

## **Application of Student Team Achivement Divition (STAD) Cooperative Learning and Jigsaw Type on Learning Outcomes**

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### **Abstract**

This study aims to determine whether there is a difference in the application of Student Team Achievement Division (STAD) and Jigsaw Type Cooperative learning on student learning outcomes in terms of learning creativity. The research method used was a 2 x 2 factorial experimental design. The research sample was students of SMPN 7 Tambun, Bekasi. The instruments used were tests for learning outcome variables and questionnaires for learning creativity variables. The research findings Learning outcomes with learning creativity given the Jigsaw learning model are higher than the learning outcomes of students with high learning creativity given the STAD learning model. 903,7. This difference is also very significant by the value of tcount = 3.26 which is greater than ttable = 2.62 for  $\alpha = 0.01$

Kata kunci: Creativity, Jigsaw, STAD.

## **1 INTRODUCTION**

The ability to learn that humans have, is a very basic provision. Based on this ability, mankind has developed over the past centuries and there are still wide opportunities for him to enrich himself and reach a higher level of culture. With the ability to learn, humans finally understand a problem that is thought of logically. In connection with the cultivation of values, attitudes and personality as mentioned above, provision to students in Indonesia is carried out through civic education so that with the subject program it is hoped that students can develop their creativity in cooperation in various fields of life. Creativity is a form of mental activity, namely an understanding that occurs inside a special person. (Ade; 2013) According to West (2000) creativity is the integration of knowledge from different fields of experience to produce new ideas or develop better ideas. Another opinion expressed by Torrance cited by Burden and Byrd (1999) creativity is as a process of creating opinions or hypotheses centered on ideas, testing hypotheses, modifying and retesting hypotheses and communicating the results. The same thing was stated by Utami Munandar (2009) who said that creativity is the ability to develop ideas in creating new products. According to Amabile (2000) in developing creativity a number of certain personality traits need to be developed because creativity itself consists of the ability to think (aptitude trait) which then interacts with certain personality traits (nonaptitude trait) in an environment.

Teachers as implementers of education are challenged to think logically, critically, creatively and reflexively in improving the quality of learning. Teachers are really required to develop ways of teaching and learning processes that can improve learning outcomes. The utilization of learning methods in the teaching and learning process will help students in developing insight, memory, students' ability to solve problems, and student creativity to explore the lessons they follow. (Pudjiastuti; 2018) The right learning method is of course one that can be manipulated, can be seen, can be heard and read. But what is more

important than the learning method is that it can be used to channel students' ability to solve problems, so that it can stimulate students' thoughts, feelings, attention and interests and attention in such a way that the learning process occurs. (Pudjiastuti & Rumiati: 2019) Creative thinking is connecting new ideas or things that were previously unrelated. Creative thinking is called divergent thinking mentioning lateral thinking. In this divergent thinking there are many possible answers to problems and the mind is encouraged to spread and expand in finding ideas to solve problems. (Hawadi; 2001)

One form of learning that is oriented towards a constructivist approach is cooperative learning of the Student Teams Achievement Divisions (STAD) model. (Slavin; 2008) Cooperative learning of the STAD model is characterized by a structure of cooperative tasks, goals and rewards. Students work together in a cooperative learning situation and spirit such as requiring cooperation to achieve a common goal and coordinate their efforts to complete the task. (Hamdayama; 2015) Some experts state that cooperative learning models are not only superior in making students understand concepts but also help students foster cooperation skills, critical thinking and develop students' social attitudes. The use of cooperative learning, especially the STAD model, has the advantage of being able to motivate students in groups so that they help each other in mastering the material presented, besides that STAD learning can also foster an awareness that learning is important, meaningful and fun, students are more responsible in the learning process, and the emergence of positive attitudes of students in learning the material presented.

