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Jigsaw and Problem-Based *Cooperative Learning Modifications* to Optimize Learning Outcomes and Learning Motivation Of Social Studies Mts Al-Ikhlas Fajar Bulan

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ABSTRACT
Education is related to a conscious effort made by individuals to develop every aspect they have, including aspects of attitudes, knowledge, and skills. This study uses quantitative nets with *a* quasi-experimental design. Data was obtained through two instruments, namely learning motivation questionnaires and learning outcome tests. The results of the study show that; (1) Show significant results with the results of sig. learning motivation is 0.013 and the GIS value of learning outcomes is 0.026 < 0.05, then as the basis for decision-making in test f that the hypothesis is accepted, which means that it has a significant influence of *PBL-modified jigsaw-based* learning in the experimental and control classes, (2) The results of learning motivation in the experimental class showed significant results with results of 0.029 in the experimental class and 0.030 in the control class which means that the value is < 0.05 (3) Test the effectiveness through learning by applying jigsaw and *problem-based learning* modifications to student learning outcomes and learning motivation. Therefore, it can be concluded that the application of jigsaw-type cooperative learning and *problem-based learning* in experimental classes had a significant impact on improving student learning outcomes compared to control classes that were not given *jigsaw-type* cooperative learning and *problem-based learning* treatments, with a difference of 17.7%.

INTRODUCTION

Education is an inseparable part of human life from birth, changing human attitudes and behaviors through training and learning as an effort to achieve maturity. Ginting (2016), stated that education is a necessity for humans to be able to carry out social activities in the community. Through quality education, a person will be provided with knowledge, understanding and skills as well as many examples of practices on how to behave and behave well which will later be easier for a person to get a job and income so that better life welfare can be achieved (Pujiati, 2013).

The conditions that occurred at MTs Al-Ikhlas, the learning process was not in accordance with expectations. This happens because of the weak learning process caused by the lack of encouragement from the teacher in creating an effective and interesting classroom atmosphere, so that students cannot understand the material well and are not encouraged to learn further. Students only listen to the teacher and observe what the teacher says. This results in low learning motivation and student learning outcomes. The learning process should be able to help students master certain abilities and change their behavior for the better, so that students become more motivated and enthusiastic in learning, and the learning results obtained can increase and affect student behavior for the better. The learning process at MTs Al-Ikhlas is still dominated by the learning process that leads to the cognitive aspect alone or the teacher as the only source of learning.

Teachers play a very important role in the learning process in the classroom, for that teachers must be smart and active in educating students in the learning process (Sasmita E, et al., 2015; Dedy, M, et al., 2016). MTs Al-Ikhlas has implemented the Independent Curriculum, an educational approach that gives more freedom to schools in arranging learning according to the needs of students. The learning process that occurs positions students as listeners to teachers' lectures. As a result, the teaching and learning process tends to be boring and makes students lazy to learn. This passive attitude of students occurs in almost all subjects, especially social studies subjects.

Based on the results of observations at MTs Al-Ikhlas, the factors causing the low ability of students and students' learning motivation in social studies learning. This is mainly due to: (1) Teachers are less creative in teaching learning (2) Learning activities in the classroom are still teacher-centered so that students tend to be passive, (3) Social studies learning is done too much theory, (4) Learning does not relate it to the context of the learning place and situation. Other information was also obtained from Mrs. L as a social studies teacher stated that the problems of social studies learning from the student factor are; (1) Students get bored quickly during the learning process, (2) Students are too bored because learning is too quickly brought by the teacher when teaching, (3) Students are not interested in learning social studies, and (4) Students tend to chat without paying attention to the material presented by the teacher, which makes students not

enthusiastic about carrying out learning plus the students' daily test scores are quite low.

Based on the results of the questionnaire filled out by 30 students, it can be seen that the majority of students, namely 18 students (60%), have low motivation to learn with a total score of ≤ 45. These students tend to be less interested and less enthusiastic about learning, often feel lazy, and prefer other activities to study. In contrast, 12 students (30%) showed high motivation to learn with a total score of > 45. These students learn with the goal of achieving good grades, earning rewards, and preparing for a better future. They feel satisfied when they understand the subject matter and enjoy the learning process. This data shows the need to increase the learning motivation of most students through more engaging and interactive learning strategies. This is shown from the scores obtained by students in doing daily social studies subject test questions shown in table 1 below:

Table 1. Recapitulation of Odd Semester Final Scores for MTs Al-Ikhlas Students 2024

Class	**Mid-and/or Late Semester summative**		**Number of Students**	**Interval KKTP**
	<65	**> 65**		
VII A	23	10	32	65 Policies set by the School
VII B	18	12	30	
VII C	23	7	30	
VII D	18	14	32	
Sum	82	42	124	
Percentage	**66,13%**	**33,87%**	**100%**	

Source: Social Studies Teacher Class VII MTs AL-Ikhlas Pajar Bulan

Based on the table above, it can be seen that the learning outcomes in social studies subjects obtained from mid-semester summative and end-semester summative scores are classified as less based on the interval used at MTs Al-Ikhlas Fajar Bulan with a score of 65, only 42 students (33.87%) achieved cretris with a score of ≥65, while as many as 82 students (66.13%) got a score of less than 65. Modifying jigsaw-type cooperative and *problem-based learning* not only improves students' academic learning outcomes, but also motivates them to learn more enthusiastically and independently. This approach creates a more holistic learning experience and prepares students with the skills needed for future success.

