



The Effect of Implementation of Jigsaw Cooperative Learning Model on The Student Mathematics Learning Outcomes SD Negeri 133 Bontotiro

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Abstract

The purpose of this study was to determine the effect of the implementation of the jigsaw cooperative learning model on the mathematics learning outcomes of elementary school students in SD Negeri 133 Bontotiro. This study uses an experimental approach with an experimental design of Pretest-Posttest Nonequivalent Group with data collection techniques through learning outcomes tests and teacher and student observation sheets. The data analysis technique in this research is descriptive analysis and inferential analysis which consists of normality test, homogeneity test and hypothesis testing. Based on the results of the research and discussion, it can be said that the implementation of the Jigsaw cooperative learning model on students at SDN 133 Bontotiro District is in the high category. Students' mathematics learning outcomes at SDN 133 Bontotiro District before the implementation of the Jigsaw Cooperative learning model obtained an average score of 34 and the learning outcomes after the implementation of the Jigsaw Cooperative learning model obtained an average score of 70 from the ideal score of 100. After an inferential analysis has been carried out on the value of increasing students' mathematics learning outcomes, it is obtained that the probability value of $P_{value} = 0.02$ for $\alpha = 0.05$, then statistically the hypothesis H_0 is rejected or H_1 is accepted, so there is a positive influence from the implementation of the model Jigsaw cooperative learning to students' mathematics learning outcomes at SD 133 Bontotiro. The results of this study also show that the implementation of the Jigsaw cooperative learning model can be applied to improve student learning outcomes, especially in mathematics in elementary schools.

Keywords: Jigsaw Type Cooperative Learning; Student Mathematics Learning Outcomes.

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INTRODUCTION

The Ministry of Education and Culture (Kemendikbud) released the achievement of the Program for International Student Assessment (PISA) scores. The results of the 2018 Program for International Student Assessment (PISA) survey published in March 2019 and then photographed a few problems in Indonesia's education. In the category of reading, science, and mathematics, Indonesia's score is low because it is ranked 74th out of 79 countries.

Despite the increase, the data above shows that the success of education in Indonesia is still far from that of other developed countries. For this reason, the development and progress of education in Indonesia must continue to be addressed through a sustainable and targeted education system in order to realize the ideals of the Indonesian nation. Based on observations made by researchers at schools, the results show that the National Examination scores obtained during the last two years have decreased significantly, especially in mathematics.

Likewise, the learning used by the average teacher still tends to be conventional. In this case, the learning process is still dominated by results-oriented teachers rather than the process, so students are less active in the learning process. In presenting the material and the learning process in the classroom, there are many things that need attention, including the lack of student involvement during the learning process because the learning process is dominated by the teacher.

According to Slavin in (Lubis, 2016) one of the learning models that demands the activity of all students is the cooperative learning model. Cooperative learning is a learning strategy that prioritizes cooperation between students in groups to achieve learning objectives. The students are divided into small groups and directed to study the material that has been determined. The purpose of forming cooperative groups is to provide opportunities for students to be actively involved in the thinking process and in learning activities. In this case, most of the activities are student-centered, namely studying the subject matter and solving problems.

Today many cooperative learning models have been applied in the classrooms. One of them is the Jigsaw cooperative learning model. The Jigsaw learning model is a cooperative learning model with the following syntax: directions, information on teaching materials, for heterogeneous groups, giving teaching materials which consists of several parts according to the number of students in the group, each group member discusses a certain part, each group of learning materials together, create expert groups according to the same learning materials so that collaboration and discussion occur, return to the original group, conclusions and evaluations. This jigsaw learning model is one of the cooperative learning that involves students actively in learning and train students to work together in a group (Anitra,2021).

METHOD

Based on the research objectives to be achieved, namely to see whether there is an effect of the treatment given on student learning outcomes, this type of research is included in experimental research. Because there are many other variables that cannot be controlled incorrectly, thinking style and effective communication, this research is categorized in a quasi-experimental research (quasi-experimental), namely the treatment given to determine its effect on the control variable, but the influential variables cannot be controlled by strict (Sugiyono: 2013).

