

# The Effect of Jigsaw Type Cooperative Learning Model and Learning Motivation on Understanding Concept of Changes in the Objectives of SD Students

Desma Elvita<sup>1</sup>, Yanti Fitria<sup>2</sup>, Alwen Bentri<sup>3</sup>

<sup>1</sup>Pastgraduate Universitas Negeri Padang

<sup>2</sup>Lecture Elementary of Education Universitas Negeri Padang

<sup>3</sup>Lecture Elementary of Education Universitas Negeri Padang, Universitas Negeri Padang

**Abstract:** *This study aims to see the magnitude of the influence of the jigsaw type cooperative learning model and learning motivation on the understanding of the concept of changes in the nature of objects in elementary students. This research is a quasy experiment with the research design used is Randomized Group Only Design. The population used in this study was 55 students in grade 5 in the third cluster of elementary schools in Talamau District, West Pasaman Regency. The instrument used in this study was to use a questionnaire that measured the experience of motivation and understanding the concept of changes in the nature of objects measured by using multiple choice tests and entries. The results show that: First the conceptual understanding of students taught by the model of jigsaw cooperative learning is better than the conventional learning model. Second, the conceptual understanding of students who are highly motivated is taught by the model of jigsaw cooperative learning which is higher than the conceptual understanding of students have high motivation taught by conventional models. Third, the conceptual understanding of students who have low learning motivation taught by the jigsaw cooperative learning model is higher than the conceptual understanding of students who have low learning motivation taught by conventional models. Fourth there is no interaction between the jigsaw type cooperative learning learning model and learning motivation towards understanding concepts.*

**Keywords:** Jigsaw Cooperative Learning Model, Learning Motivation, Concept Understanding

## 1. Introduction

The teacher has an important role in the learning process of elementary school (Renihan, 2012). In line with that Zaroha, Firman and Desyandri (2018: 15) suggested "The success of the science teaching and learning activities process can be measured by the success of students who take part in learning activities which include the level of understanding, mastery of material, and learning achievement of students. This process can be done by modeling the learning process (Vélez, Lorenzo, & Garrido, 2017). A teacher has a specific strategy in order to motivate students to understand the concepts in learning (Deeboonmee & Ariratana, 2014). Understanding of concepts is "actions that are embedded in the mind and have meaning so that they understand mental understanding, implications and applications in everyday life (Fitria, 2018). Great teachers are able to motivate students to understand the concepts of learning (Zhang, Siribanpitak, & Charoenkul, 2018).

One model that can be used is the Jigsaw Cooperative Type learning model. According to Slavin (2005: 235) The type of jigsaw cooperative learning model is "Students learn in small groups consisting of four to six heterogeneous people and each member is responsible for completing the part of material learned" Cooperative models can have an impact on student academic achievement, student attitudes and motivation (Language & Conference, 2013). This model of cooperative jigsaw also has the effect of providing understanding of concepts in the learning process.

Work motivation is one of the factors that determine a person's performance. The size or influence of motivation on a person's performance depends on how much intensity of motivation is given (Blaskova, Blasko, Figurska, & Sokol, 2015). Based on this, work motivation is an encouragement from a person in carrying out their duties professionally and systematically according to competence, in order to achieve goals, and fulfill the needs of achievement and obtain satisfaction in the form of recognition and appreciation.

## 2. Method

The method used in this study is a quasy experiment with the research design used is Randomized Group Only Design, because this study wants to know the effect of a treatment on a variable. In this study the treatment given to the experimental class was the application of a jigsaw type cooperative learning model and learning motivation to the understanding of the concept of matter-changing material, while in the control class using conventional learning. Sampling in this study is carried out the following steps: (1) collecting the average test scores, (2) Finding schools that have an average that is almost close, (3) Analyzing values, the analysis carried out is divided into two parts, namely normality test and homogeneity test.