Another cooperative learning model is the Jigsaw model. According to Arends (2012), jigsaw learning is one of the cooperative learning models consisting of heterogeneous learning teams of 4 to 6 students. The academic material is presented in text form and each student is responsible for the assignment of part of the learning material and is able to teach that part of the material to other team members. In the jigsaw type cooperative learning model, students are given the opportunity to collaborate with other friends in the form of group discussions to solve a problem. Each group has heterogeneous academic abilities so that there will be high-ability students, two or three medium-ability students, and one low-ability student.

The principles of active student learning require the realization of learning activities that are able to involve intellectual, emotional, and physical aspects optimally. (Dwi S; 2012) Conny Semiawan, et. al. In Rahmawati (2005) said that if we want to activate students in learning we should make lessons that challenge, stimulate creativity to find and impress. Student creativity is needed in the teaching and learning process. If during the teaching and learning process students are not creative, students tend to be lazy to learn and lazy to accept lessons from teachers so that it will affect student learning outcomes. Currently, student creativity at SMPN 7 Tambun Selatan Bekasi is still low. This is evidenced during classroom observations in Civics subjects on the material of cooperation in various aspects of life tend to be passive and tend to be silent when they cannot understand the material / cannot do the questions. They are embarrassed to ask the teacher or peers. Only 20% of all students in the class were active in the teaching and learning process. This is because students have not been creative to learn Civics on the material of cooperation in various aspects of life. In the learning process, students should not be passive, but must be active and creative in learning. Students can develop their own understanding, so that students' abilities and potential can be explored and developed. To explore this potential, and in the context of efforts to improve learning outcomes on the material of cooperation in various fields of life.

The alternative that is done to anticipate these problems is to use learning strategies that are varied, fun and can make students more creative to learn the material of cooperation in various aspects of life, which is applied during the teaching and learning process in groups so that it can improve student learning outcomes on the material of cooperation in various aspects of life. Therefore, researchers are interested in conducting research using cooperative learning strategies of the Jigsaw and Student Team Achievement Divisions (STAD) types. By using these cooperative learning strategies, students can practice thinking skills and social skills, such as expressing opinions, receiving

suggestions/input from others, cooperating, being loyal to friends. Students are no longer the object of learning but can also be peer tutors for other students so that students can be creative to learn more actively and ultimately can improve student learning outcomes. Jigsaw type cooperative learning strategy is a learning strategy where there are study groups and expert groups by dividing large units of information into smaller components. Meanwhile, the Student Team-Achievement Divisions (STAD) type cooperative learning strategy is the simplest group learning strategy and a group learning strategy that encourages students to encourage and help each other to master the material taught by the teacher. By using both types of cooperative learning, it is expected to improve student learning outcomes in terms of student creativity.

Learning outcomes are the results obtained by students after following one particular material and subject in the form of quantitative or qualitative data. Learning outcomes are obtained from test results. Learning outcome test is a process to determine the value of student learning through assessment activities and or measurement of learning outcomes. (Iskandawasid; 2008) Sudjana (2001) suggests that success in teaching and learning can be measured in two aspects, namely: in terms of the learning process and learning outcomes. The learning process means that the success of teaching lies in the learning process in the success of student learning, while student learning outcomes are obtained as a result of the learning process.

## **2 RESEARCH METHODS**

The method used in this research is to use the experimental method. In this study using a 2x2 factorial experimental design research design. In this design, each independent variable has two levels. The independent variable of learning outcomes from the application of the STAD and jigsaw models. The attribute variable of student creativity consists of high and low. The experimental design has sufficient control power to eliminate the influence of external variables, namely variables that can control external variables and will strengthen internal validity. Internal validity is an effort to control the experimental process so that the effects caused are truly caused by conditioned treatment. (Pudjiastuti: 2019). The population in this study were students of SMPN 7 Tambun Selatan Bekasi. With a total population of 444 students, with details of grade 7 totaling 179 students, grade 8 totaling 130 students, and grade 9 totaling 135 students. The subject population in this study was carried out in grade 7, with the consideration that grade 7 is the lowest grade so that all students have initial competencies that must be monitored as well as their creativity. Sampling in this study was determined based on the characteristics of students in equivalent classes seen from the activity and creativity in learning based on the experience of researchers and other teachers who teach. So the samples were class 7 C as the experimental class and 7 D as the control class. In this study, researchers used test instruments for student learning outcomes variables and for student creativity variables measured by behavioral scale questionnaires.