METHOD

This study uses a quantitative approach with a *quasi-experimental* method or pseudo-experiment. The design of this study is *the pretest* and *posttest of Control Groub.* In the variation of observation methods under artificial *conditions where* these conditions are created and regulated by the researcher. Later in this study, there were two groups that were randomly selected, then given a pretest to find out the initial state, namely whether there was a difference between the experimental group and the control group. If the pretest is significantly the same, then the group is already in accordance with the group that will be used for the experiment.

Table 4. Research Design

Group	Pretest	Treatment	Posttest
Experiment	XE	A	YE
Control	XK	B	YK

Source: Sugiyono (2012)

Information: XE: *Pretest* in the experimental group

XK: *Pretest* in the control group

YE: *Posttest* in the experimental group

YK: *Posttest* in the control group

A : Treatment with *a jigsaw cooperative learning model* modified problem *based learning*

B : Treatment with learning models Conventional

Based on this information, both were tested for the initial and final abilities to determine the effectiveness of *the jigsaw* cooperative learning model modified by *problem-based learning* in improving learning outcomes and student learning motivation. Location and Time This research was conducted at Mts Al-Ikhlas Fajar Bulan, Way Tenong District, West Lampung Regency. The research activities were carried out in grade VII of the 2024/2025 school year. Research activities are adjusted to the schedule set by the head of the madrasah. The population in this study is grade VII students of MTs Al-Ikhlas Fajar Bulan which totals 124 students consisting of 4 classes with details; class VII A has 32 students, class VII B has 30 students, class VII C has 30 students, and class VII D has 32 students. The sample selection in this study used *the Nonprobability Sampling* technique with the type *of Purposive Sampling*. *Purposive Sampling* is a type of data collection that is adjusted to predetermined criteria (Asnawi, 2005). The sample in this study consisted of two classes, namely class VIIB as an experimental class with 30 students and class VIIC as a control class with 30 students.

Data collection techniques, tests are made by teachers to assess students' progress in achieving the material that has been learned. The questionnaire was created to find out the learning motivation, learning outcomes and learning of Jigsaw *Type Cooperative* and *Problem Based Learning* social studies subjects for students. Documentation, This technique is used to obtain general data related to school information.

RESULTS OF RESEARCH AND DISCUSSION

The research conducted at MTs Al-Ikhlas Fajar Bulan Way Tenong, West Lampung, was carried out with an experimentation scheme and a control scheme to determine the initial and final capabilities of social studies learning based on jigsaw-type cooperative *learning* and *problem-based learning* to optimize students' learning outcomes and motivation. The research involving grade VII students of MTs Al-Ikhlas Fajar Bulan consisted of class VIIB as an experimental class and VIIC as a control class with a sample of 30 students from classes VIIB and VIIC respectively. The research was conducted during 4 meetings with a modified design by the researcher by applying jigsaw-type cooperative and *problem-based learning*.

1. Learning Implementation Analysis

1) Frequency Distribution

This study uses data on learning outcomes and learning motivation, the data description is presented as follows:

Table 2 Frequency Distribution of Learning Outcome Categories

Learning Outcomes Categories	Frequency (VIIB)	Percentage (%)	Frequency (VIIC)	Percentage (%)
Height (> 91)	14	46.67	12	40.00
Medium (84 - 91)	15	50.00	16	53.33
Low (< 84)	1	3.33	2	6.67
Total	**30**	**100**	**30**	**100**

Source: Research data processing 2025

Class VIIB has higher learning outcomes, with 46.67% of students in the high category compared to 40% in VIIC. Most students were in the medium category in both classes, but VIIB had a smaller percentage for the low category (3.33%) compared to VIIC (6.67%).

Table 3 Frequency Distribution of Learning Motivation Categories

Categories of Learning Motivation	Frequency (VIIB)	Percentage (%)	Frequency (VIIC)	Percentage (%)
Height (> 93)	13	43.33	7	23.33
Medium (86 - 93)	16	53.33	20	66.67
Low (< 86)	1	3.33	3	10.00
Total	**30**	**100**	**30**	**100**

Source: Research data processing 2025

Class VIIB has a higher proportion of students with high motivation (43.33%) compared to VIIC (23.33%). Class VIIC is more dominant in the medium motivation category (66.67%). The category of low motivation was found less in both classes.

2. Analysis of Test T Tests

1) Experimental Classes

The *t-test* was used to see the extent of the influence of the use of a jigsaw-type *cooperative* learning model modified on *problem-based learning* on the learning motivation and learning outcomes of students in the experimental class. Before the hypothesis test using parametric statistics, the analysis prerequisite test was carried out, namely the normality test and the homogeneity test.

a. Analysis of Test T Tests

a) Experimental Class Normality Test

The normality test is a test that is carried out as a prerequisite for conducting data analysis. The normality test aims to study whether the distribution of the selected sample comes from a normal or abnormal population distribution. The results of the normality, learning motivation and learning outcomes of *PBL modified jigsaw* learning in this study:

Table 26. Normality Test Results of Learning Outcomes

One-Sample Kolmogorov-Smirnov Test				
		Learning Motivation	Learning Outcomes	*PBL Jigsaw*
N		30	30	30
Normal Parameters[a,b]	Mean	92.97	90.10	111.83
	Std. Deviation	1.921	3.800	4.069
Most Extreme Differences	Absolute	.140	.094	.141
	Positive	.126	.081	.141
	Negative	-.140	-.094	-.114

Test Statistic	.140	.094	.141
Asymp. Sig. (2-tailed)	.137c	.200c,d	.135c
a. Test distribution is Normal.			
b. Calculated from data.			
c. Lilliefors Significance Correction.			
d. This is a lower bound of the true significance.			

