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Application of Integrated Cooperative Model (Jigsaw and TGT) In Chemical Learning

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Abstract: **The success of the learning process cannot be separated from the ability of learners and the ability of teachers to create a condition that processes the learning process for mental development and understanding of students on the subject matter. The weakness in the process of learning chemistry is the dominance of teachers that impact on the lack of activity and critical attitude of students who reflected on the resignation of students accept the concept presented teachers without attempts to examine further through the submission of questions. SMKN 5 Makassar one of the leading SMK in Makassar. The average score of student learning outcomes is 70.4. Thus the average value of student learning outcomes of 70 still need to be improved. The purpose of this study is to describe Implementation of integrated cooperative model (JIGSAW and TGT) to improve student learning outcomes X Grade SMKN 5 Makassar. The approach used is qualitative and quantitative approach with classroom action research type which is analyzed descriptively. The result of the research shows that the application of integrated cooperative learning model of Jigsaw and TGT is done well. Likewise student learning outcomes have increased from cycle I to cycle II.**

Keywords: **Model, Co-operative, Integrated, Jigsaw, TGT.**

1. INTRODUCTION

Learning process activities are the most fundamental of the whole process of education in schools. This indicates that the success of educational goals depends largely on the learning process (Yanti Purnamasari, 2014).

So far, the learning process of chemistry in SMKN 5 Kota Makassar still use less activating method of students, which only emphasize on the achievement of curriculum and the delivery of theory only and not develop the ability of learning and building individual. This condition will not grow the aspect of ability and activities of students, so that teachers are considered not successful in improving student learning outcomes. Teachers should be able to choose and or combine several learning techniques that can refer to curiosity and motivate students to be actively involved in the learning process.

Although scientifically there are changes (development), but the reality in the field still shows the opposite phenomenon that is still a lot of teachers oriented to the teacher centered, that is the teacher still emphasizes on his role as a messenger subject matter. As a result the educational process is still centered on listening activities not yet on the interpretation of the meaning being learned and the learning atmosphere has not provided an opportunity for students to develop and demonstrate their diverse abilities.

SMKN 5 Makassar including the leading SMK in Makassar City However, the results achieved by students are still not maximized. The average value of students' learning outcomes X Grade SMKN 5 Makassar is 70.4. The value is obtained from the number of values 2535 divided by the number of students 36 people. Thus, the average score of student learning outcomes of 70 still needs to be improved.

The main weakness that is still visible in the learning process of chemistry is in the process of learning chemistry remained dominated by teachers so that the impact on the lack of student activity in the learning process. Another

weakness that can be identified is the lack of critical attitude of students in the learning depicted in the resignation of students to accept just all the concepts presented by the teacher without any attempt to try to further explore. It also has an impact on learning evaluations that encourage students to seek the only appropriate answer and lack confidence in their own thoughts (Putu Enny Rusmawati, I Made Candiasa, I Made Kirna, 2013; Ummi Rosyidah, 2016; Meina Noriyana, 2013; Anna Farhiya Ulfah, I Ketut Mahardika, Agus Abdul Gani, 2015).

One effort that can be done by teachers to support the achievement of student learning outcomes according to the phenomenon is to implement cooperative learning model because cooperative learning model gives opportunity to students to cooperate with other students in structured tasks. In addition, in cooperative learning train students to accept differences of opinion and work together to help each other in performing certain activities to solve problems encountered (Amry Sukmawan, 2013; Rini Dewi Safitri, Mardiyana, Budi Usodo, 2016; Luthfiana Mirati, Riyadi, Imam Sujadi, 2015; Endang Eny Astutik, 2016).

The jigsaw and TGT learning types can be integrated into an integrated cooperative learning model of jigsaw and TGT that provides a better learning environment so that learning outcomes are better (Hamsina, 2016). Thus, the exposure to the learning conditions of chemistry in SMK and the description of Jigsaw and TGT integrated cooperative models have an impact on the learning activities, self-reliance, cooperation, respect for others, self-control, sportsmanship, and motivation of peers can be improved through the implementation of the Cooperative Model integrated Jigsaw and TGT in chemistry learning.

2. RESEARCH METHODS

This research is a classroom action research (CAR) that is designed in a cycle consisting of two cycles through the stages of planning, implementation, observation, and reflection. This research uses qualitative and quantitative approach which is analyzed descriptively. The tools and materials used in this research are preparing 4 material topics, about tournaments, playing cards, key answer cards, tables for 4, 3, and 2 players, scoring guidelines, tournament tables, and rewards that will be prepared for the winners.

