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The Effect of Jigsaw Type Cooperative Learning Model on Science Learning Outcomes at Grade V Students of UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar

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Abstract. This study aims to determine the effect of the Jigsaw Type Cooperative Learning Model on the science learning outcomes of fifth grade students of UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar. The type of research used in this study is quantitative research using an experimental method (pre-experimental design). The research design used is One Group Pretest-Posttest. The population of the study was in fifth grade students of UPTD SD Negeri 122345 Jalan Thamrin located in East Siantar District. The sample in this study was taken from one class used as a One Group class so that the sample in this study was all fifth grade students of UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar totaling 23 students. The results of the average pretest score were 53.73 which was included in the category of less than good or had not met the KKM, then the average posttest result was 86.17 which was included in the good category. The instrument test carried out used a test technique with a reliability test, a difficulty level test, and a discriminatory power test. The results of the Hypothesis test show a t-count value of 11.06 and a t-table of 2.052. Thus, t-count > t-table = 11.06 > 2.052, so Ha is accepted and H0 is rejected. So it can be concluded that there is a significant influence of the implementation of the jigsaw type cooperative model on the science learning outcomes of grade V students of UPTD SD Negeri 125546 Pematangsiantar

Key words: Jigsaw, learning outcomes, cooperative learning model

INTRODUCTION

The teaching and learning process is a process that contains a series of activities between teachers and students based on direct reciprocal relationships to achieve learning objectives. The achievement of learning objectives is supported by the use of learning methods that are appropriate to the conditions of the students. According to Law No. 20 of 2003 concerning the National Education System, Article 1 paragraph 1 (2003: 2) states that Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have spiritual religious strength, self-control, personality, intelligence, noble morals, and skills needed by themselves, society, nation and state. Based on this Law, the goal of education in Indonesia is to create a learning atmosphere and an active learning process so that students can develop their potential. Achieving success in the world of education is greatly influenced by educators in teaching students. Creative educators are educators who are able to create learning activities and an atmosphere in the learning process to be enjoyable in various ways that vary and can involve students directly. According to Mulyasa (2019:19) educators must have the ability to change the psyche and mindset of their students from not knowing to knowing and to mature their students. The impact of being a creative educator is that students can understand learning materials quickly, are more active in learning and can change student learning outcomes to increase. Conversely, if educators are less creative, learning will be boring and student outcomes will decline. In the classroom, students are often found to have difficulty accepting or grasping the subject matter given by the teacher. Therefore, teachers are required to have innovative models and strategies, as well as skills in using learning media in order to create meaningful teaching to achieve learning goals. Education and teaching are quite complex issues, in the sense that learning is essentially a conscious effort by an educator to teach their students in order to achieve the expected goals. Thematic learning is integrated learning that uses themes to link several subjects so that it can provide meaningful experiences to students. Thematic learning is believed to be one of the effective learning approaches because it is able to accommodate and touch in an integrated manner both emotionally, physically and academically students in the classroom or school environment. In achieving the desired goals, which in this context is the availability of reliable Indonesian human resource capital for the future (Sianturi, 2013). In learning activities there are several subjects studied, one of which is the lesson on Natural Sciences (IPA). Natural Sciences (IPA) is systematic and generally applicable (universal) knowledge that discusses a set of data on natural phenomena produced based on the results of observations, experiments, conclusions, and the preparation of theories. The purpose of the science subject is to understand the surrounding environment, have the skills to gain knowledge in the form of scientific process/method skills. The Jigsaw Type Cooperative Learning Model in science learning is that students are able to increase their sense of responsibility for their own learning and also the learning of others, students not only study the material given but they must also be ready to provide and teach the material to other members of their group. In this case, the researcher will carry out the learning process and evaluation of learning outcomes to improve student learning outcomes, so the Jigsaw Type Cooperative Model can be a solution to the problem of learning science subjects in grade V.

Cooperative Learning Model is one of the learning models that can provide a positive contribution to the process and learning outcomes of students. Cooperative learning is a learning

model that groups students for the purpose of creating a learning approach that successfully integrates academic social skills. There are several variations of the cooperative learning model type, one of which is the jigsaw cooperative learning model. The Jigsaw cooperative learning model is one type of cooperative learning where there are two groups, namely the original group and the expert group consisting of 4-5 people and expert members who are tasked with explaining the material with their members. This Jigsaw cooperative learning model emphasizes the existence of activities and interactions between students to motivate each other and help each other in mastering the subject matter in order to achieve maximum achievement. As has been done by several previous studies, it has been shown that the use of this jigsaw cooperative model can improve student learning outcomes. Based on the results of observations conducted by researchers in class V UPTD SDN 122345 Jalan Thamrin Pematangsiantar, in the science learning process many students do not understand and understand. In addition, there are still many students who do not pay attention to the teacher during the learning process such as talking to friends, doing things that are fun, being busy with their own imagination. The teacher also holds full control in learning as the main information provider. The learning process is only centered on the teacher explaining the material and students only listen to the material. In learning activities, teachers are expected to be able to apply learning models that can encourage student participation to be more active in the learning process. The lack of use of varied learning models and the use of interesting media during science learning in class also causes a lack of student participation and interest in learning, a sense of cooperation and responsibility for students has not been created during learning. The problems found are reinforced by evidence that the learning outcomes of students at UPTD SD Negeri 122345, especially in class V, are relatively low, as evidenced by the results of students' science test scores.