Source: SPSS processed data (*attached*)

Based on the normality test data, it is known that the value of Asymp. Sig. (2-tiled) learning motivation obtained a result of 0.137, learning outcomes 0.200 and *PBL-modified jigsaw-based* learning 0.135 as the basis for decision-making > 0.05 which can be interpreted that the data on learning motivation, learning outcomes and PBL-modified jigsaw-based learning in this study are normally distributed in the experimental class.

b) Homogeneity Test

The results of the homogeneity test in this study are as follows:

Table 27. Results of the Homogeneity Test of Learning Motivation

Test of Homogeneity of Variances					
		Living Statistic	df1	df2	Sig.
Learning Motivation	Based on Mean	12,305	1	58	0,166
	Based on Median	8,481	1	58	0,156
	Based on Median and with adjusted df	8,481	1	38,321	0,106
	Based on trimmed mean	12,314	1	58	0,109

Source: data processed with SPSS (attached)

Table 27. Homogeneity Test Results of Learning Outcomes

Test of Homogeneity of Variances					
		Living Statistic	df1	df2	Sig.
Learning Outcomes	Based on Mean	0,060	1	58	0,808
	Based on Median	0,023	1	58	0,880
	Based on Median and with adjusted df	0,023	1	55,379	0,880
	Based on trimmed mean	0,046	1	58	0,831

Source: data processed with SPSS (attached)

Table 28. Results of the Homogeneity Test of *PBL-Modified Jigsaw-Based* Learning

Test of Homogeneity of Variances					
		Living Statistic	**df1**	**df2**	**Sig.**
Jigasaw PBL	Based on Mean	11,130	1	58	0,101
	Based on Median	10,561	1	58	0,092
	Based on Median and with adjusted df	10,561	1	44,706	0,092
	Based on trimmed mean	10,880	1	58	0,083

Source: data processed with SPSS (attached)

Based on the *output data* above, it is known that the *Sig. Based on Mean* value for the learning motivation variable is 0.166, the learning outcome value is 0.808 and the *PBL Jigsaw value* is 0.101, so it can be concluded based on the homogeneous value of the learning motivation variable, learning outcome and *PBL* Jigsaw > 0.05, then as the basis for decision-making in the homogeneity test, it can be concluded that the variance of the data is equal or homogeneous in application.

c) Hypothesis Test

Hypothesis test was carried out using *the Paired-Sample t Test method.* Decision making if the probability > 0.05 then H_0 is accepted and if the probability ≤ 0.05 then H_0 is rejected. The data testing is as follows:

Table. Paired Sample Correlation

Coefficient						
Type		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	177.889	36.424		4.884	.000
	Learning Motivation	.422	.387	.199	3.089	.029
	Learning Outcomes	.298	.196	.278	2.520	.014
a. Dependent Variable: *Jigsaw*_PBL						

Source: SPSS processed data (*attached*)

Based on the output of the data above, it shows that the learning motivation coefficient is 0.029 and the learning outcome is 0.014 < 0.05, so it can be concluded that the test of the learning motivation hypothesis and learning outcomes on *PBL-modified jigsaw* learning has a significant influence.

Furthermore, it is known that the t-value of the table is 2.051 and the t-value of calculating the learning motivation variable is 3.089 and the learning outcome is 2.520, so it can be concluded that the t-value of the calculation is > 2.051 which means that there is an influence of learning motivation and learning outcomes on *PBL-modified jigsaw* learning in the experimental class.

Furthermore, the decision making of the F Test is known as follows:

Table 30. Results of the Anova Experiment

NEW ERA						
Type		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	67.981	2	33.991	4.227	.013b
	Residual	412.185	27	15.266		
	Total	480.167	29			
a. Dependent Variable: *Jigsaw*_PBL						
b. Predictors: (Constant), Hasil_Belajar, Motivasi_Belajar						

Source: SPSS processed data (*attached*)

Based on the table above, it is known that the sig. value is 0.013. Because the value of sig. 0.013 < 0.05, then in accordance with the basis of decision-making in the f-test, it can be concluded that the hypothesis is accepted simultaneously the effect of PBL-modified jigsaw learning on learning motivation and learning outcomes in experimental classes.

Furthermore, it is known that the F value of the table is 3,340. because the value of F is calculated as 4.227 > 3.340, as the basis for decision-making in the F test, it can be concluded that the hypothesis is accepted.

Control Class

The *t-test* was used to see the extent of the effect of using a jigsaw-type *cooperative* learning model modified on *the* learning motivation and learning outcomes of control class students. Before the hypothesis test using parametric statistics, the analysis prerequisite test was carried out, namely the normality test and the homogeneity test.

a. Data analysis Test t Test

a) Normality Test

The results of the normality, learning motivation and learning outcomes of *PBL modified jigsaw* learning in this study:

Table 31. Normality Test Results of Control Class Learning Outcomes

One-Sample Kolmogorov-Smirnov Test				
		Learning Motivation	Learning Outcomes	*Jigsaw*_PBL
N		30	30	30
Normal Parameters[a,b]	Mean	89.07	89.20	96.87
	Std. Deviation	4.346	4.172	7.272
Most Extreme Differences	Absolute	.164	.120	.115
	Positive	.164	.082	.089
	Negative	-.117	-.120	-.115
Test Statistic		.164	.120	.115
Asymp. Sig. (2-tailed)		.139c	.200c,d	.200c,d
a. Test distribution is Normal.				
b. Calculated from data.				
c. Lilliefors Significance Correction.				
d. This is a lower bound of the true significance.				

