



TRENDS IN SCIENCE
AND SCIENCE EDUCATION

2017 State University of Medan
November 14th - 15th

Grand Mercure Hotel, Jl. Sutomo, No. 1, Medan, Indonesia



Muhamad Imron, 2017 "Comparison of Cooperative Learning Model of Jigsaw Type and Think Pair Share (TPS) on Biology Learning Competence of Senior High School X On Ecosystem Material and Environmental Pollution

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ABSTRACT

the results of observations that have been made in class X SMAs Kurnia Jaya Base nyirih shows that the discussion group in applied learning process of teachers has not gone well so the responsibility for students in discussions uneven and cognitive competence of learners is still low. One effort to overcome these problems is to use cooperative learning model, the model of learning jigsaw and Think Pair Share (TPS). This study aims to determine the ratio between the model jigsaw and Think Pair Share (TPS) on the competency study biology. This study is a quasi-experimental research (quasi experiment). The study population was class X SMAs Kurnia Jaya nyirih Base Academic Year 2016/2017, sampling was done by using purposive sampling and got class X1, as an experimental class I treated models, jigsaw and class X3 as an experimental class II treated TPS models. Instruments used in the form of an essay test. Data analysis techniques to test the hypotheses is t-test. results showed competence comparison study results are significant (sig <0.05) among students who study with the model jigsaw and students learn to models. think pair share It can be concluded that there is no difference to the competence of student learning outcomes. The difference is only found in classical completeness between classes using a model jigsaw with a class that uses a model polling stations. The average value of competence cognitive abilities experimental class I is 81.60 with the percentage of students who completed was 85.18% and the percentage of students who have not completed was 14.81%. While the experimental class II average cognitive ability competence is 81.09 with the percentage of students who completed was 69.23% and the percentage of students who have not completed was 30.77%. Affective and psychomotor value in both the experimental class is in the value of both categories.

Keywords: cooperative learning model, jigsaw type, think pair share, learning competence, ecosystem, pollution.

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INTRODUCTION

Education is one form of manifestation of human culture that is dynamic and full of developments. Therefore, change or development of education is a matter that should occur in line with changes in cultural life. Education that is capable of supporting future development is education which is able to develop the potential of students, so that those concerned are able to face and solve the problems facing life. Education should touch the conscience of potential or potential competence of learners in the learning process (Trianto, 2009:1). The



process to develop the education of students must in good with effective learning. Learning is a part or element that has a dominant role to realize the quality of graduate education. In the process of learning need for the approach and strategy of the learning model. Cooperative learning is one of the options in improving the learning process to improve and develop the education of students.

Based on the observations made at the SMAS, the gift of learning biology yet goes according to expectations, where the discussion process is implemented yet teacher goes well. Equitable responsibility and participation of the students in the group could not be reached due to passive students submit all task groups on his colleagues who were active, and the results of the average value of daily student has not reached the KKM set out namely 78. Data daily value of these students can be seen in table 1 below.

Table 1. The average daily value grade X on SMAS Kurnia Jaya 2016/2017 biology subjects

No	Class	The number of students	Average Daily repeats	complete
1	X1	27	68,24	55,56
2	X2	26	82,32	80,77
3	X3	28	66,08	50
4	X4	26	77,32	65,38

Source: Archive of biology teacher SMAS Kurnia Jaya class X year 2016

Discussion on teachers done four classes have an average rating, and one class of classical meets ketuntasan. This proves that not all classes are managed by using the same method. Based on interviews with biology teacher SMAS Kurnia Jaya, obtained information that the leader of the discussion in class X2 was instrumental in arranging the course of discussion and have a sense of responsibility so that the friends in his group actively participate and work together for the settlement of the problem, this leads to success in learning is very high. In contrast to XI, X3 and X4, the leader of the discussion on these three classes could not control its friends, so the sense of responsibility, participation and cooperation of the group is very less and cause the success of learning students processed X1, X2, and X3 low. Slavin (2009:252) says "it is important to choose a leader of the group discussion. This person should be selected based on leadership and organizational ability, and not just based on the academic performance only. This leader must ensure that everyone participates and that fixed the task group ". Slavin explanation States that the leaders in the discussion was very instrumental in the success of the discussion group, and proven leaders who can not control in the group discussions in class X1, X2 and X3 causing failure in the discussion group. The observations made during the students carry out discussions on a class X 1 and X 2 of the student can be seen in table 2 below:

Table 2. The observations of the discussion grade X1 and X2

Activity	X1	X2
Students who are active and many expressed his opinion and during discussions	33,33%	76,92%
Students are passive and resigned only on her friend while discussion takes place	66,67%	28,08%

Source: school observation



The problems presented above it is known that the leader of the discussion cannot control the sekelompoknya friends, led to success in the learning process is not achieved. This situation requires the existence of variations in models used for teaching and learning activities. Variations of the model of learning is needed to achieve success in the learning process as well as to enhance the sense of responsibility and participation of students in the class discussion. Jigsaw learning model and TPS is one of the cooperative model that is suitable for solving the problems above, this model demands a second student to take responsibility within the Group and participated in the discussion groups. This cooperative model is expected to make students more active in the process of learning and improving student learning outcomes.

Based on the description of the problems that have been addressed, the researchers have conducted studies on "Cooperative Learning Model Comparison Type Jigsaw and Think-Pair-Share (TPS) against a HIGH SCHOOL Biology Class Learning Competence in Material Ecosystem and environmental pollution ".

MATERIAL AND METHODS

Based on the problems and goals you want to achieve, then this research uses quasi experiment approach (a quasi experiment). Quasi experimental research is the research methods used to locate a particular influence to one another in conditions completely. This research aims to examine the relationship of cause and effect by giving one or more of the experimental group, and compare the results against one or more of the control group who did not receive treatment (Setyosari, 2010:156). Quasi experimental research accordingly used in this study because of the influence of model comparison study to know the type of Jigsaw with a model of learning type TPS against competence of students.

The design of the research used in this study is the kind of randomized control-group posttest only design. In this study there were experimental class I and class II experiment. Classroom experiments I used the learning model jigsaw and wants a class II using the learning model of TPS. After being given the treatment, second class test (posttest). The population in this research is the entire class X SMAS Kurnia Jaya except class X2 because X2 was already completely in classical, the population consists of three classes, namely class X1, X3, and X4.

The sample is a portion of the members of the population examined. Samples taken must be representative and represents what will be examined. Sampling steps are as follows:

- a. Calculate the average value of the class of the value obtained from the Biology classroom teacher.
- b. Choose a sample that has the same characteristics with the purposive sampling technique. According to Lufri (2014:155), purposive sampling is sampling which is intentionally selected based on characteristics that are required in the research.



- c. based on the calculated average, taken two classes that have on average almost the same. Based on the average of the class is then taken as a sample is a class X1 and X3.

RESULTS AND DISCUSSION

Data description: Data obtained in this research in the form of cognitive competence. Competency cognitive domain data obtained after the learning process two basic competence completed. Data taken from both models, namely models of learning and the learning model jigsaw TPS.

Data description competency cognitive domain: Cognitive competence on research data is obtained through the ultimate test in the form of a written test in the form of reserved essay given to grade the experiments I and II experiment class was held at the end of the meeting the basic competencies of each. Data research competence cognitive domain of learning students are presented in table 3.

Table 3. The average value, test Normality, test its homogeneity experiment class I and experiment class II

Parameter	Kelas		Information
	Exp I	Exp II	
Average	82,97	79,95	$\bar{X} 1 > \bar{X} 2$
Normality test	P= 0,200	P= 0,200	Normally distributed
Homogenety test	Sig 0,428		Homogeneous

Based on table 3, note that the average competence learning biology students on classroom experiments I was higher than on the experimental class II, where the average value of experimental class I is the experimental class II and 82.97 is 79.95. The second class of normality test sample, and to test its homogeneity both classes of homogeneous samples.

Table 4. The difference in the number of completeness students in the experimental class I and experiment class II

Model	The number of students	Students complete	Students are not complete
Jigsaw	27	23 (85,18%)	4 (14,81%)
TPS	26	18 (69,23%)	8 (30,77%)

Based on the research data obtained by that at the experimental class I, 85.18% of students expressed satisfaction and 14.81% of students found not completely. On the experimental class II, 69.23% students expressed satisfaction and 30.76% of students found not completely.