The data analysis used includes data analysis with descriptive statistics, data analysis with inferential statistics and the analysis requirements test. Descriptive statistics are statistics used to analyze data by describing or describing the data that has been collected as it is without intending to make generally applicable conclusions, Sugiyono (2012), inferential statistics are statistical techniques used to analyze sample data and the results are applied to the population (Sugiyono; 2012). Inferential statistics are concerned with data modeling and decision making based on data analysis, for example hypothesis testing.

## **3 RESULT AND DISCUSSION**

### 3.1 Description of Research Data

Research data was obtained for the purpose of describing the research data. The research data consisted of: (1) student learning outcomes on the material The importance of cooperation given the Jigsaw learning model which has high learning creativity, (2) student learning outcomes given the STAD (Student Teams Achievement Devision) learning model which has high learning creativity, (3) student learning outcomes given the jigsaw learning model which has low learning creativity, (4) student learning outcomes given the STAD (Student Teams Achievement Devision) learning model which has low learning creativity. The data of each group can be seen in the summary table of research results described in the table below:

Tabel 1  
Summary of Research Data Results

| Learning Creativity | Ket.           | Learning Model |           | Total    |
|---------------------|----------------|----------------|-----------|----------|
|                     |                | Jigsaw (A1)    | STAD (A2) |          |
| High (B1)           | n =            | 15             | 15        | 30       |
|                     | $\Sigma Y =$   | 903.667        | 753.5     | 1657.167 |
|                     | $\bar{Y} =$    | 60.24          | 49.87     | 55.06    |
|                     | SD =           | 9.17           | 9.05      | 9.11     |
|                     | Var =          | 84.14          | 81.84     | 82.99    |
|                     | $\Sigma Y^2 =$ | 55618.9        | 39046.5   | 94665.4  |
|                     | $Y_{\max}$     | 70             | 69        | 70       |
|                     | $Y_{\min}$     | 43             | 32        | 32       |
| Lowly (B2)          | n =            | 15             | 15        | 30       |
|                     | $\Sigma Y =$   | 748            | 702       | 1450     |
|                     | $\bar{Y} =$    | 50.5           | 46.80     | 48.65    |
|                     | SD =           | 7.53           | 7.04      | 7.28     |
|                     | Var =          | 56.63          | 49.60     | 53.11    |
|                     | $\Sigma Y^2 =$ | 38446          | 33548     | 71994    |
|                     | $Y_{\max}$     | 69             | 62        | 69       |
|                     | $Y_{\min}$     | 42             | 38        | 38       |
| Total               | n =            | 30             | 30        | 60       |
|                     | $\Sigma Y =$   | 1651.667       | 1455.5    | 3107.167 |
|                     | $\bar{Y} =$    | 55.37          | 48.33     | 51.85    |
|                     | SD =           | 8.35           | 8.04      | 8.20     |
|                     | Var =          | 70.38          | 65.72     | 68.05    |
|                     | $\Sigma Y^2 =$ | 94064.9        | 72594.5   | 166659.4 |
|                     | $Y_{\max}$     | 70             | 69        | 70       |
|                     | $Y_{\min}$     | 42             | 32        | 32       |

Information:

n = number of samples

Y = Learning Outcome Score

SD = Standard Deviation

Overall, the sample of learning outcomes of SMPN Class IX students had the lowest score of 32 and the highest score of 70 with an average score of 51.85 and a standard deviation of 8.20 then if grouped into the following 5 group categories:

| Interval                              |                   | Kategori  |
|---------------------------------------|-------------------|-----------|
| $X < \bar{X} - 2SD$                   | $= X < 35,45$     | Very low  |
| $\bar{X} - 2SD \leq X < \bar{X} - SD$ | $= 35,46 - 43,65$ | low       |
| $\bar{X} - SD \leq X < \bar{X} + SD$  | $= 43,66 - 60,05$ | curently  |
| $\bar{X} + SD \leq X < \bar{X} + 2SD$ | $= 60,06 - 68,25$ | high      |
| $X \geq \bar{X} + 2SD$                | $= X \geq 68,26$  | very high |