The description of the science learning outcomes of class V students at UPTD SD Negeri 122345 Jalan Thamrin can be seen from the science test score table below.

Table 1. Data on Daily Science Test Scores for Grade V Students of UPTD SD Negeri 122345 Jalan Thamrin for the 2023/2024 Academic Year

Kelas	KKM	Jumlah Siswa	Rata-rata Nilai	Ketuntasan	
				Tuntas	Tidak tuntas
V	70	23	53,91	7(30,43%)	16(69,56%)

(Source: Document of Grade V Science Daily Test Scores, UPTD SD Negeri 122345 Jalan Thamrin.)

Based on the data in Table 1 above, low student learning outcomes can be caused by several factors, one of which is the learning model used is not appropriate and ineffective. Therefore, it is necessary to apply an innovative learning model to improve the quality of science learning in the classroom and can encourage student participation and provide meaningful experiences, namely by applying the Jigsaw Cooperative Learning Model. According to Muslim Ibrahim (2014) The Jigsaw Cooperative Learning Model is a learning activity that uses a group learning pattern for students to establish cooperation and interdependence in the task structure. Students who work together in cooperative learning situations are encouraged or required to work together on a common task and they must coordinate their efforts to complete their tasks. Jigsaw Cooperative Learning is believed

to be able to solve problems experienced by fifth grade students of UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar. Because the Jigsaw Cooperative Learning Model is designed to increase students' sense of responsibility for their own learning and the learning of others. So students not only learn the material given but also must be ready to provide and teach the material to group members, especially those who do not understand or are less intelligent. Based on the results of previous research conducted by Prima Vibopa Damanik et al. (2022) This study is entitled "The Effect of the Jigsaw Type Cooperative Learning Model on Student Learning Outcomes in Subtheme 3 Let's Love the Environment in Grade IV Elementary School. The results of the study showed the effect of using the Jigsaw Type Cooperative learning model, which can be seen using the t-test, obtained that the taing value> is 44.702 1.701 with an error rate of 3%. This shows that Ha is accepted and Ho is rejected, which means that there is a significant influence on student learning outcomes by using jigsaw type cooperative learning in subtheme 3 let's love the environment learning in grade IV A at UPTD SD Negeri 122384 Pematangsiantar. The researcher concluded that the jigsaw type cooperative learning model is a learning model that can help students get good learning outcomes.

MATERIALS AND METHODS

1. Type of Research

The type of research used is quantitative research. According to Sugiyono (2019:7) Quantitative research is a research approach that uses numbers, starting from collecting data, interpreting the data obtained, and presenting the results. This study uses an experimental method (pre-experimental design). The research design used is one group pretest posttest design. Students are given an initial test (pretest) before being given treatment and given a final test (posttest) after being given treatment. After the initial test results are obtained, an action is given whose influence will be assessed.

The research design used can be described in Table 2 below.

Table 2. One Group Pretest Posttest Research Design

Pre-test	Treatment	Post-test
O1	X	O2

Notes: O1 = Pre-test
O2 = Post-test
X = Treatment

2. Population and Research Sample

A. Research Population

Every research needs to deal with the object of research, whether it is an object, human or event. According to Sugiyono (2019:80), the definition of population is a generalization area consisting of; objects/subjects that have certain qualities and characteristics determined by researchers to be studied and then conclusions drawn. Based on this understanding, the population in this study is all fifth grade students with a total of 23 students at UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar.

B. Research Sample

The research sample is part of the population that becomes data in the study. Sugiyono (2019:127) states that the sample is part of the number and characteristics possessed by the population. This means that the sample is part of the population. Sampling in this study used cluster sampling, which is a technique for taking groups from the population. The sample used in this study was the total number of fifth grade students at UPTD SDN 122358 Pematangsiantar.

Table 3. Research Sample

Class	Gender		Notes
	Male	Female	
V	9	14	Active
Total	23 students		Active

(Data source: UPTD SD Negeri 122345)

C. Data Collection Techniques

Data collection techniques are a strategic step in the research process, because the main purpose of the research is to obtain data (Sugiyono, 2016:224). Without knowing the technique of data collection first, the researcher will not succeed in obtaining data that meets the established data standards. Data collection techniques here mean the methods that will be taken and the tools used by researchers in collecting data. The data collection techniques used in this study are as follows:

1. Tests

A test is a series of questions or exercises and tools used to measure skills, intelligence knowledge, abilities or talents possessed by individuals or groups. In this study, the test was used to determine the effect of the Jigsaw cooperative learning model on student learning outcomes. In this study, the researcher used a test in the form of multiple choice questions. The test in this study was in the form of a pretest and posttest.

