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The Influence of Jigsaw Cooperative Learning Model on Learning Outcomes of Biology Protist Material

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ABSTRACT

Tujuan penelitian ini adalah untuk mengetahui pengaruh model pembelajaran kooperatif tipe Jigsaw terhadap hasil belajar siswa di SMA Negeri 1 Amanuban Tengah. Penelitian ini merupakan penelitian Quasi Eksperimental yang terdiri dari 2 kelas. Instrumen yang digunakan dalam penelitian ini adalah: RPP, Lembar Kerja Siswa (LKPD) dan media pembelajaran. Data yang dikumpulkan berupa tes hasil belajar. Teknik pengumpulan data dalam penelitian ini menggunakan tes pilihan ganda, pretest dan posttest. Teknik analisis data yang digunakan adalah uji-t. Hasil penelitian menunjukkan rata-rata skor hasil belajar pre-test kontrol sebesar 27,53 dan skor post-test sebesar 48,92, sedangkan pada kelas eksperimen rata-rata skor pre-test sebesar 27,38 dan skor post-test sebesar 64,30. Analisis menggunakan seluruh hasil posttest dan diuji menggunakan uji t dengan t hitung < t tabel (0,009 < 0,05) menunjukkan Ho ditolak dan Ha diterima, dari hasil tersebut dapat disimpulkan bahwa hasil belajar siswa menggunakan model Jigsaw mempunyai hasil belajar yang lebih baik dibandingkan dengan hasil belajar siswa yang menggunakan model Ceramah.

The time of the research was carried out in July-July 2023. The aim of this research was to determine the effect of the jigsaw cooperative learning model on the learning outcomes of students at SMA Negeri 1 Amanuban Tengah. This research is Quasi Experimental which consists of 2 classes. The instruments used in this research are: RPP, Student Worksheets (LKPD) and learning media, The data collected is a learning outcomes test. The data collection technique in this research used multiple-choice tests, pretests, and posttests. The data analysis technique used is the t-test. The research results showed that the average pre-test control learning result score was 27.53 and the post-test score was 48.92, while in the experimental class, the average pre-test score was 27.38 and the post-test score was 64.30. The analysis uses all posttest results and is tested using the t-test with the calculated t < t table (0.009 < 0.05) showing that Ho is rejected and Ha is accepted, from these results it can be concluded that the learning outcomes of students using the Jigsaw model have better learning outcomes than the learning outcomes of students using the Lecture model.

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INTRODUCTION

Education as a subsystem is an aspect of life that is influenced by various interrelated external aspects. In this case, political, economic, socio-cultural, defense and security, and even ideological aspects. Meanwhile, education as a system shows that education in it consists of various devices that influence each other internally, so that in the series of educational process

inputs and outputs, the various devices that influence them need to guarantee better quality education (Fakhrurrazi, 2016).

The quality of education in Indonesia is currently very worrying, this is proven by the fact that the human development index in Indonesia is decreasing. The main problem of education is the quality of education, especially relating to the inadequate availability of educators and educational staff both in terms of quantity and quality, as well as welfare, learning advice and infrastructure that is not yet available, if available it is not used optimally, educational funding that is not adequate to support learning, and the learning process is not yet effective and efficient.

The causes of the low quality of education in Indonesia include factors such as teaching staff, infrastructure, environment and others. In the teaching and learning process, students tend to learn by memorizing techniques which are recorded from the teacher's explanations and from books. The thing that causes the quality of education in Indonesia to decline is the lack of teacher initiative in implementing learning models because many teachers today still use conventional teaching styles so that many students are still lazy or bored in class, besides that, teachers also have to create a class atmosphere. comfortable and using props, playing games according to the material being taught, displaying interesting pictures, and making learning videos.

According to (Hanim, 2018), teachers as educators, apart from having to be able to create a conducive and meaningful learning process, must also be able to increase students' attention and interest in following lessons and help students use various opportunities, resources and learning media in achieving the learning objectives that have been formulated, if if this is done well by the teacher, then success in learning can be achieved.

The success of learning can be seen from the learning outcomes achieved by students. Learning outcomes are the results obtained by students after following the learning process. Learning outcomes will be better if the teacher uses certain strategies that can make it easier for students to understand the material presented. When students are able to understand the material, of course they are able to meet the Minimum Completeness Criteria (KKM) score, which is one of the benchmarks for learning outcomes. This condition causes students' activities in class to feel boring. This can result in students not understanding the material and ultimately affecting students' KKM achievement. This can be seen from the test scores, the student's KKM is 65 while the KKM value is set at 75.

Based on the results of an interview with one of the biology subject teachers at SMA Negeri 1 Amanuban Tengah, it is known that in the school process the 2013 curriculum is

implemented. In the learning process, teachers are not only focused on the lecture method but are also accompanied by presentations. Even so, student activity has not reached the 50% level so the learning process is less effective for students.

The various kinds of problems identified at SMA Negeri 1 Amanuban Tengah show the need for innovation in learning in learning by applying certain learning models, one of which is the cooperative learning model.

