# The Influence of Snowball Throwing and Teams Games Tournament Cooperative Learning Models on the Learning Outcomes of Elementary School Students

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## Info Artikel

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## Abstract

The purpose of this study is to analyze the effect of the Snowball Throwing and Teams Games Tournament learning models on learning outcomes and explain the differences between the Snowball Throwing learning model and the Teams Games Tournament learning outcomes on heat transfer science subjects in elementary schools. The results of the research 1) there is an influence of the snowball throwing learning model on the science learning outcomes of heat transfer material for Students of 1st Kuwu State Elementary School, Dempet, Demak based on the value of Sig. (2-tailed) 0.000 < 0.05, or t-count 9.657 > t-table 2.06390. The magnitude of the influence is 15.80. 2) There is an influence of the Team Games Tournament (TGT) learning model on the science learning outcomes of heat transfer material for fifth-grade Students of 4th Dempet State Elementary School, Dempet, Demak based on the value of Sig. (2-tailed) obtained 0.000 < 0.05, or t-count 11.932 > t-table 2.05183 while the magnitude of the effect given is 23.99. 3) There is a difference in the influences between the snowball throwing learning model and the team games tournament (TGT) on the improvement of science learning outcomes for fifth-grade Students heat transfer material in elementary schools. It can be concluded that the experimental 2nd experimental class research using the Team Games Tournament (TGT) learning model increased learning outcomes higher than the 1st experimental class research which used the snowball throwing learning model



## Introduction

Education is a conscious and planned effort to create a learning atmosphere and learning process so that students actively develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves, the nation's community and the state (Depdiknas, 2011). 2003). In other words, education is the basis of human beings to develop themselves for the better. This is in accordance with the expression of Roesminingsih and Susarno (2011: 11) which says that education in a broad sense is a process to develop all aspects of the human personality, which includes knowledge, values and is orderly, generally accepted (universal), and in the form of a collection of results data. observation and experiment.

Schools are the first formal educational institutions that are very important in determining student learning success (Hariyanti & Amin, 2016:33). Therefore, in schools, teachers and conditions must be provided that support the learning process. The main key in improving the quality of education lies in the quality of the teachers, therefore educators, especially teachers, are required to master and innovate both in the use of learning methods, as well as the available facilities and infrastructure for the achievement of improving the quality of education. responsible

for implementing innovations in the implementation of education in schools (Hamalik: 2001). With good quality education, it will produce mastery of concepts and results good learning from students (Widyaningsih & Yusuf, 2015:65).

Science is a collection of knowledge that is arranged systematically. Science is related to how to find out about nature systematically so that it is not only mastery of a collection of knowledge in the form of facts, concepts, or principles but also a process of discovery. Science cannot be learned by reading alone but requires practical work and real examples in learning (Depdiknas, 2003). Giving practicum and real examples in science learning can make it easier for students to understand a science concept. In addition, fun learning can also help students understand a science concept. One of the materials in science learning is heat material. Heat is the transfer of energy from an object with a higher temperature to an object with a lower temperature. Naturally, heat always moves/flows from objects with a high temperature (hot) to objects with a lower temperature (cold).

The description above Science is a science that has an object, using the scientific method so that it needs to be taught in elementary schools. Every teacher must understand the reasons why science needs to be taught in elementary schools. There are various reasons that cause one subject to be included in the curriculum of a school. Usman Samatowa (2006:35) suggests four reasons science is included in the elementary school curriculum, namely:

1. That science is useful For a nation, there is no need to discuss it at length. The material welfare of a nation is very much dependent on the nation's ability in the field of science because science is the basis of technology, often cited as the backbone of development. The basic knowledge of technology is science. People don't become good electrical engineers, or good doctors, without a fairly broad foundation of natural phenomena.
2. If science is taught in the right way, then science is a subject that provides critical thinking opportunities; for example, science is taught by following the "find it yourself" method. With this the child is faced with a problem; For example, a problem like this can be put forward "Can plant live without leaves?" Children are asked to find and investigate this.
3. If science is taught through experiments carried out by children themselves. then science is not a mere rote subject.
4. This subject has educational values that have the potential to shape the child's personality as a whole.

Competency Standards (SK) and Basic Competencies (KD) for Science in SD/MI are the minimum standards that must be achieved nationally by students and become a reference in curriculum development in every education unit. The achievement of SK and KD is based on empowering students to build abilities, work scientifically, and own knowledge which is facilitated by the teacher. This subject is also used in the UN and UASBN.

Learning outcomes are the most important part of learning. Nana Sudjana (2009:3) defines student learning outcomes in essence as changes in behavior as a result of learning in a broader sense covering the cognitive, affective, and psychomotor fields. Dimyati and Mudjiono (2006: 3-4) also mention that learning outcomes are the result of an interaction of the act of learning and the act of teaching. From the teacher's perspective, the act of teaching ends with the process of evaluating learning outcomes. From the student's perspective, learning outcomes are the end of

teaching from the peak of the learning process. Based on the results of observations of the teaching and learning process in the classroom, the teacher has not emphasized the understanding of students. Students are directed to be able to memorize learning material. Learning materials are delivered using conventional methods, by means of lectures explaining learning materials accompanied by a division of tasks and exercises. Students listen more to the teacher's explanation in front of the class and carry out assignments if the teacher gives practice questions to students. When the teacher provides an opportunity to ask questions, students do not ask questions and when students are asked questions, students tend to be silent. When the teacher explains the learning material, some students talk to their classmates or friends who are in front or behind them. This shows that students are less enthusiastic about learning.