Source: SPSS processed data (*attached*)

Based on the normality test data, it was known that the Asymp. Sig. (2-tiled) learning motivation obtained a result of 0.139, learning outcomes 0.200 and *PBL-modified jigsaw-based* learning 0.200 as the basis for decision-making > 0.05 which can be interpreted that the data on learning motivation, learning outcomes and *PBL-modified jigsaw-based* learning in this study are normally distributed in the control class.

b) Hypothesis Test

Hypothesis test was carried out using *the Paired-Sample t Test method.* Decision making if the probability > 0.05 then H_0 is accepted and if the probability ≤ 0.05 then H_0 is rejected. The data testing is as follows:

Table 32. Paired sample correlation

Coefficient						
Type		Unstandardized Coefficients		Standardized Coefficients	t	Sig.
		B	Std. Error	Beta		
1	(Constant)	182.208	37.632		4.842	.000
	Learning	.665	.291	.397	3.287	.030

	Motivation					
	Learning Outcomes	.293	.303	.168	3.967	.042
a. Dependent Variable: *Jigsaw*_PBL						

Source: SPSS processed data (*attached*)

Based on the output of the data above, it shows that the learning *motivation coefficient* is 0.030 and the learning outcome is 0.042 < 0.05, so it can be concluded that the learning motivation hypothesis test and learning outcomes on *PBL-modified jigsaw* learning have a significant influence on the control class.

Furthermore, it is known that the t-value $_{\text{of the table}}$ is 2.051 and the t-value$_{\text{of}}$ the variable of learning motivation is 3.287 and the learning outcome is 3.967, so it can be concluded that the$_{\text{t-value of}}$ the calculation is > 2.051 which means that there is an influence of learning motivation and learning outcomes on *PBL-modified jigsaw* learning in the control class.

Furthermore, the decision making of the F Test is known as follows:

Table 33. Anova Control Results

NEW ERA						
Type		Sum of Squares	Df	Mean Square	F	Sig.
1	Regression	283.424	2	141.712	4.061	.026b
	Residual	1250.043	27	46.298		
	Total	1533.467	29			
a. Dependent Variable: *Jigsaw*_PBL						
b. Predictors: (Constant), Hasil_Belajar, Motivasi_Belajar						

Source: SPSS processed data (*attached*)

Based on the table above, it is known that the sig. value is 0.026. Because the value of sig. 0.026 < 0.05, then in accordance with the basis of decision-making in the F test, it can be concluded that the hypothesis is accepted simultaneously as having the effect of jigsaw-type *cooperative* learning modified *problem based learning* on learning motivation and learning outcomes of the control class. Furthermore, it is known that the F value of the table is 3,340. because the value of F is calculated as 4.061 > 3.340, as the basis for decision-making in the F test, it can be concluded that the hypothesis is accepted in the control class.

DISCUSSION

The Effect of Jigsaw and *Problem Based Learning Modification* in Improving Student Learning Outcomes

The results of this study show that the application of the jigsaw cooperative learning model modified with *problem based learning* (PBL) has a significant influence on student learning outcomes. Based on data obtained from the experimental class and the control class, there was a significant increase in student learning outcomes after the implementation of the learning model.

Based on the results of the study, there are still many students who are in the very low and low categories before being given treatment, this is due to the lack of knowledge they have about the family system material. After students are taught by applying jigsaw-type *cooperative* modifications and *problem-based learning* to the learning outcomes they obtain increase, this is evidenced by student learning outcomes in the high and very high categories. The results of descriptive analysis were obtained in the experimental class or the control class, the social studies learning outcomes of the students increased after treatment, and in the experimental class, the increase in the social studies learning outcomes of the students obtained higher results than in the control class.

The effect of jigsaw-type *cooperative learning* modification and *problem-based learning* applied by the researcher in the experimental class and the control class obtained significant results, the implementation of learning which was carried out 4 times in the experimental and control classes, was carried out with different learning methods. Based on the results of data processing, it is known that the value of sig. learning motivation is equal to and the GIS value of learning outcomes is 0.013 of 0.026 < 0.05, then as the basis for decision-making in test f that the hypothesis is accepted, which means that it has a significant influence of *PBL-modified jigsaw-based* learning in the experimental and control classes.

This research is in accordance with research conducted by Dharma, (2023). The meta-analysis of the comparative effectiveness of the PBL and *Jigsaw learning models* was reviewed from the social studies learning outcomes of elementary school students obtained significant results, based on the results of the research conducted Judging from the results of the analysis using the ancova test, the average result *of the posttest* score using the PBL learning model was 79.5450 and the increase in learning outcomes was 23.59, while the *Jigsaw learning model* obtained a score result *Posttest* was 79.5588 and the improvement in learning outcomes was 28.835. Meanwhile, the size effect test seen from the Partial Eta Squared showed a result of 0.423 and the significance value was 0.042. The results of the size effect test showed that the PBL and *Jigsaw learning models* had a moderate effect on the social studies learning outcomes of MTs students.

