



## **THE EFFECT OF COOPERATIVE LEARNING JIGSAW TYPE TO INCREASE LEARNING RESULT OF BASIC BIOMEDICAL LECTURE**

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<b>ABSTRACT</b>	<b>Keywords</b>
Students are an active part that plays a role in the learning process. Cooperative learning trains students to be able to work together and responsibly independently. This research was quasi-experimental research with posttest-only control design. The sample of this research was the students of Diploma III Nursing Bina Sehat PPNI Health Science Institute Mojokerto at the level I of academic year 2017/2018. The research data was obtained from the result of the final examination of the students in the basic biomedical course. The data were analyzed using independent sample t-test. The result of the independent sample t-test is 0.00 is less than 0.05. The conclusion of these results is that there are differences in basic biomedical learning outcomes in the control class and experimental class. Average learning outcomes control class 60,17 and experimental class 73,94. These results suggest that jigsaw type cooperative learning can improve student learning outcomes in basic biomedical courses.	<b>Nursing Student, Basic Biomedical, Jigsaw Method</b>

## INTRODUCTION

The result of field study on biomedical learning in DIII study program of nursing Bina Sehat PPNI Health Science Institute Mojokerto is known there are some problems, such as (1) diverse student input so that students' initial understanding is different, (2) some students come from SMK non health or high school graduate program IPS so that the initial understanding needed to study biomedical is still very low, (3) Students' learning outcomes in biomedical courses are still low. One effort to overcome these problems is to apply learning that can invite every student to be active in learning. If each student participates actively in learning, then it is expected that the learning result can be increased.

The jigsaw type of cooperative learning according to (Shoimin, 2014) is a cooperative learning model using students studying in small groups of four to six people. Students work together with positive and responsible interdependence independently. Students have many opportunities to express opinions and process information obtained to improve communication skills.

According to (Slavin, 1994), the purpose of cooperative learning jigsaw type is to create a situation where the success of the group determines individual success. This system is different from the conventional group that applies the competition system, where individuals success is oriented to the failure of others. And the purpose of the jigsaw type cooperative learning model itself is to provide a sense of individual and group responsibility for mutual success and to interact with other groups.

Class members who are heterogeneous are well suited to the jigsaw learning model. Group members can be heterogeneous; the heterogeneous group atmosphere makes it easy for members to motivate and help each other. Higher-ability students can help provide understanding to less-skilled

students. According to (Slavin, 2005) cooperative learning can be applied to various classes, including special classes for gifted children, special education classes, classes with average intelligence and indispensable in heterogeneous classes with varying degrees of ability.

Many research results have proven that the jigsaw type learning model can improve student learning outcomes. Learning outcomes as described by (Sudjana, 2009) is the ability of the learners after the learners receive a learning experience. Based on the results of research (Suwiwa, 2015) obtained the result that the application of cooperative learning model type jigsaw can increase activity and learning outcomes in the theory and practice pool II. (Jumardin Fua, 2014) shows that the learning outcomes of basic natural science courses are improved after learning using the jigsaw type learning model.

(Sugihartono, 2007), mentioning factors - factors that affect learning outcomes are internal factors and external factors. Internal factors are factors that exist within the individual who is learning. Internal factors include physical factors and psychological factors. External factors are factors that exist outside the individual. External factors include family factors, school factors, and community factors.

Lecturer as a teacher is an external factor that plays a vital role in learning. One of the efforts that can be done by lecturers to improve learning outcomes is to apply the learning model by the condition of the students. The jigsaw learning model is an appropriate learning model for a heterogeneous class that can improve learning outcomes.

The fundamental problems in the basic Biomedical class have been explained previously, namely heterogeneous student input and low student learning outcomes. Researchers tried to overcome these

problems by applying the Jigsaw learning model. Where in the jigsaw learning model each student is given the responsibility to understand a material in the expert group and is given the responsibility to explain it again in the original group. Thus, the hope is that students who have less ability can learn more deeply from students who have more abilities. In addition, students were also given the opportunity to demonstrate their abilities by giving explanations of the material he had learned to friends in the original group. Based on this explanation, this study aims to distinguish whether the application of the jigsaw cooperative learning model in the basic biomedical subjects provides a better improvement in learning outcomes than the application of ordinary learning models.

## METHOD

This research was a "queasy experiment" or pseudo-experiment. The design used is a posttest-only control design. The design is used because post-test is done during midterm so that the pretest is not possible to avoid leaking of basic biomedical problems.