According to (Slavin, 2008). The cooperative learning model is a learning model where students learn and work in small groups collaboratively consisting of four people to master the material presented by the teacher. One of the cooperative learning models is the Jigsaw cooperative learning model. The Jigsaw cooperative learning model is a cooperative learning model where learning is done through the use of small groups of students who work together to maximize learning conditions to achieve learning goals and obtain maximum learning experiences, both individual and group experiences.

It is hoped that the jigsaw type cooperative learning model will be more interesting and suitable when used in Biology learning. Remembering that subjects are subjects that can be studied by dividing them into discussion points that do not require the order of delivery. The jigsaw type cooperative learning model emphasizes group discussions with a relatively small number of members and is heterogeneous in nature. The main thing that differentiates jigsaw from ordinary group discussions is that in cooperative jigsaw learning mode each individual studies their respective parts and then exchanges knowledge with their friends. In this learning model, students will have the same perception, have individual and group responsibility in studying the material provided, share tasks and responsibilities equally within the group, and can learn leadership. Jigsaw, like any other teaching method, has advantages and disadvantages.

In its implementation, jigsaw type cooperative learning has advantages and disadvantages. The advantage of the jigsaw method is that it can provide students with the opportunity to collaborate with other students, students can master the lessons being taught, each student member has the right to become an expert in their group. In the teaching and learning process students are positively interdependent, each student can complement each other. The disadvantages are that it takes a long time, smart students tend not to want to be put together with friends who are less smart, and those who are less smart will feel inferior when put together with smart friends, although over time this feeling will disappear by itself.

Several studies that were used as references in conducting this research were those conducted by (Haryana, 2012). The results obtained are that the use of the jigsaw cooperative model in environmental change and pollution material can increase learning motivation by

11.43% in cycle I and 14.29% in cycle II. Meanwhile, student learning outcomes from 50.14 to 64.85 in cycle I then increased in cycle II to 71.42.

METHODS

This type of research is included in quasi-experimental research. This research design uses the Conte group. In this design, two groups will be involved, namely the experimental group with treatment using the jigsaw cooperative learning model and the control group using the conventional learning model (which has been used by the teacher). The research design can be seen in Table 1

Table 1. Experimental design *The Randomized Pretest-Posttest Control Group*

Activity	Pretest	Implementation	Posttest
Experiment	T_1	X	T_2
Control	T_1	-	T_2

Information:

T_1 = pretest
T_2 = posttest
X = Jigsaw Cooperative Model Learning

Data Acquisition

Data Data processing is an important part of research, because by processing data, the data can be given meaning and meaning that is useful in solving problems in research. The steps taken in processing the data are as follows:

1) The Normality Test aims to determine whether the data population is normally distributed or not (Siregar, 2014). In this research, the normality test was carried out using the Kolmogorov-Smirnov test with the help of SPSS Version 18. Decision rule: for (α) = 0.05 If sig > 0.05, then Ho is accepted, meaning the data is normally distributed. If sig < 0.05, then Ho is rejected, meaning the data is not normally distributed.
2) Homogeneity Test

   Homogeneity Test is a test of differences between two groups, namely by looking at the differences in group variance. Thus, testing homogeneity of variance assumes that the score of each variable has a homogeneous variance (Maman Abdurahman, 2011:264). The homogeneity test was carried out using the Levene test with the help of SPSS Version 18. Decision rule: If$\boldsymbol{\alpha}$ = 0.05 greater than or equal to the Sig value. Or ($\boldsymbol{\alpha}$ = 0.05 ≥ Sig) then Ho is accepted and Ha is rejected, meaning homogeneous 68 If$\boldsymbol{\alpha}$ = 0.05 greater than or equal to the Sig value. Or ($\boldsymbol{\alpha}$ = 0.05 ≥ Sig) then Ha is accepted and Ho is rejected, meaning it is not homogeneous. (Riduwan, AdunRussiana, Enas. 2011).

3) Hypothesis testing

This research hypothesis includes a test of equality of averages originating from the pre-test and post-test using the t-test and a form of statistical hypothesis. The t-test is a parametric test and is used if the data obtained is homogeneous and normal. In this study, to test whether there is an influence of the jigsaw type cooperative learning model using protist material on the learning outcomes of class the average of two unpaired or unrelated samples. After statistical testing, the data for the two classes were normally distributed and homogeneous, therefore hypothesis testing was carried out. Hypothesis testing was carried out using the t-test with the help of SPSS Version 18. If count > table then the relationship between significant means Ha is rejected (Ha: The jigsaw types cooperative learning model using animation on protist material has an effect on the learning outcomes of class X students at SMAN 1 Amanuban Tengah.