From the table above, the distribution of overall student learning outcomes scores is obtained as in table 2 below:

Tabel 2  
Distribution of Student Learning Outcomes Score  
Class IX SMPN 7 Tambun Selatan Bekasi

| Kategori  | Frekuensi | Frek relatif |
|-----------|-----------|--------------|
| Very low  | 1         | 1,67         |
| Low       | 16        | 26,67        |
| curently  | 29        | 48,33        |
| High      | 10        | 16,67        |
| very high | 4         | 6,67         |
| Jumlah    | 60        | 100          |

From the table it can be seen that overall students with moderate learning outcomes (medium, high and very high) are 71.67% and the rest have low learning outcomes.

### 3.2. Testing Data Analysis Requirements

The use of two-way Anava for the purposes of testing research hypotheses is preceded by testing the requirements of data analysis which consists of testing normality and homogeneity.

#### Normality Test

Normality test aims to determine whether the sample comes from a normally distributed population or not. Based on the results of the normality test calculation for the learning creativity variable and the learning outcomes variable, the  $L_0$  value is smaller than the  $L_{tabel}$  at a significant level  $\alpha = 0.05$  so there is no reason to reject  $H_0$ . This shows that all data groups in this study come from normally distributed populations. The results of the Liliefors test calculation can be seen in the following table 3.

#### Uji Homogenitas

The next analysis requirement that must be done is the homogeneity test which aims to determine whether the variance is homogeneous. Testing the homogeneity of student learning outcomes scores in each sample group was carried out using the Harley test with a significant level of  $\alpha = 0.05$ . The test criterion is to reject  $H_0$  if  $\chi^2 \geq \chi^2(1 - \alpha)(k-1)$  where

$\chi^2(1 - \alpha)(k-1)$  is obtained from the chi-square distribution list with odds  $(1 - \alpha)$  and  $dk = k-1$ .

Tabel 3  
Summary of Normality Test Calculation Results

|                     | amount (n) | L <sub>count</sub><br>(L <sub>0</sub> ) | L <sub>tabel</sub><br>(L <sub>t</sub> ) | Conclusion |
|---------------------|------------|-----------------------------------------|-----------------------------------------|------------|
| Learning Creativity | 30         | 0,139                                   | 0,161                                   | Normal     |
| Learning outcomes   | 30         | 0,158                                   | 0,161                                   | Normal     |

Tabel 4  
Summary of Homogeneity Test Calculation Results

| Variabel            | amount (n) | L <sub>count</sub><br>(L <sub>0</sub> ) | L <sub>tabel</sub><br>(L <sub>t</sub> ) | Conclusion |
|---------------------|------------|-----------------------------------------|-----------------------------------------|------------|
| Learning Creativity | 30         | 56,627                                  | 7,815                                   | Normal     |
| Learning outcomes   | 30         | 84,412                                  | 7,815                                   | Normal     |

Overall, the analytical requirements for normality and homogeneity testing have been met so that the research hypothesis testing can be continued.

### 3.3. Hypothesis Testing

Based on the requirements test that has been carried out above which results in that the sample data is taken from a normally distributed population, and the sample groups each come from a homogeneous population, the analysis continues with testing the research hypothesis. Testing is done with two-way ANOVA. The test was conducted on the score of student learning outcomes between students who were given the jigsaw learning model and those given the STAD (Student Teams Achievement Devision) learning model. The interaction between the level of learning creativity and the type of learning model used. If there is a difference and interaction in the main effect, the analysis is continued with a pair t test to test the simple effect. This test aims to find out which group is more influential than the groups being compared.