### 3. Result

#### 1) Differences in Understanding of Concepts taught with Jigsaw Cooperative Learning and Conventional Learning models

The hypothesis that reads Understanding the concepts of students taught by the model of jigsaw cooperative learning is better than understanding the concepts of students who learn by using conventional models. The findings illustrate that the results of calculations using the t-test obtained  $t_{hitung} = 1.75$  at the level of  $\alpha = 0.05$  obtained  $t_{table} = 1.692$  because  $t_{count} > t_{table}$   $H_0$  is rejected. This means understanding the concepts taught by the jigsaw type cooperative learning model is higher than understanding the concepts of students who are taught conventionally. Data on understanding students' concepts as a whole in the experimental class and control class can also be seen in table 1 below:

**Table 1:** Description of Data Understanding the concepts of Experimental and Control Classes

No	Understanding of Concepts	
	Class Experiment	Class Control
Average	81,33	69,17
Max	100	80
Min	60	55
DS	15,04	14,38

From table 1, the average value of conceptual understanding of experimental class students who use cooperative learning models is higher than the average conceptual understanding of control class students who are taught using conventional learning. The maximum value of the experimental class is higher than the control class. The minimum value of the experimental class is also higher than the control class.

The above findings are in line with the research of Kesnajaya et al. (2015) entitled The Effect of Jigsaw Cooperative Learning Type Model and Motivation on Learning Outcomes of Science V grade students at SD Tianyar West. The findings in this study indicate that the application of jigsaw type cooperative learning is far more effective and useful when compared to conventional learning.

The aim of science learning in elementary schools is for students to have the ability to develop knowledge and understanding of science concepts, develop curiosity, positive attitudes, develop process skills, increase awareness of caring for nature, (Permendiknas No 22 of 2006). One of the important capabilities in achieving science learning goals is to develop knowledge and understanding of science concepts that are useful and applicable in everyday life. Understanding concepts is a very important part of the process of learning and solving problems, both in the learning process and in real life. According to Y. Fitria (2018) Understanding the concept is "actions that are embedded in the mind and have meaning so that they understand understanding mentally, implications and applications in everyday life. Great teachers are able to motivate students to understand the learning concepts (Zhang, Siribanpitak, & Charoenkul, 2018)

Based on the description above it is clear that in order to achieve the expected goals it is necessary to understand the concepts of the material to be studied, for which the teacher is expected to train students to master the learning concepts one of them by using a jigsaw cooperative learning model. Because based on the research that has been done, it can be seen the results of understanding the concepts of students in the experimental class taught using a model of higher jigsaw cooperative learning compared to the control class taught by conventional models.

#### 2) Difference in Understanding of Concepts with Higher Learning Motivation taught by models of jigsaw cooperative learning and Conventional Learning

The hypothesis that reads the Understanding of Concepts of students with Motivation for learning High who are taught by the model of jigsaw cooperative learning is higher than the concept of understanding students who have high motivation taught by Conventional Learning The results of calculations using the t-test obtained  $t_{hitung} = 2.80$  at the real level  $\alpha = 0.05$  were obtained  $t_{table} = 1.761$  because of  $t_{count} > t_{table}$ ,  $H_0$  is rejected. This means that the understanding of concepts and high learning motivation are taught by the jigsaw type cooperative learning learning model that is higher than the understanding of the concepts of students who are taught conventionally.

Data acquisition conceptual understanding of students who have high learning motivation in the experimental class and control class can also be seen in table 2 below.

**Table 2:** Description of Data Understanding concepts that have high learning motivation in Experimental and Control Classes

No	Motivation learning (High)	
	Understanding of concepts Experiment Class	Understanding of concepts Control Class
Average	92	70
Max	100	100
Min	70	55
DS	14,14	13,04

From Table 2, it can be seen that the average value of conceptual understanding of experimental class students who have high learning motivation taught using a jigsaw type cooperative learning model is higher than the average understanding concept of control class students who have high learning motivation who use conventional learning . The maximum value of the experimental class is higher than the control class. The minimum value of the experimental class is higher than the control class.

One of the factors that can determine the success of student learning in the fields of attitudes, knowledge and skills is motivation. According to Suprijono (2009) motivation to learn is "a process that encourages learning, direction, and persistence of behavior, meaning motivated behavior is behavior that is full of directed and long-lasting energy. In this study, a jigsaw type cooperative learning model can improve the conceptual understanding of students who are highly motivated, this is because the model of jigsaw cooperative learning gives students time to work together and give freedom to students to exchange ideas about ideas

or ideas so students who are motivated high learning will take learning from the teacher seriously because students who have high motivation have a high sense of responsibility in learning, different from the conventional model where learning does not involve students to be active in the learning process, so students who have high learning motivation become not active in learning because their abilities are not channeled and make students less active in learning.