Testing requirements analysis: The analytical requirements test was performed before proceeding to the hypothesis test, the first test was the normality test using Kolmogorov Smirnov and the homogeneity test of variance using the Levene test with the help of SPSS software. If the data is normally distributed and homogeneous then the hypothesis testing using t test. If it is not normally distributed, it will not proceed with the homogeneity test of variance and hypothesis testing using Mann Whitney U test.

a. Normality test

Normality test on the competence value of cognitive domain is done by using Kolmogorov Smirnov test with SPSS software. The test criterion is accepted H_0 if sig. > level ($\alpha = 0,05$) and H_0 is rejected otherwise. The results of the normality test can be seen in table 5.

Table 5. Result of normality test of student learning competence

Class	competence of learning outcomes	
	Sig	Information
Experiment I	0,200	Normal
Experiment II	0,200	Normal

b. Homogeneity test

The homogeneity test of the final test scores of both experimental class I and experimental class II students used Levene test with SPSS software. The test criterion is accepted H_0 if sig. > level ($\alpha = 0,05$) and H_0 is rejected otherwise. The result of homogeneity test can be seen in table 6.

Table 6. Homogeneity Test Results of Student Learning Competence

Class	Student Learning Competencies	
	Sig	Information
Experiment I	0,428	Homogeneous
Experiment II		

Data analysis: Based on the analytical requirements test for cognitive competence data, the data obtained are normally distributed and have homogeneous variance so that it is qualified to continue the hypothesis test. The hypothesis test used for cognitive competence is t test.

The cognitive domain competence hypothesis test: This hypothesis test is used to know the difference of students' cognitive achievement competence in learning by using cooperative model of jigsaw type and cooperative model of TPS type. Testing this hypothesis using t test. The results can be seen in Table 7.

Table 7. Result of Test calculation t

Class	Rata-Rata	Sig	α	Conclusion
Experiment I	82,97	0.080	0,05	H_0 accepted H_1 rejected
Experiment II	79,95			



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Table 7, it can be seen that the result of the difference test of students' cognitive competence has $\text{Sig} > \alpha$ means H_0 accepted and H_1 is rejected. It can be concluded that there is no significant difference of cognitive domain competence between experimental class I using jigsaw pursuit model with experiment class II using TPS learning model.

Discussion: Cooperative learning is a form of learning by means of students learning and working in groups. A small, collaborative group consisting of four to six people with heterogeneous group structure (Rusman, 2012: 202). Assessment system is done to the group. Each group will be awarded (reward), if the group is able to demonstrate the required achievement.

Each member of the group will have a positive dependence on the learning process. Such dependence will then lead to individual responsibility for the group and interpersonal skills of each group member. Each individual will help each other, they will have motivation for the success of the group, so that each individual will have equal opportunity to contribute for the sake of success of the group. There are many models of cooperative model learning, such as jigsaw type cooperative learning model and TPS type learning model.

Achievement of Learning Competence in the Cognitive Domain: Based on t test conducted on the competence of cognitive domains showed that there is no significant difference between classes using jigsaw learning model and class using TPS learning model. This is because the two models of cooperative learning are jigsaw and TPS models have no significant difference, except in group discussion process. The process of group discussion that has been implemented by the students, seen each member of the group to help each other and give each other motivation for the success of the group. This is supported by the opinion of Sanjaya (2008: 242-243) stating that every individual will have equal opportunity to contribute for the success of his group.

Jigsaw type cooperative learning model and TPS also has three stages of learning, which in the first stage in the learning model has similarity is the same as thinking. However, in the second stage there is little difference, namely the type of jigsaw of the origin group and group of experts to discuss, whereas in the type of TPS, students only discuss and pair (pair) with a group of friends. Basically in this stage there are similarities in which each student conducts a discussion process with other group members. Students from Jigsaw and TPS classes will try to gather as much information as possible to complete the tasks assigned by teachers by working together. In accordance with the opinion of Lie (2008), that cooperative learning is a learning that prioritizes cooperation in groups to achieve common goals.