There are two groups: the experimental class and the control class. The experimental class is a class that uses a jigsaw type cooperative learning model, while the control group gets treatment with conventional learning model. The sample of this research is the students of DIII of Nursing Bina Sehat PPNI Health Science Institute Mojokerto level I of academic year 2017/2018 consisting of two classes, class A as control group with the number of students as many as 47 people and class B as the experimental group with the number of students as many as 48 people.

The data obtained in this study are test results. The test used is post-test. Post-test conducted to measure student learning outcomes after the learning process. Type of test in the form of objective questions as much as 40 items. The post-test data is then analyzed. Data analysis techniques used

statistical descriptions that included the homogeneity test, normality test, and different test.

## RESULTS AND DISCUSSION

The influence of jigsaw learning is seen by examining the basic biomedical study result data using independent t-test statistical analysis. Before performing an independent sample t-test, first, test the data normality using SPSS 17.0 for Windows program. Homogeneity test is not done because the sample size tends to be large and is considered equivalent.

The result of the normality test of basic learning result of the biomedical subject can be seen in Table 1 below.

Table 1. Test of Data Normality of Learning Result of Basic Biomedical Subject

Class	N	Mean	Std. Dev	Sig
<b>A (control)</b>	47	60,17	10,77	0,30
<b>B (experiment)</b>	47	73,94	7,85	0,28

Table 1 shows that the significance of the normality test of the basic biomedical subject study results is greater than 0.05, i.e. in class A of 0.30 and class B of 0.28. The results of the normality test show that the data is normally distributed. Furthermore, the statistical analysis of the independent sample t-test.

The independent sample t-test results are shown in Table 2 below.

Table 2. Independent sample t-test Result of Basic Biomedical Learning Result

Inde ndent sample	N	Si g	Me an	St d De v	St d E rr	P Va lue	P ta bl e
A	47	0,00	60,17	10,77	1,57	0,00	0,05
B	47	0,00	73,94	7,85	1,15	0,00	0,05

Based on Table 2 shows the results of the independent sample t-test with a significance value of 0.00 is smaller than 0.05. The conclusion that can be taken is that there are differences in basic biomedical learning outcomes in class kA (control class) and class B (experimental class). Classes that were taught using the jigsaw type learning model obtained a higher average learning rate of 73.94 compared to the control class which averaged only 60.17. The results also show that the jigsaw learning model proved to be influential and effective in improving learning outcomes. This is supported by research results (Trisniati, 2012) that the jigsaw cooperative learning model is influential in improving student learning outcomes.

Based on the analysis of research results proved that the jigsaw cooperative learning effect could improve the learning outcomes of basic biomedical courses. This is because with the cooperative model of jigsaw students studying the material more deeply. Students study a material topic within a group of experts until they fully understand and then explain the material they are studying to members of the original group. When in the group of origin, each member explains the topics he has learned in the group of experts and gets explanations of other topics from his friends. Thus, students study the course material several times independently. At the end of the lesson, the lecturer reviews the course material and

gives the students a chance to ask questions. Further post-testis made after they are considered to understand the material in the original group.

The results of this study are in line with (Suparman, 2014) which shows the result that the application of jigsaw type cooperative learning model on environmental pollution material can increase student activity and learning outcomes.

(Trisniati, 2012) based on the results of his research suggests that jigsaw type cooperative learning has a good effect on students' attitudes in learning. In addition to student achievement attitudes in learning also increased. It turns out that a positive attitude in learning can improve student achievement. Two things are mutually correlated.

## CLOSING CONCLUSION

Research on the influence of jigsaw type cooperative learning to improve the learning outcomes of basic biomedical subjects has concluded that (1) Cooperative learning of jigsaw type affects the learning result. The result is evidenced using statistical analysis using independent sample t-test that is 0.00 is smaller than 0.05. (2) Jigsaw type cooperative learning outcomes can improve learning outcomes in basic biomedical courses. This is reinforced by the average value of basic biomedical learning outcomes in the experimental class is greater than the control class, i.e. the average in the experimental class is 73.94 and in the control class 60.17.

## SUGGESTION

The suggestion that can be given by the researcher based on the result of this research is the jigsaw type learning model is one of the learning recommendations that can be applied to improve the learning result. However, attention should be paid to the things that teachers must prepare for jigsaw

learning to work properly. Among learning, resources must be prepared in advance so that students can learn independently.

Some further research also needs to be done to know the influence of jigsaw type learning model to other independent variables, such as student activities, student attitudes and so on. Especially research on basic biomedical courses.

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