

THE EFFECT OF COOPERATIVE LEARNING TYPE GAMES TEAMS TOURNAMENT (TGT) OF MATHEMATICS LEARNING OUTCOMES IN THE FRACTIONS MATTER

Ansori Hasibuan¹, Asmin Panjaitan², Asrin Lubis³

¹College student, Post Graduate Program School in Mathematics Education, State University of Medan, Indonesia

²Lecturer, Post Graduate Program School in Mathematics Education, State University of Medan, Indonesia

³Lecturer, Post Graduate Program School in Mathematics Education, State University of Medan, Indonesia

ABSTRACT

The aims of this study is to know whether there is a significant effect between cooperative type teams games tournament the subject matter of mathematics learning outcomes in the fractions in the class VII of SMP Negeri 1 Barumun (Junior High School). The population is 238 students and the sample is 48 taken by random sampling. To collect the data about cooperative type teams games tournament the subject is using the instrument by questionnaire and test for the mathematics learning outcomes in the fractions. Then the data will be analyzed by two steps. For the first step is by descriptive analysis and the second step is inferential analysis to examine the hypothesis with using the formula "r" product moment by person. And to know whether there is significant between two variables is using by t_{test} . The result of research got average of variable X is 3,24 with "Very good" category and variable Y is 72,75 with "good" category. Though the calculation that has done the t_{count} is 10,71 and t_{table} is 1,68. So the t_{count} is higher than t_{table} ($10,71 > 1,68$). It means that the hypothesis is accepted.

Keywords: Cooperative type teams games tournament, Result mathematics fractions.

Introduction

Mathematics is a branch of science that plays an important role in the development of science and technology as a tool, mindset formers, and attitude formers. Mathematics also builds human character, creates human beings who can think logically, practically, meticulously, principally, and are able to decide the problem quickly and precisely. The magnitude of the role makes mathematics as one of science that must be studied in every level of education. Therefore, learning needs to be oriented on active, creative, effective and fun learning that will lead to improvements in student learning outcomes.

To achieve this, the Curriculum 2013 emphasizes the active involvement of teachers and students in the teaching and learning process. As stated in the standard process for core activities (Regulation of the Minister of National Education of the Republic of Indonesia Number 41 of 2007) it has been mentioned that the implementation of core activities is a learning process to achieve KD conducted interactively, inspiration, fun, challenging, motivating participants Educate to participate actively, and provide sufficient space for initiative, creativity, and independence in accordance with the talents, interests and physical and psychological development of learners. However, it is less apparent in the implementation of mathematics learning in SMP Negeri 1 Barumun. This is seen when the authors make observations in class VII SMP Negeri 1 Barumun.

Based on the observation of student activities when the teacher delivered the material found some students listen, pay attention to the material given by the teacher. Others, however, are busy doing unexpected activities, such as talking about things that are not related to learning, asking for permission to leave the classroom, and many other activities that show students less seriously in learning.

Students do not dare to ask or express opinions if they do not understand the material taught by the teacher. This can be seen when students are asked to the front of the class to solve a problem, students are hesitant to move forward because they fear wrong or fear laughed at by their friends. And when the teacher asked directly to students, he can solve the problem. Similarly, when the teacher asks students to express their opinions about a material, no students dare to express their opinions. In the execution of training some students there are capable, but there are still not understand in doing it and there are also just waiting for answers from friends without trying to do it yourself, resulting in low student learning outcomes. This is seen from the results of the daily test of mathematics of Class VII students where the average value of the class is 65, while the minimum Criterion of Minimum Score (KKM) that has been set is 70. This means that the value of students is still less than KKM (minimal score of student).

Based on the results of interviews conducted with some students SMPN 1 Barumon, it is known that math is the most difficult lessons and feels boring. In response to this, educators should be able to design interesting learning, involve students actively and invite students to think creatively. One effort that can be done is to teach students with cooperative learning. Cooperative learning can make students take advantage of potential and existing capabilities. In addition, it provides an opportunity for them to understand the concept of matter and solve problems through social interaction. One type of cooperative learning that is expected to provide more enjoyable learning for students, facilitating the students' need for discussion and collaboration is by using the Team Games Tournament (TGT) type.

Team Games Tournament can facilitate students in discussing and expressing opinions. The opportunity they ask for explanations from friends about the concept that is less understood and deepen the material wide open. Each member of the group must succeed in getting the correct concept before entering the tournament because the individual score affects the team score.

TGT is expected to avoid students from boredom because there is a tournament in learning. In addition, it can be used as a means to repeat the subject matter at home. Each student will be challenged in improving his team's score because the best group from each meeting will be rewarded in front of the class. Awards are a form of positive reinforcement that can make students more passionate about learning.