The jigsaw *learning model* is one of the learning that provides opportunities for students to learn actively because this model is student-centered (Maya, 2014). Student-centered learning will provide students with the opportunity to gain more experience that affects student learning outcomes. Learning with *the jigsaw* model is able to increase interest and learning activities (Thomas & Setiaji, 2014), and learning with *the jigsaw learning model* can improve student learning outcomes (Fadliyani et al., 2018). This is supported by several research results. Research conducted by Almukarram et al., (2017) stated that there is a difference in students' critical thinking skills using the application of a jigsaw-type cooperative model with conventional learning on the concept of environmental pollution at SMA Negeri 12 Banda Aceh. Alfaris, (2014) stated that there is a difference between classes that use *the jigsaw* cooperative learning model and classes that use conventional learning models, because t counts 1.466 is smaller than t table 2.002. Wati & Anggraini (2019) stated that *jigsaw* learning strategies affect students' critical thinking skills. Marfuah (2017) stated that the use of the Jigsaw-type cooperative learning model can improve students' communication skills. So, *the jigsaw* learning model can make students actively learn to build their own knowledge independently or work together with their peers in a group.

Problem-based learning is one of the models that focuses on bridging students to gain learning experience in organizing, researching, and solving complex problems in daily life (Abidin, 2014). *Problem-Based Learning* (PBL) has several advantages that make it popular in learning. First, PBL encourages students to develop critical thinking and problem-solving skills because they must actively seek solutions to a given problem. Second, PBL promotes collaborative learning. Students work together in groups to solve problems, gather ideas, and share their knowledge (Muhsam & Muh, 2022). This not only improves social skills, but also prepares them to work in teams in the real world. In addition, *Problem Based Learning* provides a real-world context for learning. Students face relevant and complex problems, similar to the challenges they may face in their daily lives or in their work environment later. *Problem Based Learning* can also increase student motivation because they have direct involvement in the learning process. They feel a responsibility to complete certain tasks or problems, which can increase their intrinsic motivation (Mahardika, 2022). Lastly, *Problem Based Learning* (PBL) helps develop research and independent skills. Students learn how to search for information, analyze data, and find solutions on their own, giving them valuable expertise for their future. This opinion is supported by Delise in Abidin (2014) that the *Problem Based Learning* learning model helps teachers to develop students' critical thinking skills during the learning process.

Furthermore, Pujiati (2022) stated that the *Problem Based Learning* (PBL) model is one of the innovative learning models used by teachers to design learning that can actively involve students and train students' high-level thinking skills in solving problems. Problem solving is carried out with a pattern of collaboration and using high-level thinking skills, namely the ability

to analyze-synthesize, and evaluation or using discovery in order to solve a problem. The PBL model is a learning model that makes students think critically and find solutions to the problems posed and uses real problems as the main focus, so that students gain essential knowledge and skills from what they learn. By helping students think creatively and critically, this is in accordance with the opinion Thinking is a mental activity in dealing with problems. Thinking is a mental activity that helps formulate or solve problems, make decisions, understand, find answers and achieve meaning (Maria, Riswandi & Pujiati 2022)

This study shows that there is a significant difference in learning outcomes between classes taught using jigsaw-type cooperative modification and *problem-based learning* and classes taught with conventional learning models. This indicates that a good learning process can provide positive contributions for students, so that students are increasingly aware of the importance of learning social studies, especially the subject of family in life and they are able to construct their knowledge. In social studies learning, all these dimensions must be achieved so that the social studies learning objectives can be achieved properly (Purwanti, Purnomo & Pujiati 2015)

This explanation is supported by Vigotzky's theory of constructivism, (1978) which considers that students find and understand difficult concepts more easily if they discuss them with their friends. The positive influence of the application of *jigsaw and PBL cooperative modification means that* the jigsaw-type *cooperative modification model* and *problem-based learning* are learning models that can improve social studies learning outcomes for students. It can be seen that during the learning process, students are able to discuss well, and students help and remind each other about their respective materials. This is because the modification of *jigsaw* and PBL cooperative learning involves the activities of all students, responsible for their respective materials, because all students have their own tasks so that students are more active and not bored in the learning process. Students in their groups help each other and work together to find assignments/questions given so that students with low abilities can also be helped by smart students. The conventional model of students only listens to the teacher explain the subject matter, so the student is bored and inactive. This is in accordance with Rokhmatika's (2012) research concluding that the learning achievement of students with the jigsaw-type cooperative learning model is better compared to the learning achievement of students with the conventional model.

Cooperative learning can improve student learning achievement while improving students' social relations skills. The relationship between peers to realize positive goals in social studies learning has also been proven by the learning outcomes achieved by students. Group learning is one of the approaches/strategies that are specifically designed to encourage students to work together during learning, which can certainly improve student understanding. This is also what happened in class VIIB which is an experimental class. Students are motivated to be willing to cooperate during

learning. This is what gives rise to strong interaction between students and students. The effect of jigsaw-type cooperative modification and *problem-based learning* with teachers as supervisors in the learning process, which can ultimately improve student learning outcomes, especially on the subject of family and life. The reason why students' learning scores in the experimental class are better than in the control class is due to the application of jigsaw-type cooperative modification and *problem-based learning* as an alternative to constructivist and collaborative social studies learning. Constructivism brings students to the real social studies learning paradigm, which is to construct knowledge independently, not limited to memorizing knowledge.