The variables in this study consisted of two variables, namely the Jigsaw cooperative learning model as an independent variable and elementary school students' mathematics learning outcomes as a specific variable. The design used in this research is the experimental research of the Pretest-Posttest Nonequivalent Group which is designed in table below:

Table 1. Pretest-Posttest Nonequivalent Group Design

Group	Pretest	Treatment	Posttest
Experiment	O1	X	O2
Control	O3		O4

Description:

X : The treatment in the experimental group is the application of the Jigsaw Cooperative Learning Model with a Contextual Approach

O1 : Pretest in the experimental group

O2 : Posttest in the experimental group

O3 : Pretest in the control group

O4 : Posttest in the control group

The population in this study were all grade 4 elementary school students who were accredited B in Ekatiro Village, Bontotiro District, Bulukumba Regency. The sampling technique in this study used cluster sampling so that two samples were obtained, namely SD 133 Ekatiro students as a group taught by the Jigsaw type cooperative learning model and SD 195 Ekatiro students as a group taught through conventional models in this case direct learning.

The instrument used in this study was a learning outcome test) in the form of an objective test in the form of multiple choice and a learning implementation observation sheet. The test is first validated by experts and tested before use. The data collection technique in this study was carried out by giving learning outcomes tests to each respondent in both groups (experimental and control). Tests were given before and after both groups were given treatment (treatment). The scores on the collected learning outcomes test are the learning outcomes data which will then be analyzed in this study.

The increase in learning outcomes for both classes can be determined by using normalized gain. Here is the normalized gain formula:

$$\langle g \rangle = \frac{\text{posttest score} - \text{pretest score}}{\text{maksimumscore} - \text{pretest score}}$$

The calculation results are then interpreted using the gain index $\langle g \rangle$ as follows :

Table 3. Gain Criteria

Gain Index	Intrepretation
$g > 0,70$	High
$0,30 < g \leq 0,70$	Medium
$g \leq 0,30$	Low

Descriptive statistics only describe sample statistics. This is not representative of the general population parameters. Inferential statistics is the answer to this problem. By using t-test, the hypothesis will be tested. The significance level is set at 5% or 0.05.

If the probability value (sig) < 0.05 , then H_0 is rejected, which means that the application of the jigsaw cooperative learning model has a positive effect on students' mathematics learning outcomes. On the other hand, if the probability value (sig) 0.05 , there is not enough evidence to reject H_0 which means that there is no effect on the application of jigsaw cooperative learning through a contextual approach. Before performing the t-test, normality and homogeneity tests were first performed.

The hypothesis testing is intended to answer the research hypotheses that have been proposed. The statistical hypotheses to be tested are:

$$H_0: \mu_1 \leq \mu_2 \text{ versus } H_1: \mu_1 > \mu_2$$

Description:

μ_1 = the average parameter of increasing student learning outcomes who are taught using the Jigsaw Type Cooperative Learning Model with Contextual Approach

μ_2 = the average parameter of increasing student learning outcomes who are taught using conventional learning models.

RESULT AND DISCUSSION

Gain normalization data for experimental and control students class show in table below:

Experimental Group				
No.	Gain Index	Category	Frequency	Percentage
1	$g \leq 0,30$	Low	0	0%
2	$0,30 < g \leq 0,70$	Medium	9	90 %
3	$g > 0,70$	High	1	10 %
Jumlah			10	100%

Control Group				
No.	Gain Index	Category	Frequency	Percentage
1	$g \leq 0,30$	Low	2	20 %
2	$0,30 < g \leq 0,70$	Medium	8	80 %
3	$g > 0,70$	High	0	
Jumlah			1	100%

The results of the descriptive analysis show that learning with the Cooperative model of the Jigsaw and conventional learning are both well implemented. This can be seen from the average implementation of cooperative learning with the Jigsaw Unified is 3.50 and the average implementation of conventional learning is 3.44. Both are in the high category.

