class. Based on the results of the interviews, the researchers obtained some information, namely:

- a. Teachers do not use varied learning methods, only lecture, question and answer, and assignments

- b. Students' academic abilities vary widely, some are categorized as high, medium, and low. So it is necessary to equalize the abilities of all students in the class.
- c. The teacher has difficulty in teaching the material for metamorphosis of science content to students.
- d. Many students' learning outcomes regarding the metamorphosis of science content material are still below the KKM.

Based on the results of interviews and supported by documentation, it shows that there are still many students whose learning outcomes do not reach the KKM, especially in science content. In addition, the researchers also made observations. Observations were made to observe the learning process of students in class. The results of the observations show that students during science learning still look passive, bored, and busy even though the characteristics of students at the school tend to be active, therefore a more appropriate learning model is needed to accommodate students so that they can be more active in constructing knowledge in the classroom.

From the various information obtained, the researchers chose to apply the jigsaw learning model to help the problems of fourth grade students at SDN Sumberjo on the science content of metamorphosis material. The jigsaw learning model is a cooperative learning model where students are grouped into several small groups then learn and teach each other the material with other group members in order to understand the material (Tahulending et al., 2021). The jigsaw model was chosen because peer teaching which is the hallmark of the jigsaw learning model has been shown to improve student learning outcomes and activities as well as encourage their communication and social skills (Abdullah, 2017)

2. Precycle Action

At the planning stage of the first cycle, the researcher has made a Learning Implementation Plan, teaching materials, media, as well as assessment and research instruments. The arrangement of learning tools is designed using the jigsaw learning model on the metamorphosis material of the Natural Sciences grade 4 Elementary School subjects. At this stage, the researcher acts as a model teacher. There are also fellow researchers as observers who make observations or observations during learning to find out

the activities of fourth grade students at SDN Sumberjo through the application of the jigsaw learning model for the science content of metamorphosis material.

The observations made showed that in the first cycle the teacher had not linked the science content with other content so that the students only focused on the science content. This must be corrected because in the 2013 curriculum, subject matter should not be taught separately, but must be packaged thematically by linking the content of one lesson to another (Juanda, 2019). In addition, students experienced difficulties in cooperating with their group mates during the process of applying the jigsaw learning model. So that students need maximum supervision and practice to be professional when the discussion takes place.

At the reflection stage, the activities carried out were analyzing and concluding the results of the implementation of the first cycle of class actions, namely from the results of observing student activities and pretest-posttest questions using the jigsaw learning model on the metamorphosis material of science content. The results of giving the students' pretest-posttest showed that there was an increase from pretest to posttest but it could not be said to be perfect.

The results of the analysis of student observations in the first cycle of action, namely the number of very active students amounted to 4, the number of active students was 2 students, and the students were quite active 2 students. In addition to student observations, they also filled out a questionnaire using the JIGSAW learning model in the classroom, it was found that there were 2 students with sufficient predicates, 3 students with good predicates and 3 students with very good predicates. Then for analysis

Furthermore, the analysis of learning outcomes through pretest and posttest. Learning outcomes are the level of student success in studying a material and are expressed in the form of scores obtained from test results (Muflihah, 2021). The results of this study can be information about the ability of students to understand the subject matter that has been obtained. The results of the pretest posttest in this cycle showed that the application of the jigsaw learning model to the metamorphosis of science content gave a fairly good effect. This can be seen from the percentage of student learning outcomes, the average score on the pre-test is 61.25% with good predicates of 2 students, 4 students with sufficient predicates, and 2 students with less predicates. Then

for the classical completeness criteria in the class by 50%. In addition, from the percentage of student learning outcomes the average score on the post test has increased by 77.5% with 2 students very good predicate, 3 students good predicate, and 3 students quite predicate. For classical completeness criteria in class, namely 75%. The following are the results of the questionnaire for all fourth graders at SDN Sumberjo in cycle I:

Table 1. Student Questionnaire Results in Cycle I

No.	Students Name	Score	Percentage (%)	Predicate	Description
1.	Akhmad Arif	35	87.5%	B	Good
2.	Aril Febriansyah	30	75%	C	Enough
3.	Citra Dwi Amelia	35	87.5%	B	Good
4.	Davin Ramadhan	30	75%	C	Enough
5.	Denanda Amelia D	35	87.5%	B	Good
6.	Jauhurul Azka Arrifa'i	39	97.5%	A	Very Good
7.	Rosidah N.	37	95%	A	Very Good
8.	Syafira Maulida F	38	95%	A	Very Good

The following are the results of the pretest posttest for all fourth graders at SDN Sumberjo in the cycle I:

Table 2. Student Learning Test Results in Cycle I

No	Students Name	Pretest	Description	Posttest	Description
1	Akhmad Arif	60	Enough	80	Good
2	Aril Febriansyah	70	Enough	80	Good
3	Citra Dwi Amelia	50	Not Enough	60	Enough
4	Davin Ramadhan	50	Not Enough	60	Enough
5	Denanda Amelia D	80	Good	90	Very Good
6	Jauhurul Azka Arrifa'i	80	Good	90	Very Good
7	Rosidah N	50	Good	70	Enough
8	Syafira Maulda F	70	Enough	80	Good

Based on the analysis of the results of observations and student results, it can be concluded that the implementation of cycle I in an effort to improve learning outcomes of science content, especially metamorphosis material, shows an increase. However, it is still necessary to improve and strengthen the application of the jigsaw learning model in cycle II. Therefore, the researcher decided to re-prepare the second cycle of action with the jigsaw learning model and correct the deficiencies in the first cycle. This is in accordance with what was conveyed by (Mu'alimin & Cahyadi, 2014), that in classroom action research, researchers can continue the cycle, if there are things that are less than optimal and need to be corrected in the previous cycle.