Place of research conducted in class X Picture Building SMK 5 Makassar City. The chemistry teacher at the school acts as a classroom practitioner and other researchers act as observers. Data were collected by using test technique for learning result data and non-test technique in the form of observation sheet to obtain data on implementation of integrated cooperative model by observing teacher and student activity.

The focus of research on Implementation of Jigsaw Cooperative Model and Tournament Games Team in Chemical Learning is Implementation of merging two Jigsaw and TGT learning techniques that are mixed into one cooperative learning model integrated in chemistry learning. Another focus is on student learning outcomes in chemistry subjects obtained on the basis of the test scores of student learning outcomes given at the end of the meeting in each cycle.

The analysis technique used is descriptive analysis to determine the score of student learning outcomes with the indicator that states successful if it has reached 80% the number of students have classically reached KKM. In addition to the implementation of integrated cooperative model used observation sheet of teachers and students with the implementation of 100% learning steps. Expressed successfully if 80% of each step is done with good category.

Stages of planning are done by making RPP, media, and other tools used in learning. Furthermore, at the stage of implementation is done with the stage that begins the percentage of teachers, giving quizzes, forming heterogeneous groups based on achievement differences, Giving 4 topics each group, forming groups of Experts (same topic), group work, return to origin group, each person percentage in his group each in turn, tournaments (representatives of groups of equal rank), determining the winning group, and awarding.

3. RESEARCH RESULT

Implementation of integrated cooperative learning model jigsaw and TGT in chemistry learning In cycle 1 of learning process in class X GB SMKN 5 Kota Makassar shows that the application of integrated cooperative learning model Jigsaw and TGT by teacher performed 100% with teacher activity equal to 77,78%. student activity of 69.44%.

The average value of learning outcomes of students of class X GB SMKN 5 Makassar City is 70.972 the number of 2555 divided by the number of students 36 people. The biggest scores achieved by students with a score of 95 and the lowest

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score is 60. Thus the average value of student learning outcomes in cycle 1 of 70.972 For more details can be described categories of value based on the test score of student learning outcomes, the frequency distribution and percentage obtained in the table 1. is as follows:

Table 1. Frequency Distribution and Percentage of Learning Outcome Scores in Cycle

Score	Categories	Frequency	Percentage (%)
90-100	Very High	2	05,56
80-89	High	8	22,22
65-79	Medium	17	47,22
55-64	Less	9	25
0-54	Very Less		
Total		36	100

Source: the results of data processing in cycle 1

The frequency distribution table and the percentage of learning result score indicate that from 36 students 2 people are categorized as very high, 8 people are categorized as high, 17 people are categorized as being, 9 people are categorized less and no category is very less.

The reflection materials in cycle I are as follows:

a. Her friends learn, and there are also students who are active in doing LKS, this is because there are some students who have low cognitive ability, slow to think, so that active in the group only smart students. Teachers have carried out the learning process in accordance with the scenario in the RPP and in accordance with the steps of Jigsaw and TGT integrated cooperative learning model starting with the explanation of Integrated cooperative model (JIGSAW and TGT), Teacher Percentage, giving quizzes, forming heterogeneous groups, giving several topics each groups, forming expert groups, expert group work, returning to origin groups for percentages, tournaments, determining winning groups, awarding, and conclusions but they are not yet optimal because they are still relatively new for the students so they still need help and guidance.

b. Implementation of the learning process still lacks of teachers when implementing learning steps integrated cooperative learning model Jigsaw and TGT, where in doing the quiz, group formation process, and still need to be guided in organizing tournaments, so that the indicator is done 77.78% or sufficiently categorized. So it needs to be improved and improved again in cycle II.

c. The material given by the teacher is in accordance with the real-life context and the experimental activities provided are also in accordance with real-life every day, but less challenging for the students.

d. Student activity is still considered less in following the learning process, there are still students who are less serious in learning, some of them just sitting and looking.

e. In presenting the results of works such as reports of observations, tools / learning media, there are still students who like to imitate the work of his friend, is due to lack of habituation to create a work in the learning process. The students who often forget the material taught, so that when the teacher asks students to conclude the learning outcomes, then some students just silent while students who are classified smart who always give ideas / opinions or provide answers and conclude the material.

f. As a result has been accustomed to learning by lecture method so that initially there was some rigidity in activating students, especially for the activities in the field. This results in an increase in the time spent on each meeting.

g. Students who are also accustomed to lectures are also rather rigid performing every activity. Even those who used to do the lab work in high school also find this activity is rather new because it is not too clear steps that will be done as a practicum "cook book" that has been implemented.

h. A very positive thing is the emergence of higher students in conducting each activity. Questions raised, and their scientific attitudes challenged to be developed further.