#### 3.3.1. *Student Learning Outcomes on Cooperation Materials in Various Fields of Life Given Jigsaw and STAD (Student Teams Achievement Devision) Learning Models*

The first hypothesis proposed in this study is "Students' learning outcomes on the material of cooperation in various fields of life given the jigsaw learning model are higher than those given the STAD (Student Teams Achievement Devision) learning model". The difference in student learning outcomes on cooperation material in various fields of life can be seen from the results of ANOVA, obtained the average score of student learning outcomes with the Jigsaw learning model 114.33 and student learning outcomes with the STAD (Student Teams Achievement Devision) learning model of 109.20 and obtained  $F_{\text{count}} = 8.416$  on differences between columns, while  $F_{(0.99; 1.56)} = 7.12$ . Thus the proposed null hypothesis is rejected because  $F_{\text{count}} > F_{\text{table}}$ , which means that the comparison is very significant. In

other words, student learning outcomes with the jigsaw learning model are higher than with the STAD (Student Teams Achievement Devision) learning model.

To find out which jigsaw learning model has a greater effect on learning outcomes of students on the material of cooperation in various fields of life can be seen from the average score of student learning outcomes of groups of students given the jigsaw learning model and students given the STAD (Student Teams Achievement Devision) learning model. From the calculation, the average score of student learning outcomes given the A1 Jigsaw learning model  $\bar{Y}_{A1} = 114,33$  while students given the STAD (Student Teams Achievement Devision) learning model have an average score of  $\bar{Y}_{A2} = 109,20$ . It can be seen that  $\bar{Y}_{A1} > \bar{Y}_{A2}$  it can be concluded that the learning outcomes of students on the material of cooperation in various fields of life given the Jigsaw learning model are higher than those with the STAD (Student Teams Achievement Devision) learning model ".

### *3.3.2. Interaction between Learning Model and Learning Creativity on Learning Outcomes on Cooperation Material in Various Fields of Life.*

The second hypothesis proposed in this study is "There is an interaction effect between learning creativity and the learning model given. From the ANOVA results, it turns out that there is an interaction between learning creativity and the learning model given to students of SMPN 7 Tambun Selatan Bekasi. The existence of this interaction (a x b) can be seen from the ANOVA results, namely  $F_{\text{count}} = 62,01$ , while  $F_{(0,99; 1,56)} = 7,12$  so that  $F_{\text{count}} > F_{(0,99; 1,56)}$  which means there is a very significant interaction between the learning model and student learning creativity so that  $H_0$  is rejected and  $H_1$  is accepted. Thus the hypothesis that states "there is an interaction effect between learning creativity and the learning model given to students on student learning outcomes on the material of cooperation in various fields of life in Class IX SMPN 7 Tambun Selatan Bekasi" can be accepted.

### *3.3.3. The Effect of Learning Models Given to Student Groups with High Learning Creativity on Learning Outcomes on Cooperation Material in Various Fields of Life.*

The third hypothesis in this study is: "The learning outcomes of students with high learning creativity who are given the Jigsaw learning model are higher than those given the STAD (Student Teams Achievement Devision) learning model. If consulted with the table of t values for  $N = 15$ , it is obtained  $t_{\text{table}} 1.75$  Because  $t_{\text{count}} = 3.26 > t_{\text{table}} = 1.75$  the comparison of the learning outcomes of the two groups is very significant, thus  $H_0$  is rejected ( $H_1$  is accepted) in other words, the learning outcomes of students on the material of cooperation in various fields of life with high learning creativity who are given the Jigsaw learning model are higher than the learning outcomes of students who are given the STAD (Student Teams Achievement Development) learning model. So it can be concluded that the learning outcomes of students with high learning creativity who are given the Jigsaw learning model are higher than the learning outcomes of students with high learning creativity who are given the STAD (Student Teams Achievement Devision) learning model.