3. Cycle II Action

At the planning stage of the second cycle, the researcher has made a Learning Implementation Plan, teaching materials, media, as well as assessment and research instruments which are improvements from cycle I. The preparation of learning tools is designed using the jigsaw learning model on the metamorphosis material of Natural Sciences subjects. grade 4 Elementary School.

In the second cycle of action, there were several differences or improvements from the implementation of the first cycle. When the teacher gave directions on the implementation of the jigsaw learning model, the students seemed to have understood, paid attention, and were enthusiastic during the learning process. Students also apply discussions well with their groups, so that all students are active when learning. Each group gave each other input and questions to the group presenting in front so that mastery of the material was also carried out evenly. The teacher has also carried out learning to the maximum, namely linking the metamorphosis material with other content, namely Indonesian in the slogan material.

At the reflection stage, the activities carried out were analyzing and concluding the results of the implementation of the second cycle class actions, namely from the results of observing student activities and posttest pretest questions using the jigsaw learning model on the metamorphosis material of science content. In the second cycle of action students were very active and interested in learning science using the jigsaw learning model where students had the opportunity to discuss and work together. With some improvements, students are finally able to follow the steps of the jigsaw learning model properly and correctly. In addition, there was an increase in the score of learning outcomes seen from pretest to posttest from cycle I to cycle II.

The results of the analysis of student observations in the second cycle of action, namely the number of very active students were 7 and the number of active students was 1. In addition to student observations, they also filled out a questionnaire using the jigsaw learning model in class, it was found that there were 2 students with good predicates and 6 students with very good predicates. For the analysis of the results of the pre-test-post-test, it shows that the jigsaw learning model on the metamorphosis of science content material has a very good influence. This can be seen from the percentage of student learning

outcomes, the average score on the pre-test is 85% with very good predicates as many as 4 students, good predicates as many as 3 students and less predicates as many as 1 student. For classical completeness criteria in the class of 87.5%. In addition, from the percentage of student learning outcomes the average score on the posttest also increased by 96.25% with the classical completeness criteria in the class, namely 100%, namely very good predicate as many as 7 students, good predicate as many as 1 student.

The following are the results of the questionnaire for all fourth graders at SDN Sumberjo in cycle II:

Table 3. Student Questionnaire Results in Cycle II

No.	Students Name	Score	Percentage (%)	Predicate	Description
1.	Akhmad Arif	37	92.5%	A	Very Good
2.	Aril Febriansyah	35	87.5%	B	Good
3.	Citra Dwi Amelia	35	87.5%	B	Good
4.	Davin Ramadhan	37	92.5%	A	Very Good
5.	Denanda Amelia D	38	95%	A	Very Good
6.	Jauhurul Azka Arrifa'i	40	100%	A	Very Good
7.	Rosidah N.	38	95%	A	Very Good
8.	Syafira Maulida F	38	95%	A	Very Good

The following are the results of the pre-test-post-test for all fourth graders at SDN Sumberjo in cycle II:

Table 4. Student Learning Test Results in Cycle II

No	Students Name	Pretest	Description	Posttest	Description
1	Akhmad Arif	80	Good	90	Very Good
2	Aril Febriansyah	50	Not Enough	80	Good
3	Citra Dwi Amelia	90	Very Good	100	Very Good
4	Davin Ramadhan	80	Good	100	Very Good
5	Denanda Amelia D	100	Very Good	100	Very Good
6	Jauhurul Azka Arrifa'i	100	Very Good	100	Very Good
7	Rosidah N	80	Good	100	Very Good
8	Syafira Maulda F	100	Very Good	100	Very Good

Based on the analysis of the results of observations and student results, it can be concluded that there is an increase in the influence of the jigsaw learning model on learning outcomes of science content, especially metamorphosis material from cycle I to cycle II. All students have completed and get a score above the KKM even half of the number of students in the class get a perfect score. In the evaluation step, it is known that the jigsaw learning model has a positive impact on students

D. Conclusion

Based on the analysis process that has been carried out by the researcher on the results of the evaluation test questions in the first cycle, it can be seen from the percentage of student learning outcomes, the average score on the pre test is 61.25% with good predicates as many as 2 students, sufficient predicates as many as 4 students, and less predicates as many as 2 students. Then for the classical completeness criteria in the class by 50%. In addition, from the percentage of student learning outcomes the average score on the post test has increased by 77.5% with 2 students very good predicate, 3 students good predicate, and 3 students quite predicate. For classical completeness criteria in class, that is 75%. So it was concluded that in the first cycle the JIGSAW learning model had a positive influence on student learning outcomes by using the JIGSAW learning model on the metamorphosis material for science content for class IV at SDN Sumberjo. After seeing some shortcomings and the need for improvement, the researchers conducted a second cycle of action to analyze the results of the student evaluation questions. It can be seen from the percentage of student learning outcomes, the average score on the pre-test was 85% with very good predicates as many as 4 students, good predicates as many as 3 students. and the predicate is less than 1 student. Then for the classical completeness criteria in the class of 87.5%. In addition, from the percentage of student learning outcomes, the average score on the post test also increased by 96.25% with a very good predicate of 7 students, a good predicate of 1 student. Then for the classical completeness criteria in the class, that is 100%. The results of the analysis showed a fairly high increase in student learning outcomes in cycle II. Therefore, it can be concluded that by using the JIGSAW learning model, fourth grade students at SDN Sumberjo can improve their learning outcomes on science content.

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