Review of Theory

1. Mathematics Learning Outcomes of Fractional Materials

Learning outcomes are the abilities that students have after receiving their learning experiences. According to Hamalik (2002: 31) "Learning outcomes are patterns of actions, values, insights, attitudes, appreciations, abilities, and skills". Sanjaya 2008: 13) says that "Learning outcomes relate to achievement in gaining capabilities in accordance with the specific objectives planned".

In relation to mathematics learning, Nikson in Muliardi (2002: 3) states that "Mathematics learning is an effort to help students to construct mathematical concepts or principles with their own ability through internalization process so that the concept or principle is rebuilt". According to Russefendi in Heruman

(2010: 1) "Mathematics is a language of symbols; A deductive science that does not accept inductive proof; The science of order patterns, and organized structures, ranging from elements not defined to definable elements".

The result of learning mathematics that want to be measured by writer is result of learning fraction. Nuharini (2008: 41) says that "Fractional number is a number which can be expressed as p/q , with p, q integers and $q \neq 0$. Number p is called the numerator and the number q is called denominator." Along with it Khalimi (2007: 67) states that "Fractional number is a number which is the result of dividing between two numbers that is the number divided is called the numerator while the dividing number is called the denominator". Sudirman (2007: 25) states that "Fraction is a number that describes a part of a whole, a part of an area, a part of an object, or part of a set". Discussion of the fractional material to be described is a). Determine simple fractions, b). Compare and sort the fractions, c). Change the mixed shards.

On fractional materials, determine simple fractions. Sudirman (2007: 27) says that "The value of a fractional number remains the same if the numerator and its denominator are multiplied or divided by the same number, provided that the divisor or multiplier is not zero".

Comparing fractions is the same as determining the relationship between two fractions. Sudirman (2007: 29) says that "To compare fractions, the denominator must be equated first". Nuharini (2008: 44) states that in order to determine the relationship of two fractions, compare the numerator if the denominator of both fractions is equal. As for the denominator of the two different denominations, to compare the fraction, equate the denominator of both fractions (by specifying the KPK of the denominator of the two fractions), then compare the numerator.

Fractional mixture means fractions consisting of integers and fractions. This is in accordance with the one described by Wintarti (2008: 26) that "Mixed numbers are combinations of integers and fractions". In parallel with it Wagiyo (2008: 16) explains that "Fractions The mixture is a fraction consisting of a rounded and pure fractional part". While Sudirman (2007: 32) says that "A fractional number of mixtures can be stated in ordinary fractional numbers". From the above description it can be concluded that the fractional mixture is a combination of integers and ordinary fractions. The fractional mixture can be converted to the usual fractional form, otherwise the ordinary fractions can be converted to a mixed shrapnel.

Based on the above definition it can be concluded that the fractional learning result is the ability of the students after studying the fractions, ie determining the simple fractions, comparing and sorting the fractions, and changing the mixed fractions.

2. Cooperative Learning Type TGT

Learning model is all the procedures and facilities used by teachers before, during and after as guidelines and supporting learning to achieve learning objectives. Suprijono (2010: 46) reveals that "Learning model is a pattern used as a guide in planning learning in the classroom or tutorial. Ambarjaya (2012: 93) says that "Cooperative learning model is a series of learning activities undertaken by students in certain groups to achieve the learning objectives that have been formulated". While Suprijono (2010: 54) says that "Cooperative learning is a broader concept covering all types of groups including more teacher-led or teacher-directed forms". Based on the opinion, it can be concluded that cooperative learning model is a learning activity procedure in the form of groups facilitated by teachers to achieve the defined learning objectives. Team Games Tournament (TGT) is one type of cooperative learning that emphasizes the existence of learning activities with the game so as to enable students to learn more relaxed as well as foster responsibility, cooperation, healthy competition and

learning involvement. As Ahmadi (2011: 63) explains that "Cooperative learning type TGT is one of the cooperative learning model that is easy to apply, involving all students activity without any difference of status, involving student role as peer tutor and containing element of game or reinforcement". Furthermore Rusman (2008: 244) says that "Cooperative learning type TGT is one type of cooperative that puts students in groups of study consisting of 5-6 students who have different abilities, gender, ethnicity or race". Slavin (2005: 166), there are five components in the implementation of TGT namely a). Presentation in class, b). Team, c). Game, d). Tournaments and e). Team recognition.

The material in TGT was first introduced in the presentation in the classroom. At this stage the material is explained by the teacher. Maufur (2009: 157) explains that "The presentation of the class is the beginning of the lesson, the teacher delivering the material in the class presentation is usually done by direct instruction or by a lecture or discussion submitted by the teacher".