### *3.3.4. The Effect of Learning Models Given to Student Groups with Low Learning Creativity on Student Learning Outcomes on Cooperation Material in Various Fields of Life.*

The fourth hypothesis of this study is "The learning outcomes of students on the material of cooperation in various fields of life with low learning creativity will be higher when given the Jigsaw learning model than students who are given the STAD (Student Teams Achievement Devision) learning model". The calculation results obtained a t value of 3.005, while the value of  $t_{\text{table}} = 1.75$  thus  $3.005 > t_{\text{table}}$  means  $H_0$  is rejected ( $H_1$  is accepted) in other words, the learning outcomes of students with low learning creativity who are given the Jigsaw learning model are higher than the learning outcomes of students who are given the STAD (Student Teams Achievement Devision) learning model.

Tabel 5  
Summary of T Test Calculation Results

| Variabel | T count | T tabel |      |
|----------|---------|---------|------|
|          |         | 0,05    | 0,01 |
| A1B1     | 3,26    | 1,75    | 2,62 |
| A1B2     | 3,005   | 1,75    | 2,62 |

Thus it can be concluded that the learning outcomes of students on the material of cooperation in various fields of life with low learning creativity given the Jigsaw learning model are higher than the learning outcomes of students with low learning creativity given the STAD (Student Teams Achivement Devision) learning model.

### 3.4. Discussion of Research Results

After analyzing the data, the research results showed that:

#### 3.4.1. *The Learning Outcomes of Cooperation in Various Fields of Life Given the Jigsaw Learning Model Are Better Than the Learning Outcomes Given the STAD Learning Model.*

From the results of testing the first hypothesis, it can be seen that student learning outcomes on the material of cooperation in various fields of life given the Jigsaw learning model are better than the learning outcomes of students given the STAD (Student Teams Achivement Devision) learning model. Calculation of variance analysis for both groups resulted in a significant comparison. These results indicate that the difference in student learning outcomes on the material of cooperation in various fields of life given the Jigsaw learning model and those given the STAD (Student Teams Achivement Devision) learning model is very significant. In the implementation of learning in class, students need to be given training in both the Jigsaw and STAD (Student Teams Achivement Devision) learning models depending on which model is chosen and used by the teacher. This study has proven that the application of the Jigsaw learning model causes better student learning outcomes than the application of the STAD (Student Teams Achivement Devision) learning model.

#### 3.4.2. *There is an interaction between the learning model used and learning creativity towards student learning outcomes on the material of cooperation in various fields of life.*

The implementation of the Jigsaw learning model is related to learning between teachers and students. Thus there is communication between the teacher who teaches and students as learners. This learning will be effective if teachers and students have the same perception of everything that will be given in learning. This communication will be effective if the teacher knows the characteristics of the students he will teach. In students who have low learning creativity, the Jigsaw learning model is preferred because students are more passive and wait for direction, so students tend to only carry out teacher orders. On the other hand, for students with high learning creativity, the STAD (Student Teams Achivement Devision) learning model is preferred because students with high learning creativity find it easier to interact and communicate with teachers and their environment or vice versa because of the openness and closeness of the emotional relationships formed. This ease of communication is certainly supported by the existence of socialization and parenting at home so as to shape the level of creativity.

Thus between learning creativity and the learning model used has a close relationship to realize better student learning outcomes. This study proves that there is a very significant interaction between learning creativity and the learning model used by teachers in teaching in class. Statistically the results of the analysis of variance obtained that  $F_{\text{count}} = 62.01$  which is much greater than  $F_{\text{table}}$  both at the level  $\alpha = 0.05$  (4.02) and at  $\alpha = 0.01$  (7.12) which means that there is a very significant interaction between learning creativity and the learning model used on student learning outcomes. Thus it can be said that for different learning creativity (high and low) it is necessary to approach with different techniques (Jigsaw and STAD (Student Teams Achievement Devision)) to improve the learning outcomes of students of SMPN 7 Tambun Selatan Bekasi.

