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Improving student learning outcomes through the use of Jigsaw learning

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Abstract: The research aims to apply jigsaw cooperative learning to improve student learning outcomes in the eighth grade of SMPN 10 Anggori Manokwari. This research is classroom action research. The research subjects were 36 students. Data were collected using learning achievement tests and observation sheets. The results showed that the students who were deaf in cycle I was 47.22% and experienced an increase in cycle II of 91.67%. This study concludes that applying the jigsaw cooperative learning model can improve student learning outcomes.

Keywords: Biology, cooperative learning, jigsaw, learner

Abstrak: Riset bertujuan untuk menerapkan pembelajaran kooperatif tipe jigsaw untuk meningkatkan hasil belajar peserta didik di kelas delapan SMPN 10 Anggori Manokwari. Penelitian ini merupakan penelitian tindakan kelas. Subjek penelitian adalah 36 siswa. Data dikumpulkan menggunakan tes hasil belajar dan lembar observasi. Hasil penelitian menunjukkan bahwa siswa yang tuna pada siklus I sebesar 47,22 % dan mengalami peningkatan di siklus II sebesar 91,67%. Kesimpulan penelitian ini adalah penerapan model pembelajaran kooperatif tipe jigsaw dapat meningkatkan hasil belajar peserta didik.

Kata kunci: Biologi, pembelajaran kooperatif, jigsaw, pembelajar

INTRODUCTION

Individuals alter their behavior in order to acquire new knowledge, skills, and attitudes through a series of activities geared toward the development of the human person at this time. Learning achievement is the abilities students possess after participating in the learning process, including cognitive, affective and psychomotor abilities (Damopolii et al., 2019; Damopolii et al., 2018; Nusantara et al., 2021; Rumalolas et al., 2021; Welerubun et al., 2022). During the science learning process, the focus is more on a series of investigative processes about a concept of events that occur around students. It is in this process that the teacher needs to make efforts to create learning conditions that can activate students. Implementation of learning must occur in direct student interaction activities in the learning process such as observing, predicting, calculating, measuring, classifying, recognizing, making hypotheses, planning experiments (Damopolii et al., 2020; Lelasari et al., 2021; Mandasari et al., 2021; Nwafor et al., 2023; Soltura, 2022; Tepi et al., 2022; Yurida et al., 2021). Science learning is fun learning, but science learning can also make students tend to feel bored and bored. Even though science learning is commonly used in everyday life (Basam et al., 2017; Beluan et al., 2018; Haryadi & Pujiastuti, 2019; Kasim et al., 2018; Rumbruren et al., 2022).

Based on the observations that the researchers made with one of the science teachers at SMP Negeri 10 Manokwari, there were various problems, namely the lack of preparation for giving material from the teacher so that it was late in giving material in class, the lack of seriousness in learning students as well as the lack of awareness of students in doing assignments which are given. Based on the number of students as many as 36, not all of them submitted assignments, only 15 of the 36 students did it. Another problem is the lack of student attendance. Based on the total number of students (36 students per class) there were at most 36 students and at least 15 students. There is also the problem of a lack of teaching tools and a lack of facilities in the learning and instruction process. In the process of learning and instruction, especially in science subjects, the subject teacher used the lecture, question and answer learning model, the media used was only printed books, but there were some students who did not understand the learning material when the teacher was carrying out the learning and instruction process in class.

Based on the various problems that have been explained, namely delays in providing material, lack of seriousness of students in learning and collecting assignments and, low levels of attendance, lack of teaching tools and facilities in the teaching and learning process causes students to lack a level of understanding or level of understanding of the material. This can be seen when an evaluation is carried out with two assessment criteria, namely knowledge and skills, and only 30% of the 36 students who meet the minimum criteria. The lack of students' understanding level can also occur because the learning model used is not effective enough so the researcher thinks of trying to use a different learning model, which tends not to be boring so that it can increase students' understanding in understanding the material. The researcher thought of trying to apply the jigsaw learning model because the jigsaw is a learning model that tends to be in groups so that it requires students to discuss with each other so they don't get bored and bored quickly.

Numerous research investigations have demonstrated that jigsaw learning improves student performance in biology classes (Baken et al., 2022; Chukwu & Dike, 2019; Juniawan et al., 2023; Ojekwu & Ogunleye, 2020; Sanchez-Muñoz et al., 2022; Suzanti et al., 2023). Students study in small groups of four to five people while paying attention to heterogeneity and working together using the jigsaw learning strategy, a kind of cooperative learning. Every individual in the group is accountable for learning particular solutions to the challenges outlined in the material presented and communicating those solutions to the other group members (Alfazr et al., 2016; Behera et al., 2022). Each group member is responsible for teaching other members about one part of the material and becoming an expert in it (Juniawan et al., 2023; Ojekwu & Ogunleye, 2020).

The jigsaw learning model can handle student problems. In the step of forming groups of origin (Alfazr et al., 2016; Behera et al., 2022)., each student will be assigned to work on the questions given to him by the teacher. Students individually work on these questions based on their abilities and then the work results are discussed with their colleagues

in the home group. After finishing discussing with the home group, students must discuss the matter with the expert group (Mukaromah & Azzamzuri, 2023). In this expert group, students are required to express their opinions when discussing with their colleagues in the expert group. When finished, students go back to their original group and then report and teach their findings to their colleagues in the original group. This research aims to improve student learning outcomes through the application of jigsaw learning.