To further explore the material then the teachers form a team. Hamdani (2005: 93) explains that "The group is a team consisting of usually 4-5 students whose members are heterogeneous in terms of academic, gender, race, or ethnic achievement". Furthermore Ahmadi (2011: 63) explains that "Groups are some people usually consist of 4-5 students whose members are heterogeneous seen from academic, gender, race, or ethnic achievement".

Games consist of questions whose content is relevant to the material that has been learned that is useful for testing the students' knowledge gained from class presentation and group learning. According to Ahmadi (2011: 64) explains that "Games are questions designed to test the knowledge gained by students from class presentation and group learning".

Tournaments are games performed on weekends or each unit by matching multiple teams to earn points. Slavin (2009: 166) explains that "The tournament is a structure where the game takes place. It usually takes place at the end of the week or the end of the unit after the teacher gives a presentation in class and the team has performed group work on the activity sheet".

The team's recognition is a group award. Teams earning a certain average score will be awarded. Slavin (2009: 146) explains that "The team will get a certificate or other form of appreciation if their average score reaches certain criteria".

Thus, to test the students' knowledge gained from teamwork, there is a game or tournament between teams that will solve questions relevant to the material already learned. The team that has the highest score will be awarded or rewarded.

Method

The research was conducted on the students of Class VII of Junior High School N 1 Barumun. The reason the author makes SMP N 1 Barumun as the location of research because the problems associated with the title of the author has never been studied previously in the school. The period of this study was conducted for \pm 3 months ie from January to March 2014.

Research method is a process or steps that must be done to finish a research. According Sugiyono (2009: 3) "Research method is defined as a scientific way to get data with a specific purpose and usefulness. Syaodih (2012: 52) says that "The research method is a series of ways or activities of research implementation based on basic assumptions, philosophical and ideological views, questions and issues faced". The research method is descriptive method. According Sudajana (2001: 64) "Descriptive research is a study that

attempted to describe a phenomenon, events, events that occur in the present moment". Meanwhile, according to Nazir (2002: 63) "Descriptive method is a systematic, factual, and accurate picture or painting of the facts, properties and the relationship between the phenomena being investigated".

The population of the study is the whole subjects studied either in the form of humans, objects, events and symptoms that occur. Sugiyono (2009: 117) said that "Population is a generalization region consisting of objects / subjects that have certain qualities and characteristics set by researchers to be studied and then drawn conclusions. "The population in this study is all students of class VII in SMP N 1 Barumun consisting of 9 classes, amounting to 238 people.

The sample is a small group of the population to be studied. Arikunto (2010: 75) says that "Sample is a partial or representative of the population studied." When viewed from a relatively large population, the sampling in this study is "Random Sampling". Arikunto (2006: 134) states, "If the subject is less than 100, better taken all so that his research is a population study. But if the number of subjects is large, it can be taken between 10 -15% or 20-25% or more ". Thus the researchers took some members of the population into a sample of research. The sample in this study is 20% of the population that is 48 people.

Research instrument is a tool used to collect data about research variables, that is cooperative learning model TGT type (variable X) by using questionnaire and learning result of mathematics of fractional subject matter (Variable Y) by using test question.

In order for the data needed in this study can be analyzed, then the data collection techniques using instruments in the form of questionnaires and tes. Arikunto (2010: 75) said that "Questionnaire is a list of questions given to others with the intention that the person who is given Willing to respond according to user request. "Questionnaire given directly to the respondent to answer the question posed with alternative answer choice: if the option" a "always, given a score of 4, if the choice of answers" b "often, given a score of 3, if the choice of answers" c "sometimes, given Score 2, if the answer option "d" is never, given a score of 1.

The test is a set of statements or exercises used to measure the skills of knowledge, intelligence, ability or talents possessed by individuals or groups. According to Trianto (2012: 235), "The test of learning results is a test item used to determine student learning outcomes after attending teaching and learning activities". According to Sudijono (2007: 67) In general, there are two kinds of functions possessed by the test, that is as a measuring tool of learners and as a means of measuring the success of the teaching program.

In answering the problems that have been formulated, the authors process the data collected into two stages: descriptive analysis is to describe the influence of cooperative learning type TGT in class VII SMP Negeri 1 Barumun based on average, median, mode, frequency distribution and histogram. And an inflation statistical analysis is used to test whether the proposed hypothesis is acceptable or rejected. Then, the data obtained is then used statistical analysis techniques with the formula correlation "r" product moment by pearson. Then to know whether there is influence between two variables, then used t-test.