#### 3.4.3. *Student Learning Outcomes on Cooperation in Various Fields of Life with High Learning Creativity Given the Jigsaw Learning Model is Better than Those Given the STAD (Student Teams Achievement Devision) Learning Model.*

In accordance with the 2013 curriculum at SMPN 7 Tambun Selatan Bekasi which emphasizes the minimum completeness criteria (KKM) of 7.5 for Civics subject, it is necessary that the Civics learning outcomes exceed the KKM value both from the cognitive, affective and psychomotor aspects. Teachers must pay more attention to student sensitivity in providing material on cooperation in various fields of life, what learning models should be given to students who have low learning motivation. Students who have high learning creativity can easily use any learning model, both the Jigsaw learning model and the STAD (Student Teams Achievement Devision) learning model, but students who have low learning creativity will have difficulty if they are given the STAD (Student Teams Achievement Devision) learning model.

#### 3.4.4. *Student Learning Outcomes on Cooperation Materials in Various Fields of Life with Low Learning Creativity Given the Jigsaw Learning Model Better than Those Given the STAD (Student Teams Achievement Devision) Learning Model.*

In the previous discussion, in general, the learning outcomes of students given the Jigsaw learning model are better than those given the STAD (Student Teams Achievement Devision) learning model. The Jigsaw learning model is easier to follow, with the help of peers, because with the Jigsaw learning model expert groups can help low-ability friends with existing steps. This technique is suitable for students who have low learning creativity because this learning model does not demand individual abilities, but group abilities that can help each other who are weak. Students who have high learning creativity will easily use the STAD (Student Teams Achievement Devision) model.

## 4 CONCLUSION

Based on the research data, this study finally concludes:

1. There is a difference in the effect of learning outcomes of cooperation in various fields of life between the use of jigsaw, and STAD models. This is evidenced by the average score of student learning outcomes given the Jigsaw learning model  $\bar{Y}_{A1} = 114.33$  while students given the STAD (Student Teams Achievement Devision) learning model have an average score of  $\bar{Y}_{A2} = 109.20$ . It can be seen that  $\bar{Y}_{A1} > \bar{Y}_{A2}$ , thus the learning outcomes of students on the material of cooperation in various fields of life given the Jigsaw learning model are higher than those with the STAD (Student Teams Achievement Devision) learning model ".
2. There is a difference in the effect of creativity of students who are taught using jigsaw and STAD cooperative learning methods. This is evidenced by the existence of this interaction (a x b) can be seen from the results of ANOVA, namely  $F_{\text{hitung}} = 62.01$ ,

- while  $F(0.99; 1.56) = 7.12$  so that  $F_{hitung} > F(0.99; 1.56)$  which means there is a very significant interaction between the learning model and student learning creativity.
3. There is an effect of student learning outcomes and learning creativity taught using jigsaw and STAD cooperative learning methods. The learning outcomes of students with high learning creativity who were given the Jigsaw learning model were higher than the learning outcomes of students with high learning creativity who were given the STAD (Student Teams Achievement Division) learning model. From the results of the t test for  $N = 15$  obtained  $t_{count} = 3.26 > t_{table} = 1.75$ . the comparison of the learning outcomes of the two groups is very significant, thus  $H_0$  is rejected ( $H_1$  is accepted) in other words, the learning outcomes of students on the material of cooperation in various fields of life with high learning creativity who are given the Jigsaw learning model are higher than the learning outcomes of students who are given the STAD (Student Teams Achievement Division) learning model.

The learning outcomes of students on cooperation in various fields of life with low learning creativity who are given the Jigsaw learning model are higher than the learning outcomes of students with low learning creativity who are given the STAD (Student Teams Achievement Division) learning model. The calculation results obtained a t value of 3.005, while the value of  $t_{table} = 1.75$  thus  $3.005 > t_{table}$  means that  $H_0$  is rejected ( $H_1$  is accepted) in other words, the learning outcomes of students with low learning creativity who are given the Jigsaw learning model are higher than the learning outcomes of students who are given the STAD (Student Teams Achievement Division) learning model.

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