2. Documentation

According to Sugiyono (2017:240) a document is a record of past events. Documents can be in the form of writings, pictures, or monumental works of a person. Pictures or photos taken during the implementation of this research start from the first meeting to the last meeting, as well as photos that support research activities such as the school environment used in the research. This can make it easier for researchers to verify the accuracy of the research results.

D. Data Analysis Techniques

1. Normality Test

Parametric statistics, namely using the t-test for one sample, correlation and regression, analysis of variance and t-test for two samples, will be used to test the formulated hypothesis. Data for each variable to be analyzed must have a normal distribution to utilize parametric statistics. Therefore, before the hypothesis testing is carried out, the data normality test will first be carried out (Sugiyono, 2019:234).

The normality test used to determine the pretest and posttest values of student learning outcomes is tested with Kolmogrov-Smimow using the SPSS application program. Decision-making

guidelines:

a. If the significant value or probability value is <0.05 then the distribution is not normal.

b. If the significant value or probability value > 0.05 then the distribution is normal.

2. Hypothesis Testing

According to Sugiyono (2019:159) a hypothesis is a temporary answer to the formulation of a research problem. The truth of the hypothesis must be proven through the collected data, if both tests have normally distributed data, then a hypothesis test can be carried out. Hypothesis testing is carried out to determine whether there is a significant difference in the average of data.

RESULTS AND DISCUSSION

The research was conducted in class V UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar. 23 students were used as research samples. This research involved giving tests and keeping detailed records such as documentation. Before conducting the research, the researcher conducted an instrument test at SD Negeri 096117 Baringin Raya. The sample was 23 students in class V and given 35 questions to answer. After conducting the instrument test for class V students, in the validity test of the 35 questions tested, there were 25 questions that were declared valid and 10 questions that were invalid. Meanwhile, the results of the test reliability test obtained a t count of 0.937 which is included in the very high reliability category. Testing the level of difficulty of the test from 25 questions, there were 5 questions in the easy category, 20 questions in the moderate category. Then, testing the discriminatory power of the 25 questions, there were 10 questions in the good category, 3 questions in the sufficient category, and 12 questions in the very good category. Furthermore, the implementation of the research was carried out on October 14-16 by providing material to be taught in the form of RPP centered on theme 9 subtheme 3 Humans and Objects in Their Environment. The action given first was to conduct a pretest to determine students' abilities before conducting the actual research. The average pretest score was 53.73. After analyzing the students' results on the pretest, the Jigsaw cooperative model was implemented in the classroom. To determine the progress of students after receiving treatment, students were given a posttest consisting of the same questions but questions with a random system. The average posttest score in class V was 86.17. Based on the average posttest score, it can be seen that the average posttest score was higher than the average pretest score. To confirm this assumption, a hypothesis test was carried out. The results of the hypothesis test showed a t count of 11.06 based on the t table of n-1 = 22 at a significance level of 0.05, a t table value of 2,052 was obtained. the results show tcount>ttable which is 11.06>2.052 then Ha is accepted and H0 is rejected. So from the data above it can be concluded that the jigsaw type cooperative model has an effect on improving student learning outcomes, especially in science learning in class V UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar.

From the research that has been conducted by the researcher that there is an increase in learning outcomes in using the jigsaw type cooperative model because students are active together with their peers looking for solutions to solve existing problems. In learning activities using the jigsaw type cooperative model, students are more enthusiastic because the jigsaw type cooperative model, students can learn while playing, the learning process becomes more enjoyable besides that students are directly involved in learning. This research model is useful for students to have good thinking

skills, and also students' communication skills are felt very well and correctly, asking questions, giving opinions and being active in discussions.

CONCLUSION

Based on the results of the research that has been conducted on class V at UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar in the 2024/2025 Academic Year, the data obtained can be concluded that:

1. The effect of the Jigsaw Type Cooperative Learning Model is measured from the average student pretest learning is 53.73, while the average student posttest learning value (after using Jigsaw Type Cooperative Learning increased to 86.17. When compared to the average pretest value, students experienced an increase of 32.44.

2. The results of the hypothesis test showed a t-count value of 11.06 Based on the t-table from db n-1 = 22 at a significance level of 0.05, a t-table value of 2,052 was obtained. The results show a t-count value> t-table, namely 11.06> 2,052, then H0 is rejected and Ha is accepted. which shows that there is a significant influence between student learning outcomes in the pretest and posttest. Then it can be It is concluded that in this study Ha is accepted and H0 is rejected, which means that there is an influence of the jigsaw type cooperative model on the science learning outcomes of class V students at UPTD SD Negeri 122345 Jalan Thamrin Pematangsiantar.

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