Result

The result of the research on TGT type coefficient variable in class VII of SMP Negeri 1 Barumun obtained the mean value (mean) 3.24, median value 3.24 and the most common value (mode) 3.24. When assessed by assessment criteria, the value is in the "Very Good" category, while the lowest grade obtained is 2.6 and the highest score is 3.8 and the student's possible score is 1.0 - 4.0. This indicates that the use of cooperative learning strategy of TGT type needs to be improved again. If the average value is 3.24 compared

with the theoretical value 2.5 it can be concluded that the average value of the use of cooperative learning strategy type TGT is above its theoretical value. To see the description of the following indicators is presented in Table 1.

Table 1. Cooperative Learning Type TGT

Number	Indicator	Average	Category
1	Class presentation	3,13	Very Good
2	Team	3,29	Very Good
3	Game	3,09	Very Good
4	Tournament	3,08	Very Good
5	Team recognition	3,50	Very Good

The result of the research on the variable of learning result of mathematics of subject matter in class VII of SMP Negeri 1 Barumun obtained the mean value (mean) 72.75, median value 72.18 and the most common value (mode) 71.05. If it is consulted with the criteria, the average rating is in the "Good" category. While the value obtained by the lowest students is 50 and the highest score 90 and the value that may be achieved by students is 0 - 100. This indicates that the results of learning mathematics subject matter in class VII SMP Negeri 1 Barumun needs to be improved again towards the better. If the average value of 72.75 compared with theoretical value 50 it can be concluded that the average value of mathematics learning result of the subject matter of fraction in class VII of Junior High School 1 Barumun is above its theoretical value. The following will be made in Table 2 of obtaining the average value of each indicator of the mathematics learning result of the fractional subject matter

Table 2. Data of Mathematics Learning Result of Fractions Material

Number	Indicator	Average	Category
1	Determine the simple fractions	77,98	Good
2	Compare and sort the fractions	69,94	Good
3	Change mixed fractions	69,79	Good

Based on the calculation of hypothesis testing obtained r_{xy} of 0.845 and to test the hypothesis that is enforced by using the t_{test} test so that obtained t_{count} of 10.71 while the t_{table} obtained by 1.68. If the price of t_{count} 10.71 compared with t table 1.68 can be known $t_{hitung} > t_{table}$, ie $10.71 > 1.68$. This means that the enforced hypothesis can be accepted or approved of the truth. That is, there is a significant influence between cooperative learning strategies TGT type to the results of learning mathematics subject matter fractions in class VII SMP Negeri 1 Barumun.

Discussion

The result of the research shows that the use of cooperative learning strategy of TGT type can improve the learning achievement of subject matter math in Grade VII of SMP Negeri 1 Barumun which has an average value of 72.75. If the average value is consulted on the classification of the assessment set out in Chapter III Table 5, it can be concluded that the result of the Mathematical Study of the Principal Material of Fractions in class VII of SMP Negeri 1 Barumun in the "Good" category.

Based on the calculations performed to test the hypothesis is obtained $t_{count} = 10.71$, when compared with t_{table} obtained by using the equation of the straight line is $t_{table} = 1.68$. Thus, it can be concluded

that t_{count} is greater than t_{table} ($10.71 > 1.68$). It means the hypothesis is accepted or approved by the truth. This means that there is a significant influence between the using Cooperative Learning Strategy Type Team Games Tournament (TGT) Against Learning Outcomes Mathematics Material Fractions in Class VII SMP Negeri 1 Barumon.

Closing

1. Conclusion

Based on the results of research and data analysis, the conclusion of this study as follows: The results of cooperative learning strategies TGT type in class VII SMP Negeri 1 Barumon obtained an average of 3.24 so as to enter the category of "Good". The results of learning mathematics subject matter Fractions in Class VII SMP Negeri 1 Barumon has an average value of 72.75 so that enter in the category of "Good". Alternative hypothesis accepted. That is, There is a significant influence between cooperative learning strategies TGT type to the results of learning mathematics subject matter fractions in class VII SMP Negeri 1 Barumon.

2. Research Implications

From the description above, this research has implication to the use of cooperative learning strategy of Team Games Tournament (TGT) type. Where the high low learning outcomes of students have several factors that play a role, among others: teachers, learning environment, framework or model of learning in accordance with the characteristics of students, learning methods and curriculum.

From the results of research conducted can be concluded that students on cooperative learning type TGT able to solve the material fractions. For that, teachers can use this learning model so that students more easily understand the basic concepts of Fractions. Teachers should also provide a description of the problem more appropriate with the real data Students.

In addition, if we want to achieve a more optimal learning objectives teachers should be able to create a conducive environment or learning climate in accordance with the ability and characteristics of learning competence.

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