Collaboratively trains students to foster a cooperative atmosphere, namely social development, cooperation, motivation, competition, and equalization of abilities (Prayitno, 2010). As revealed from the results of Yeti and Diana's (2009) research, the jigsaw-type cooperative model is effective in improving student learning outcomes. There are several reasons why the control class or the class taught with the direct learning model has a lower score than the experimental class, including that students are not actively involved during the learning process, students are only given subject matter information from student and teacher books, so they do not have the opportunity to study the information more deeply and have an impact on unsatisfactory learning outcomes. This is in accordance with the theory put forward by Trianto (2010), that based on the results of the research analysis of the low learning outcomes of students, it turns out to be due to the classroom atmosphere tending *to be teacher-centered*. This is in line with the research of Arjanggi, et al. (2010) which shows that peer tutoring can improve learning outcomes and student self-regulation which leads to becoming independent learners when compared to direct *instruction*.

The conventional learning model is a type of individual learning where students do their own tasks so that there is less social interaction and weak students' ability to exchange information. The conventional learning model is the learning model that is most often used by teachers in learning, so it is only centered on the teacher and students are sometimes not interested in the learning. The main feature of independent (conventional) learning is not the absence of teachers or fellow students, or the absence of face-to-face meetings in the classroom. According to him, the main characteristic of independent learning is the development of students' ability to carry out the learning process that does not depend on the factors of teachers, friends, classes and others.

The Effect of Jigsaw-type Cooperative Learning Modification and Problem Based Learning in Increasing Student Learning Motivation

The effect of jigsaw-type cooperative learning modification and *problem-based learning* (PBL) carried out by researchers in class VII B had a positive impact on students' learning motivation. The results of the descriptive average analysis showed that the social studies learning motivation of students in experimental classes taught with jigsaw-type cooperative modification learning models and *problem-based learning* showed a better increase in motivation than students' learning motivation in control classes taught with conventional learning models. These differences can be seen in the average descriptive value, motivation and frequency distribution of motivation categorization, so it can be said that jigsaw-type cooperative modification learning models and *problem-based learning* have a positive effect on student learning motivation. This is because in the implementation of learning with the *jigsaw* and PBL modified learning model, it involves/gives trust and responsibility to students in teaching and learning activities and student activity directly which is the impact of student motivation to learn.

The results of this study are in line with what was concluded by Subyakto (2009) in his research which stated that students who are taught with jigsaw-type cooperative modification learning models and *problem-based learning* can increase students' learning motivation. Student learning motivation is one of the indicators that can determine the success of the student learning process. In general, there are several indicators or elements that support the emergence of motivation including (1) The existence of a desire and desire to succeed, (2) The existence of encouragement and needs in learning, (3) The existence of future hopes and ideals, (4) The existence of rewards in learning, (5) The existence of interesting activities in learning, (6) The existence of a conducive learning environment so that students can learn well (Hamzah, 2014).

Motivation can be said to be a series of efforts to provide certain conditions, so that a person wants and wants to do something, and if he does not like it, then will try to eliminate or avoid the feeling of dislike. Motivation from within children can be stimulated by external factors because students who have strong motivation will have a lot of energy to carry out learning activities (Sardiman, 2012). External factors that can affect students' motivation to learn are factors related to the learning process. The model, approach, or method used by teachers, and the conditions of the learning environment are very important things to pay attention to to build student learning motivation. If the method used can build interaction and motivation of students, for them it is a very valuable thing that they get in school. The modification of jigsaw-type cooperative learning and *problem-based learning* in the school of knowledge-sharing researchers, namely at MTs Al-Ikhlas, is one of the non-conventional learning that in the process of its activities activates the cognitive structure of students through cooperation and responsibilities imposed on students so that they can train themselves in developing the ability to think to propose hypotheses and answer hypotheses that have been

formulated. After the application of jigsaw-type cooperative learning methods and *problem-based learning*, students' learning motivation has increased significantly. This learning model allows students to work in small groups, where they are responsible for understanding the material and helping their peers. This approach improves social interaction, builds confidence, and encourages students to be more active in learning.

The results of the statistical test in this study showed that the significance value of students' learning motivation in the experimental class was 0.029, while in the control class it was 0.030, both of which < 0.05. This proves that the Jigsaw learning model modified with *problem-based learning* significantly affects the increase of students' learning motivation. In educational theory, learning models based on cooperation and problem-solving such as jigsaw-type cooperative and *problem-based learning* have advantages in increasing student learning motivation. Ibrahim (2000) stated that the cooperative learning model aims to improve academic outcomes, acceptance of individuals, and the development of social skills. Meanwhile, Slavin emphasized that individual success in this model depends on the success of the group, so students are encouraged to help each other and work together. Thus, based on the results of relevant research and theories, it can be concluded that low student learning motivation can be overcome by applying a more interactive and cooperative-based learning method. The Jigsaw-type cooperative learning model modified with *PBL problem-based learning* has been proven to be effective in increasing students' learning motivation by actively involving them in the learning process and providing a more engaging and meaningful learning experience.

Effectiveness of Learning with the Application of Jigsaw Cooperative Learning Modification and Problem Based Learning on Student Learning Outcomes and Learning Motivation.