**3) Differences in Understanding of Concepts with Low Learning Motivation taught by jigsaw learning models and Conventional Learning**

The hypothesis that the conceptual understanding of students with low learning motivation is taught by the model of jigsaw cooperative learning is higher than the conceptual understanding of students who have low motivation taught by conventional learning. The results of calculations in Table 8 by using the t-test obtained  $t_{count} = 1.76$  at the level real  $\alpha = 0.05$  is obtained  $t_{table} = 1.74$  because  $t_{hitung} > t_{table}$ ,  $H_0$  is rejected. This means that the understanding of the concept of low learning motivation is taught with a jigsaw type cooperative learning model that is higher than the conceptual understanding of students who are taught conventionally. Data acquisition conceptual understanding of experimental students and control classes based on low learning motivation can also be seen in table 3.

**Table 3:** Description of Data Understanding concepts that have Low learning motivation in Experimental and Control Classes

No	Motivation Learning (Low)	
	Understanding of concepts Experiment Class	Understanding of concepts Control Class
Average	78	77,5
Max	100	100
Min	60	65
DS	14,38	15,55

From Table 3, it is seen that the average value of conceptual understanding of experimental class students who have low learning motivation taught using a jigsaw type cooperative learning model is higher than the average conceptual understanding of control class students who have low learning motivation who are taught using conventional learning. The maximum value of the experimental class is higher than the control class. The minimum value of the experimental class is higher than the control class.

Students who have low learning motivation do not have a high desire to succeed in the learning process. Based on the results of the study, cooperative learning models are able to make students who have low learning motivation become more active in learning. This is because the jigsaw type cooperative learning model is a learning model in which students are divided into several small groups whose members consist of 4 to 6 heritogens, work together and help each other so that all group members understand the lessons given together. This is in line with the opinion of Rusman (2012: 217) model of jigsaw cooperative learning type is "students learn in small groups consisting of four to six people heterogeneously and each member is responsible for completing the part of the material that must be learned".

Meanwhile the conventional model makes students accept learning passively, the application of conventional models makes students who have low motivation increasingly less confident and will become more lazy. Therefore the conceptual understanding of students who have low motivation taught by the jigsaw type cooperative learning model is higher than the conceptualization of the concept of students who have low motivation taught by conventional model.

**4) Interaction between cooperative learning models of jigsaw type and learning motivation in influencing conceptual understanding**

The fourth hypothesis uses a two-way ANAVA test with the Unweighted mean method. The results of the calculation of the fourth hypothesis can be seen in Table 4.

**Table 4:** Test Results of the Fourth Hypothesis with two-way Anava

Amount of Variance	Sum of squares	Free degree	Tenge square average	$F_{hitung}$	$F_{tabel}$
Line	66,27	1	66,27	0,32	4,160
(Learning motivation is high)	794,12	1	794,12	3,89	4,160
Column	725,1	1	725,09	3,56	4,160
(Learning motivation is low)	5905	29	203,62		
Interaction	6696,4	32			

Real ( $\alpha = 0,05$ )  $F_{table} = 4,160$

In Table 4 it can be seen that the value of  $F_{count} = 3.56 < F_{table} = 4.160$ . This means that  $H_0$  is accepted, and it is concluded that in fact there is no interaction between the jigsaw type cooperative learning model and learning motivation towards understanding the concept does not depend on learning motivation, so it can be concluded that there is no significant interaction effect between jigsaw cooperative learning models on understanding the concept of science. Based on hypothesis testing, it is shown that understanding students' concepts taught through the jigsaw type cooperative learning model is not influenced by student learning motivation can be seen from the results of  $F_{count}$  smaller than  $F_{table}$  ( $3.56 < 4.16$ ). The interactions that occur between learning strategies are illustrated through a comparison between 4 groups in different treatments. The data is obtained from the average values of the four groups as contained in the ANOVA table.

A good learning model can make students better at learning and can increase learning motivation. One learning model that is considered capable of increasing understanding of students' concepts of learning material is a model of jigsaw cooperative learning. Jigsaw type learning model can make students become active and have social traits in learning so that students' understanding of concepts becomes clearer and learning objectives will be achieved, According to Wardani (2002 :) the advantages of jigsaw cooperative learning models are: students are more active and give each other opinions students have more opportunity to interact with their friends, students are more active and creative, and have individual responsibilities.