In cycle II shows that the indicator of learning process with TGT technique of 86.67% is expressed as good category. While at the second meeting shows that the indicator of learning process implementation with integrated cooperative

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learning model jigsaw and TGT is 94.44% and stated as good category. A total of 12 indicators implemented and no longer in the category less. 36 students' activity after applying integrated cooperative learning model jigsaw and TGT cycle II showed that from 12 indicators of observation, 7 indicators were categorized well, 5 indicators were categorized enough.

Learning outcomes in the students of class X GB SMKN 5 Makassar City implemented by providing a written test. Based on the results of descriptive analysis of the test results of student learning outcomes in cycle II in science subjects after the implementation of integrated cooperative model jigsaw and TGT the average value of 77.78 obtained from the number of 2800 divided by the number of students 36 people. Can also be described that the scores achieved the greatest students with the highest score of 95 and the lowest score 65. The average value of students in this second cycle is 77.78 fall into the category of being and yet classical on cycle II has been declared because the classical already exceed 80% to get value 70.Dengan individually the remaining 2 people who have not completed. For more details can be described categories of value based on five groups that have been established based on the score of student learning outcomes, then the distribution of frequency and percentage, which is described in table 2. is as follows:

Table 2. Frequency Distribution and Percentage of Learning Results Score in Cycle II

Score	Categories	Frequency	Percentage (%)
90-100	Very High	5	13,89
80-89	High	14	38,89
65-79	Medium	17	47,22
55-64	Less	-	
0-54	Very Less	-	
Total		36	100

Source: the results of data processing in cycle II

The distribution table and percentage above shows that from 36 students of X Grade X SMKN 5 Makassar after chemistry learning through the implementation of Jigsaw and TGT integrated cooperative model are 5 students who are in very high category or equal to 13, 89%, 14 students are located in the high category of 38, 89%, 17 students are in the moderate category of 47, 22%, and no students are in the category of less and very less. This means showing that the average student learning outcomes increased after applied learning model co-operative integrated jigsaw and TGT on chemistry subjects. The score has been in high category with the mean score of 77.78 students and no students who score below 70. Thus the implementation of class action research (PTK) to know efforts to improve student learning outcomes in chemistry subjects in class X GB SMKN 5 Makassar City after implemented model integrated jigsaw cooperative learning and TGT, has been successful in the implementation of cycle II. This indicator of success of classroom action research (PTK) is if there is an increase in student learning results obtained a minimum score of 70 on chemistry subjects through the application of integrated cooperative learning model jigsaw and TGT on all students is greater than or equal to 80% have achieved the classical criteria mastery minimum (KKM). Thus classroom action research (PTK) is considered successful.

The result of reflection on cycle II is as follows:

a. The learning process has shown lessons by using the steps of integrated cooperative learning model jigsaw and TGT. This is indicated by teacher activity and student activity which generally are in good category.

b. In general, teachers apply the lesson has been shown in accordance with the plan made before and the material presented in accordance with the real circumstances that exist around the students, so that students feel useful for themselves and happy in learning.

c. The material presented by the teacher is in accordance with the real-world context in everyday life, and the problems given are challenging and clear to the students, so the students easily understand with the material.

d. Students in following the learning process look active, where students are very enthusiastic when define the problem and work in groups, students are also active at the time of doing activity sheet learners (LKPD), conduct experiments, observations and also presents the work. And proven at the time of doing the test result of learning classically student expressed and have reached the success indicator that have been determined.

e. The results of study on cycle II have shown that the research that has been done has achieved the success as expected. Based on the results of observation of learning through TGT technique for teachers obtained data that on the second cycle of this activity teachers have (optimal attachment. While from the observation of student activity can be stated that in general the student activity is in good category. data result of student understanding analysis on evaluation cycle II shows the average value of students has reached 94.44%, this result has reached the minimum criterion value criteria (KKM) is 70 of 36 students.

3. CONCLUSION

Based on the results of research and discussion that has been stated above, it can be concluded that the application of integrated cooperative learning model Jigsaw and TGT shows the implementation of learning steps reach 100%. In addition, there is an increase in the activity of teachers and students from the category enough to be a good category in chemistry learning in class X Building image (GB) SMKN 5 Kata Makassar. Likewise on student learning outcomes have increased from cycle I to cycle II of the completeness of 75% to 94.44% mastery. Percentage of completeness obtained in cycle II has exceeded the minimum completeness criteria. Therefore, in cycle II this research is stated to have succeeded.

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