The effectiveness of jigsaw-type *cooperative* learning and *problem-based learning* can be explained from various aspects. This learning provides opportunities for students to work in heterogeneous groups, where they have individual and group responsibilities to understand the material and solve the given problems. Each student has the role of a peer tutor in his or her group, which enhances understanding and strengthens critical thinking skills. In addition, the syntax of these two methods is Jigsaw, which emphasizes jigsaw-type *cooperative* learning and *problem-based learning* that is oriented towards solving problems, thus creating a more dynamic and engaging learning environment. Based on the results of *the pretest* and *posttest* in the experimental class, the researcher applied *the jigsaw cooperative learning* method and *problem based learning* with the scheme at the first meeting before applying *the jigsaw-type* cooperative learning method and *problem based learning*, the researcher gave pretest questionsto students to find out the learning outcomes of grade VII students. After conducting *a pretest*, the researcher formed a *jigsaw group* at the end of the meeting, the researcher provided *posttest* questions to

determine the students' abilities after conducting cooperative learning of *jigsaw type* and *problem-based learning*. Based on the results of the learning implementation, it is known that in the experimental class, there was a significant change in social studies learning outcomes with an average learning outcome of 93.17% with an increase of 62.5% before the implementation of jigsaw-type cooperative learning and *problem-based learning*.

Meanwhile, in the control class, the researcher did not apply a jigsaw-type cooperative learning model and *problem-based learning*. In the control class, the researcher applied the lecture method by utilizing learning resources in the form of student handbooks. The implementation of learning was carried out in 4 meetings, in the first meeting the researcher explained the material according to the student handbook by giving pretest questions in the closing session and ending by giving posttest questions in the closing session of the 4th meeting. The researcher found that students obtained significant learning outcomes with a result of 88.13% with an average increase in learning outcomes of 44.8%. So it can be concluded that the application of jigsaw-type cooperative learning and *problem-based learning* in experimental classes has a significant impact on improving student learning outcomes compared to control classes that are not given jigsaw-type cooperative learning and problem-based learning, with a difference of 17.7%.

The application of Jigsaw and PBL cooperative learning modifications showed significant results in improving student learning outcomes and motivation. This learning model allows students to work together in groups as well as solve problems independently, thus improving their critical thinking skills and problem-solving abilities. According to Ibrahim (2000), the cooperative learning model aims to improve academic learning outcomes, acceptance of other individuals, and social skills. This is reinforced by Slavin who states that the success of individuals in cooperative learning depends largely on the success of their group. Therefore, the application of *Jigsaw* modified with PBL not only contributes to improving students' learning outcomes but also increases their motivation to actively learn.

The effectiveness of this method can be explained by the theory of constructivism which emphasizes that learning should actively involve students in building their own understanding (Piaget, 1970). In a jigsaw model modified with PBL, students not only passively receive information but also participate in discussion and problem-solving, which allows them to internalize the concepts learned. Vygotsky's (1978) theory also supports this approach through the concept of the "proximal developmental zone", in which interaction with peers in cooperative groups helps improve students' understanding more than they achieve on their own.

Previous research by Dharma (2023) also showed that PBL and jigsaw learning models both provide significant results in improving learning outcomes. Analysis using the ANCOVA test showed that the posttest score of students using the PBL model reached 79.5450 with an increase of 23.59, while students with the jigsaw model reached a score of 79.5588 with an increase of 28.835. In addition, the size effect test showed that both models had a moderate influence on student learning outcomes.

The results of the pretest and posttest showed a greater improvement in the experimental class compared to the control class. The average increase in student learning outcomes in the experimental class was higher than in the control class, which shows that the applied learning model is more effective than conventional methods. This result is also in line with the findings of Mesiyanto (2018), who stated that problem-based learning methods can improve students' critical thinking skills and understanding of concepts better than traditional methods.

In addition to learning outcomes, student motivation also experienced a significant increase in the experimental class. This is in line with the intrinsic motivation theory of Deci & Ryan (1985), which states that when students are given the opportunity to learn in an environment that supports active participation and autonomy, they will be more motivated to learn. The jigsaw learning model modified with *problem based learning* (PBL) allows students to have a more challenging but still engaging learning experience, which ultimately increases their motivation. The results of this study reinforce the idea that the modification of the jigsaw learning model with *a problem based learning* approach(PBL) can be a solution to improve student learning outcomes and motivation. By actively engaging students in problem-based and collaborative learning, this approach not only helps them understand the material better but also develops critical thinking and communication skills that are essential for long-term learning.

CONCLUSION

1. There is an effect of jigsaw-type cooperative learning modification and *problem-based learning* in improving student learning outcomes. Showing significant results with the results of sig. The learning motivation was 0.013 and the GIS value of learning outcomes was 0.026 < 0.05, then as the basis for decision-making in test f that the hypothesis was accepted, which means that it has a significant influence on *PBL-modified jigsaw-based* learning in the experimental and control classes.

2. There is an effect of jigsaw-type cooperative learning modification and *problem-based learning* in increasing student learning motivation. The results of learning motivation in the experimental class showed significant results with results of 0.029 in the experimental class and 0.030 in the control class which means that the value was < 0.05, so it can be concluded significantly

that learning motivation in the experimental class and the control class had a significant influence on Jigsaw-based learning modified *problem-based learning*.