#### 4. Conclusion and Recommendations

Based on the analysis and discussion that has been described the conclusions that can be taken as follows: First understanding of students' concepts taught with cooperative models of type jigsaw is better than conventional learning models, Second, Understanding concepts of students who are highly motivated taught by model cooperative learning jigsaw is higher than the conceptual understanding of students who have high motivation taught by conventional models. Third, the conceptual understanding of students who have low learning motivation taught by the jigsaw cooperative learning model is higher than the conceptual understanding of students who have low learning motivation taught by conventional models. Fourth there is no interaction between the jigsaw type cooperative learning learning model and learning motivation towards understanding concepts.

Suggestions from the results of this study in order to improve the quality of science learning, first the findings in this study show that the application of jigsaw type cooperative learning is far more effective and useful when compared to conventional learning models. Thus the results of this study are suggested to teachers so that science learning uses a model of jigsaw cooperative learning. Both of these studies indicate that the application of jigsaw type cooperative learning can be used as a reference for the development of subsequent research. Thus, the results of this study are suggested to be used as empirical studies through the development of further research in order to bring positive contributions and become a reference in the development of science.

#### References

- [1] Blaskova, M., Blasko, R., Figurska, I., & Sokol, A. (2015). Motivation and Development of the University Teachers' Motivational Competence. *Procedia - Social and Behavioral Sciences*, 182, 116–126. <https://doi.org/10.1016/j.sbspro.2015.04.746>
- [2] Deeboonmee, W., & Ariratana, W. (2014). Relationship between Strategic Leadership and School Effectiveness. *Procedia - Social and Behavioral Sciences*, 112(Iceepsy 2013), 982–985. <https://doi.org/10.1016/j.sbspro.2014.01.1258>
- [3] Fitria, Yanti. (2018). Prestasi Belajar Siswa Kelas V Sekolah Dasar Dalam Pembelajaran Kooperatif Tipe Student Teams Achievement Divisions. *Journal Pembelajaran Inovasi*, Vol 6, No 1. <http://ejournal.unp.ac.id/students/index.php/pgsd/article/view/3024>
- [4] Kesnajaya, I Ketut, Nyoman, Gede. 2015. Pengaruh Model Pembelajaran Kooperatif Tipe Jigsaw terhadap Motivasi Belajar dan Hasil Belajar IPA Siswa Kelas V SD Negeri 3 Tianyar Barat. *Journal Program Pascasarjana Universitas Pendidikan Genesha Program Pendidikan Sekolah Dasar 5*. (1-9)
- [5] Language, A., & Conference, S. (2013). Effects of jigsaw II on academic achievement in English prep classes, 70, 1651–1659. <https://doi.org/10.1016/j.sbspro.2013.01.236>
- [6] Renihan, P. J. (2012). Leadership Succession for Tomorrow's Schools. *Procedia - Social and Behavioral*

- Sciences*, 55(2004), 138–147. <https://doi.org/10.1016/j.sbspro.2012.09.487>
- [7] Rusman.2011.Model-Model Pembelajaran. Jakarta: PT. Raja Grafindo Persada
- [8] Vélez, S. C., Lorenzo, M. C. A., & Garrido, J. M. M. (2017). Leadership: Its Importance in the Management of School Coexistence. *Procedia - Social and Behavioral Sciences*, 237(June 2016), 169–174. <https://doi.org/10.1016/j.sbspro.2017.02.059>
- [9] Wardani Prayuningtiyas Angger. 2015. Efikasi Diri dan Pemahaman Konsep IPA dengan hasil belajar Ilmu Pengetahuan Alam Sekolah Dasar Negeri Kota Bengkulu. *Journal Pendidikan Dasar*. Vol. 5; No 1 . 2015
- [10] Zaroah Lenny, Firman, Desyandri (2008). The Effect Of Using Quantum Teaching and Motivation in Learning Toward Students Achievement. *Journal Aplikasi IPTEK Indonesia*. Vol; 2 ; No 4; hal 14-20.
- [11] Zhang, Q., Siribanpitak, P., & Charoenkul, N. (2018). Creative leadership strategies for primary school principals to promote teachers' creativity in Guangxi, China. *Kasetsart Journal of Social Sciences*, 1–7. <https://doi.org/10.1016/j.kjss.2018.08.007>