4) Test *N-Gain*

This N–Gain test aims to determine the increase in learning outcomes between before and after learning. G is the normalized gain (N-Gain) of both classes. Smax is the maxim (ideal) score of the pretest and posttest. Spost is the posttest score, while Spre is the pretest score. The high and low normalized gain (N-Gain) can be classified as in Table 2 as follows (Sarinah, 2014)

Table 2 N-Gain Classification

N- Gain	Category
g > 0,70	Height
0,30 ≤ g ≤0,7	Currently
g < 0,30	Low

RESULTS AND DISCUSSION

Prerequisite tests are normality test and homogeneity test. Done using the program *SPSS Version 18* Kolmogorov Smirnov Normality Test Results for Pretest and Post Test Data. The results of the homogeneity test in this study were carried out to determine whether the experimental class and control class were homogeneous or not. This homogeneity calculation was carried out using the SPSS Version 18 application using a test*Levene Test (Test Of Homogeneity of Variances),* and obtained the results listed in table 3

Table 3 Homegeneity Results Research

No	Class	Data Type	Sig.	Information
1	Control	Pretest	0,242	Homogeneous
		Posttest	0,292	Homogeneous
2	Experiment	Pretest	0,059	Homogeneous
		Posttest	0,059	Homogeneous

Table 3 Showing that the results of the pre-test and post-test homogeneity tests in the control class and experimental class used the Levene Test with a significance level of 0.05, thus it can be concluded that the results of the pre-test and post-test data homogeneity tests obtained a decision namely Ho was accepted because of the pre-test results. -test 0.204>0.05 and post-test 0.105>0.05, which means the data comes from homogeneous variants. Next, the control class and experimental class data were carried out with a t test and the results obtained were as shown in Table 3. This hypothesis test used a parametric statistical test, namely the t-test with a significant level *a*= 0.05 or test*Independent-Sample Test, t*his test uses both classes which are analyzed with a normal distribution and homogeneous variance. This test is carried out with *SPSS version 18.* The hypothesis in this research is: The test results are shown in the following table.

Table 4. Results in the t-Test

Class	Say	α	Ha	To
Control		0,05	Rejected	Accepted
Experiment	0,009			

The results of the hypothesis test in Table 4 show that the table value is sig.0.009 with a significance level of 5% (0.05) with the decision that Ha is rejected and Ho is accepted. It can be concluded that 0.009 < 0.05, so the hypothesis reads "Cooperative type learning model jigsaw The protist material has a significant effect on the learning outcomes of class X students at SMAN 1 Amanubann Tengah.

Discussion

Based on the results of research in the control class and experimental class, it can be seen the results of increasing learning outcomes taken from test results, increasing student abilities and learning outcomes in class X Biology using the jigsaw type cooperative learning model. The results of this research show that there is a significant influence from implementing the learning model *jigsaw* on the learning outcomes of students on Protista class jigsaw. Where are the learning outcomes? The experimental class was higher than the control class.

Based on the pre-test results, the researcher's control class had a low average score, this was because students had not been given treatment or had not been taught material about Protista using the learning model. *jigsaw* So the pre-test score for the control class still looks lower than the experimental class. This is caused by the methods used being less varied in the learning process. Because the learning method in the classroom is controlled by the teacher who is more active than the students, and as a result the students are very dependent on the teacher, are not independent and the potential of the students is not developed properly. It can be seen that the students are active in conveying their opinions or problems they face to the teacher who is committed to delivering the material. With learning like that, students and teachers do not develop, as does the interaction between fellow students, so that it has a negative impact on learning outcomes.

In the experimental class, the researcher used a learning model jigsaw so that researchers can see an increase in learning outcomes that are higher than in the control class, the advantages possessed by students such as they are more enthusiastic in discussing and more active in discussions with their friends, are responsible for what is given by the teacher, then the students become more familiar in socializing with other students to exchange opinions and explore information about the material they each have, so that the final results of the students' post-test are more improved than before the material was taught. According to Supriono (2006).

This learning occurs when students have to account for the results of their discussions with the expert group to the parent group. When presenting not with an attitude of responsibility and confidence, it will provide less than optimal results for the parent group's understanding of the concept. Learning using the jigsaw model can help students improve their knowledge, understanding and application of the concepts being studied. The increase in knowledge and understanding can be seen from the difference in learning outcomes between the experimental class and the control class. This increase occurs because students directly search for and understand concepts and explain them back to their friends in the same group, both in the parent group and the expert group. This means that the influence of guiding jigsaw type cooperative learning improves student learning outcomes. The advantages of the jigsaw type cooperative learning model include: Providing opportunities for students to work together with other students, students can master the lessons delivered, each member of the student has the right to become an expert in their group, in the teaching and learning process students are positively interdependent, each student can complement each other. one another. Meanwhile, the disadvantages of the jigsaw cooperative learning model: It takes a long time, smart students tend not to want to be put together with friends who are less smart, those who are less smart

also feel inferior when combined with smart friends, although over time this feeling will disappear on its own.

CONCLUSION

There is a significant influence on biology learning with the learning model jigsaw, on protist material on student learning outcomes. The average value of the control class was pre-test 27.53 and post-test 49.53 and the experimental class pre-test 27.38 and post-test 64.30. From these learning results, the learning outcomes of control class students increased after giving the post test and the experimental class also experienced an increase, even higher than the control class. The learning outcomes of the control class and experimental class before and after being given treatment had different results

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