3. The effectiveness of learning was tested by the application of jigsaw-type cooperative learning modifications and *problem-based learning* to students' learning outcomes and learning motivation. Based on the results of the learning implementation, it is known that in the experimental class, there was a significant change in social studies learning outcomes with an average learning outcome of 93.17% with an increase of 62.5% before the implementation *of jigsaw* cooperative learning and *problem-based learning*. In the control class, students obtained significant learning outcomes with a result of 88.13% with an average increase in learning outcomes of 44.8%. Therefore, it can be concluded that the application of jigsaw-type cooperative learning and *problem-based learning* in experimental classes had a significant impact on improving student learning outcomes compared to control classes that were not given *jigsaw-type* cooperative learning and *problem-based learning* treatments, with a difference of 17.7%.

BIBLIOGRAPHY

Abidin, Y. (2014). *Learning system design in the context of the 2013 curriculum* . Bandung: Refika Aditama.

Almukarram, A., Yusrizal, & Syukri, M. (2017). The influence of the jigsaw-type cooperative learning model on students' critical thinking skills on the concept of environmental pollution. *Journal of Biotics* , 5(2), 45–52.

Alfaris, M. (2014). The effect of the jigsaw-type cooperative learning model on student learning outcomes in science subjects at SMP Negeri 3 Makassar. *Thesis* . State University of Makassar.

Arjanggi, R., Yuniarti, KW, & Wulandari, R. (2010)The Effect of Peer Tutor Learning on Student Learning Outcomes and Self-Regulation. *Journal of Educational Psychology* , 8(1), 33–40.

Asnawi, N. (2005). *Research Methodology: A Practical Approach in* Research. Yogyakarta: Student Library.

Dedy, M., Yarmaidi, Y., & Endang, S. (2016). Differences in the Application *of the Problem Based Learning* Model in Geography Learning Outcomes.

Dharma, I. M. A., Kertih, I. W., & Lasmawan, I. W. (2023). *Meta-analysis of comparative effectiveness of PBL and Jigsaw learning models reviewed from social*

studies learning outcomes of elementary school students. *Journal of Flobamorata Basic Education*, 4(3), 666–673.

Fadliyani, R., Mujahidah, & Ardiansyah, A. (2018) . The application of a jigsaw-type cooperative learning model to improve student learning outcomes on the subject matter of the human circulatory system. *Scientific Journal of Biology Education* , 7(1), 34–40.

Ginting. 2016. *The Effect of the Problem Based Learning Model on Student Motivation and Learning Outcomes in Class V PKn Subjects of SD Negeri 101815 Sidodadi.* (Article). Accessed via http://digilib.unimed.ac.id.

Maria, M., Riswandi, R., & Pujiati, P. (2022). Development of interactive learning media based on problem based learning models to improve high-level thinking skills. *Academic Discourse: Scientific Magazine of Education*, *6*(3).

Mahardika, IGA (2022). *Application of Problem-Based Learning Models to Improve Student Motivation and Learning Outcomes* . Yogyakarta: In-depth publishing.

Maya, (2014). *Application of Jigsaw Type Cooperative Learning Model for* (2014). *Application of Jigsaw-Type Cooperative Learning Model to Improve Student Learning Outcomes*. Bandung:

Marfuah, S. (2017). The application of a jigsaw-type cooperative learning model to improve students' communication skills. *Journal of Interactive Education* , 5(1), 12–18.

Muhsam, R., & Muh, R. (2022). *Implementation of the Problem Based Learning Model in Improving Students' Critical Thinking Skills* . Makassar: Edupublik.

Piaget, J. 1970. *Science of education and the psychology of the child*. Orion Press.

Piaget, J. 1952. *The origins of intelligence in children*. Norton.

Prayitno, W. (2010) *Development of Cooperative Learning in Education* . Jakarta: Rineka Cipta.

Pujiati, P. 2015. Analysis of the Accounting Competency of Economics Students, University of Lampung. *Metaphor: Education, Social Sciences and Humanities Journal*, *2*(3), 9-16.

Purwanti, E., Purnomo, E., & Pujiati, P. (2015). Development of observation-based and sociometry-based social skills instruments in social studies learning. *Journal of Social Studies*, *3*(1), 41019.

Rokhmatika, R. (2012) *Application of Jigsaw Type Cooperative Learning Model to Improve Student Learning Achievement in Science Subjects in Class V SDN 2 Sumberejo* . Thesis. University of Lampung.

Slavin, Robert E. *2005. Cooperative Laerning*. London: Allymand Bacon. *SMA Negeri 1 Prabumulih. Journal of BhinnekaTunggal Ika. 2 (2), 148-156.*

Thomas, A., & Setiaji, A. (2014). *Application of Jigsaw-Type Cooperative Learning Model to Increase Students' Learning Interests and Activities* . Journal of Education, 15(2), 101–108.

Trianto. (Year 2010) *Constructivist-Oriented Innovative Learning Models*: Literary AchievementJakarta: Literary Achievement.

Vygotsky, L. **S.** 1978. *Mind in society: The development of higher psychological processes*. Harvard University Press.

Vygotsky, Lev Semenovich.1896-1934. MIA: Encyclopedia of Marxism: glossary

Wati, R., & Anggraini, The influence of jigsaw learning strategies on students' critical thinking skills. *Journal of Education and Learning* , 8(1), 23–30.

Yeti, M., & Diana, N. (2009) The Effectiveness of Jigsaw Type Cooperative Learning Model on Student Learning Outcomes. *Journal of Basic Education* , 3(2), 45–52.