METHOD

The research was conducted at SMP Negeri 10 Manokwari in class VIII A. A research method is a scientific procedure used to collect data for specific purposes and applications. This research is a classroom action research (Kemmis & McTaggart, 1988).

Data collection techniques in this study were carried out by observation and learning achievement tests. Observation activities are carried out to determine student activities. Observation sheets of student activities are used to determine the process of learning activities carried out by students by determining the indicators used by researchers in observing ongoing learning—assessment of learning achievement to collect data on enhancing learning outcomes. The learning outcomes test used is the evaluation given at the end of the cycle. The instrument used in the use of this data uses a learning achievement test in the form of 20 multiple-choice questions.

Data analysis is in the form of calculating student learning activities and student learning outcomes. Students are considered successful in learning if the minimum mastery criterion value per student reaches 65. The indicator of success in this study is the increase in student learning outcomes based on classical mastery. A class is said to be complete if a minimum of 75% has achieved a score of ≥ 65 .

RESULTS AND DISCUSSION

The results of observations of student activity by observers in the learning process cycle I meetings 1 and 2 are presented in Table 2. Student completeness data is presented in Table 1.

Table 1. Completeness of learners cycle I

Predicate	Value	Number of learners	%
Pass	65-100	17	47.22
Not Pass	≤ 65	19	52.78
Total		36	100.00

Based on Table 1, in the first cycle of students who obtained a score of ≥ 65 , there were 17 students who received a pass predicate of (47.22%). While the students who scored ≤ 65 were 19 students who got the not pass predicate (52.78%).

Table 2. The results of the student activity cycle I

	Meeting 1 (%)	Meeting 2 (%)
Average	72.41	77.33

Based on the findings of the analysis conducted on student activity sheets and student learning outcomes in cycle I, there are still a number of categories that require improvement, including:

1. Almost some of the students still cannot adjust to the learning model that is applied because this jigsaw-type learning model has just been implemented, it can be seen when the group is divided into classes, there are still some students who are confused. This situation can be seen from the presence of some students who are confused and keep asking about the learning steps using this jigsaw-type learning model.
2. The classical mastery of students in cycle I is still below the average (47.22%), where this value is still below the set classical completeness criteria (80%).
3. Nineteen students have not met the minimum completeness criteria (MCC); because the students' responses are still lacking with what the teacher teaches, students are also still adjusting to the learning model that the teacher applies.

Table 3. Completeness of learners cycle II

Predicate	Value	Number of learners	%
Pass	65-100	33	91.67
Not Pass	≤ 65	3	8.33
Total		36	100.00

Based on Table 3, in cycle II students who scored ≥ 65 as many as 33 students who got the predicate of pass (91.67%), while there were 3 students who got the predicate of not pass (8.33%).

Table 4. The results of the student activity cycle II

	Meeting 1 (%)	Meeting 2 (%)
Average	84.00	86.67

Based on the assessment of student activities carried out by an observer, namely a colleague which includes 5 aspects of the assessment, namely: (1) Readiness of student to accept subject matter. (2) Students' eagerness to take part in learning activities. (3) The application of the jigsaw model of cooperative learning. (4) Enthusiasm of students in participating in group discussion activities. (5) Student activities in group discussion activities.

In the application of the jigsaw type cooperative learning model in cycle I, the average percentage of student activity reached (74.87%), this happened because the learning model that was applied was a new learning model that was applied by researchers in class VIII A. The application of the new learning model this causes students to need a lot of learning to

adapt to the learning activities carried out. It can be seen from the number of students who still do not understand the steps of this type of jigsaw learning and the confusion of students in moving from the original group to the expert group and vice versa. Whereas in cycle II the activity of students experienced an increase with an average percentage of student activity (85.335%). This is because students have been able to acclimate to the applied learning model, namely the cooperative learning model of the jigsaw variety. This score demonstrates that the implementation of pupil activities is deemed to be optimal.

The increase in student learning outcomes demonstrates that the activities conducted by researchers in the teaching and learning process have assisted students in comprehending the material. There was an increase from cycle I to cycle II due to the improvements and refinements made by the teacher to the deficiencies found in cycle I. A good relationship between the teacher and students can also affect student learning outcomes, as seen from the increased student learning outcomes in cycle II.

The practical application of the jigsaw cooperative learning model yielded positive results for the researchers. Jigsaw learning can enhance the learning outcomes of students. In addition, the researchers of this study discovered that students who were taught using the jigsaw cooperative learning model were more active, capable of working well in groups, and enthusiastic about learning. Several researchers who have studied the jigsaw cooperative learning paradigm, which can enhance learning outcomes and student engagement, corroborate the findings of this study (Hutapea, 2022; Juliarti, 2023; Sahrul et al., 2022).

It can be said that the classroom action research conducted at SMP Negeri 10 Manokwari using the jigsaw learning model succeeded in increasing student learning outcomes, this can be seen from the complete learning outcomes of students (91.67%) in cycle II.

CONCLUSION

Based on the research results, it can be concluded that jigsaw learning can improve the learning outcomes of class VIII A students at SMP Negeri 10 Manokwari. Student activity during the learning process is good.

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