After an inferential analysis has been carried out on the value of increasing students' mathematics learning outcomes, it is obtained that the probability value of $P_{value} = 0.02$ for $\alpha = 0.05$, then statistically the hypothesis H_0 is rejected or H_1 is accepted. This shows that the improvement of students' mathematics learning outcomes who are taught using the Jigsaw Cooperative learning model is better than the improvement of students' mathematics learning outcomes who are taught

using conventional learning. So it can be concluded that there is a positive influence on the implementation of the Jigsaw type cooperative learning model on students' mathematics learning outcomes at SD 133, Bontotiro District. Based on the results of inferential statistical analysis, the cooperative learning model of the Jigsaw resulted in improved learning outcomes that were better than conventional learning.

This is in line with the results of research conducted by Ali (2016) which states that the Jigsaw-type cooperative learning steps used in the experiment show that the model is effectively used because it involves all students in the learning process and have the same opportunity to express their opinions and have their respective roles in the group. Based on the results of observations after applying the Jigsaw cooperative learning model, most students feel happy learning mathematics because according to them this method requires good cooperation between group members, both in the home group and in the expert group to find mathematical concepts. Besides that, students who lack understanding can be motivated and try to solve the problems given with the help of group members who better understand the material provided, thus students are more confident in solving the math problems they face. This is what makes students have better learning outcomes than those in the control class.

In general, students commented that mathematics was a difficult subject, although there were also some students who thought that learning mathematics was fun. However, after applying the Jigsaw cooperative learning model, most of the students felt happy to learn mathematics because according to them this method required good cooperation between group members in finding mathematical concepts and solving problems given by connecting the material learned in everyday life. days and can exchange ideas to find the right answer so that it is memorable and easy to remember. Besides that, students who lack understanding can be motivated and try to solve the problems given with the help of smarter group members, thus students are more confident to dare to make presentations in front of the class.

CONCLUSION

Results Based on the research and discussion that has been done about the effect of the implementation of the Jigsaw Cooperative learning model on the mathematics learning outcomes of students in Bontotiro District, Show that there is a positive influence from the implementation of the Jigsaw type cooperative learning model with a contextual approach on the mathematics learning outcomes of elementary school students at SDN 133 Bontotiro District.

REFERENCES

- Ali, A. (2016). *Pengaruh Pelaksanaan Pembelajaran Model Kooperatif Tipe Jigsaw Terhadap Hasil Pembelajaran IPS Siswa Kelas V SDN Sungguminasa 2 Kabupaten Gowa* (Doctoral dissertation, Pascasarjana).
- Ambar, B. (2012). *Model Pembelajaran Kooperatif Jigsaw*. Universitas Pendidikan Indonesia Bandung.
- Hamalik, O. (2011). *Kurikulum dan Pembelajaran*. Jakarta: Bumi Aksara.
- Lubis, N. A., & Harahap, H. (2016). Pembelajaran kooperatif tipe jigsaw. *Jurnal As-Salam*, 1(1), 96-102.
- Permen No.19. (2015) . *Standar Proses* . Badan Standar Nasional Pendidikan
- Anitra, R. (2021). Pembelajaran Kooperatif Tipe Jigsaw dalam Pembelajaran Matematika di Sekolah Dasar. *JPDI (Jurnal Pendidikan Dasar Indonesia)*, 6(1), 8.
- Saefuddin, A. (2014). *Pembelajaran Efektif*. Bandung. PT. Remaja Rosdakarya
- Sugiyono, D. (2013). Metode penelitian pendidikan pendekatan kuantitatif, kualitatif dan R&D.
- Titarahardja, U. (2010). *Pengantar Pendidikan Edisi Revisi*. Jakarta
- Usmar, W. (2013). Implementasi Model Pembelajaran *Missouri Mathematics Project* Dengan Metode *Discovery* Dalam Pembelajaran Matematika Siswa Kelas Viii₆ Smp Negeri 18 Makassar. *Skripsi*. Universitas Negeri Makassar. Makassar, Indonesia.

Zainuddin, H. (2012). *Perbandingan Hasil Belajar Matematika Yang Diajar Melalui Pola Induktif Dan Melalui Pola Deduktif Pada Siswa Kelas Viii Di Smp Negeri 27 Makassar Dan Smp Negeri 18 Makassar*. Makassar: Skripsi Jurusan Matematika FMIPA UNM.