The final stages of cooperative learning model of Jigsaw and TPS types also have similarities, namely to provide information obtained from the discussion and cooperation. In the Jigsaw type, students return to the initial group to provide results and information obtained from the expert group, whereas in the TPS type the students re-assemble with other members in one group to inform the results of the discussion and share it in front of the class. The learning process in jigsaw and TPS models is assisted with books and material summaries already available. In addition students are also given LDS in the form of questions to be answered and discuss in group discussions. LDS questioning is adapted to the learning model



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used in jigsaw and TPS. The first stage of the jigsaw learning model of each student in the group will be given different questions and is responsible for answering the problem and studying it. The second stage of another group member who gets the same problem meets in a group of experts and discusses it, then in the third stage each member of the expert group will return to the group and each of them has the task of teaching a group of friends.

TPS type cooperative learning process, all students will get the same problem from the teacher, then the teacher instruct all students to think about the given problem (think). Furthermore, the teacher will ask the students to pair (pair) on a friend sebangkunya, at this stage students will discuss what has been obtained from the stage of thinking. The next stage is sharing, this stage the teacher will ask the students to share with the whole class about the topic / material they have discussed. Based on the observations of the class discussion group jigsaw and TPS showed that students are very enthusiastic in working on LDS, helping each other and motivate friends of a group. This is able to improve student learning outcomes, in accordance with the objectives of cooperative learning is to improve student learning outcomes. Muraya and Kimamo (2011) revealed that cooperative learning can improve the academic achievement of secondary school students in the field of biology compared with ordinary learning, in this study there is also no significant influence between male and female students.

Based on the grade point average using the jigsaw model is higher than the class using the TPS model. This is in line with the research that has been done by Lestari and Djumadi (2013) which states that, jigsaw class is better than TPS class but there is no significant difference. Besides, the KKM of students in the jigsaw class is 85.18% greater than the KKM of TPS class students that is 69.23%. This is because the jigsaw learning model has one of the advantages over the TPS model, namely in the discussion process all students are required to be active in the discussion and in the process of group discussion is not dominated by certain students only. Other factors that cause differences in students' mastery of grades in jigsaw and TPS classes, namely at the time of formation of groups and processes of students in obtaining the material. The formation of the jigsaw learning model group is determined by the teacher (researcher), so the group formed is a truly heterogeneous group because students can not define their own group based on close friends, intelligence, and so on. In addition to the model of learning jigsaw students are grouped into teams of experts and teams of origin, so that the material learned in each individual or group really understand it. In addition, the stages of cooperation on the Jigsaw learning model of the expert group helps students to complement and consolidate all information about the topics they get, so that when the discussion ends, each group member can deepen the mastery of the concept of the material (Slavin, 2011).

The formation of a group of TPS learning models is determined on the basis of student seats, while the pair of seats is composed of multiple partners of equal ability. Like highly skilled students sitting with highly skilled students, students are capable of being in pairs with moderately capable students and low-ability students pair with low-ability students, so high-ability students can not help other low-ability students in the learning process. This affects students' success in a classical way. In addition, the material obtained in the TPS type is not as optimal as the jigsaw learning model because students learn based on questions posed by teachers (researchers). In the learning of the TPS model, the discussion conducted by each



group member is limited only in the group by pairing, so that the information obtained is also limited and when re-meet with all members of the group, the information obtained is not as complete as the information obtained in the jigsaw group (Huda, 2011). This learning process that causes the difference between jigsaw and TPS learning model on the results of students' learning class X SMAS Kurnia Jaya.

Based on the above analysis, although there are differences and disadvantages and advantages of cooperative learning model type Jigsaw and TPS, it can not be separated from the purpose of cooperative learning model is positive interdependence, work in group, individual responsibility, and skill. In addition, learning situations with heterogeneous groups provide opportunities for students to interact more widely and collect as much information as possible because in one group there is one student who has good achievement that can help other students. Students can also be motivated and learn more responsibly by assigning assignments to each student to look for the topic assigned to the group.

CONCLUSION

Based on the results of research and discussion that has been done then obtained the following conclusions. The competence of the cognitive domain between the classes using the jigsaw learning model and the class using the TPS learning model there is no significant difference.

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