According to Hakim (2004: 62), a sense of sluggishness, lack of enthusiasm, or lack of enthusiasm to carry out learning activities is caused by learning saturation, which is a mental condition of a person when experiencing boredom and exhaustion while studying. Meanwhile, according to Robert, in Muhibbin Syah (2000: 162), learning saturation is the time span used to study but does not bring results. Heat transfer material includes material that is not only memorized but requires in-depth understanding. Meanwhile, based on the previous explanation, that students have low learning outcomes, have difficulty understanding learning materials, are less willing to read literacy or learning resources, and teachers use conventional methods during the learning process. Therefore, efforts are needed that can help students understand heat material in the form of applying fun learning methods that can improve student learning outcomes.

One of the fun learning methods can be implemented through cooperative learning models. This is in line with what was expressed by Miftahul Huda (2011: 264) that the cooperative model has other benefits outside of academics, including more time to do assignments, higher student motivation and persistence and their increasing social skills. There are several types of cooperative learning models, including Teams Games Tournament (TGT) cooperative learning, Snowball Throwing, Cooperative learning type snowball throwing is one type of cooperative learning model (Mulyana, 2005:37) states that "cooperative learning is an attitude or behavior together in working or helping each other in the structure of cooperation. According to Oviyanti (2013:67). Snowball throwing learning is a learning method which in its implementation with teacher monitoring, students learn in groups and work together to master the subject matter.

According to (Rasyid & Side, 2011:48) the learning process by utilizing the snowball throwing model makes students a learning center, students actively discuss and solve problems from the questions expressed during the learning process and work on assignments together. The snowball throwing model uses questions as a tool for student learning activities in class. Questions and answers are a stimulus and activity during the teaching and learning process. Based on the above opinion, the use of the snowballthrowing type of cooperative learning model is expected to attract the attention of students to improve their learning outcomes, so that students will be more active in learning and will create a more conducive learning atmosphere and reduce boredom in the learning process.

One of the learning models that can be used to stimulate student activity and improve their existing skills is the Teams Games Tournament (TGT) type of cooperative learning model. Parveen (2012:67) in his research states that cooperative learning methods are superior to traditional learning methods. This is because in the cooperative model there are several learning activities that can make students feel more relaxed in learning. Based on research conducted by

Parveen (2011: 61), applying the cooperative model can improve students' cognitive and affective learning outcomes.

Kurniasari (2006:54) states that the TGT type of cooperative learning model is a cooperative learning model by forming small groups in classes consisting of 3-5 students who are heterogeneous, both in terms of academics, gender, race, and ethnicity. According to Firmansyah (2012:21), the Teams Game Tournament (TGT) type of cooperative learning model is one of the cooperative learning models that is easy to apply, involves the activities of all students without having any status differences, involves the role of students as peer tutors and contains elements of the game so that students do not feel bored because students play an active role when learning takes place. In addition, research by Nadrah (2017) shows that the Teams Games Tournament (TGT) type of cooperative learning model can improve learning outcomes.

Based on the description described above, the application of the snowball throwing learning model and the Teams Game Tournament (TGT) learning model, is considered to be able to improve science learning outcomes. Therefore, the researchers tried to apply the two cooperative learning models in two different classes to find out which learning model is more appropriate to use in learning, especially in science subjects. Therefore, there is an interest in conducting research on "Application of the Cooperative Learning Model Type of Snowball Throwing and Teams Games Tournament (TGT) on the Learning Outcomes of Class V Students in Science Subjects on Heat Transfer Materials in SD Negeri Dempet District".

## Method

*Research design*

This research is quasi-experimental using Posttest Only Control Group Design. As for in this study, the experimental class 1 (Snowball throwing) is class V Kuwu 1 State Elementary School, Dempet Subdistrict, Demak Regency and those who will be experimental class 2 (TGT) are students in class V Dempet 4 State Elementary School, Dempet Subdistrict, Demak Regency and the control class is class V of the Kedungori 1 State Elementary School, Dempet Subdistrict, Demak Regency.

*Respondents of the study*

The population referred to in this study were all fifth-grade students of State Elementary Schools in Dempet District. The total population is 32 elementary schools in the district of Dempet. The samples used in this study were three classes, namely class V Kuwu State Elementary School 1, Dempet Subdistrict, Demak Regency, which amounted to 27 students as experimental class 1 using the Snowball Throwing learning model, Class V Elementary School Dempet 4 Dempet District, Demak Regency with a total of 30 students as the experimental class where the learning method used is Team Games Tournament (TTG) and class V of Kedungori 1 State Elementary School which consists of 26 students as the control class using conventional learning methods.

*Data analysis*

*1. Validity Test*

Research results are valid if there are similarities between the data collected and the data that actually occurs in the object under study. A valid instrument means that the measuring instrument used to obtain data (measure) is valid. Valid means that the instrument can be used to measure what should be measured (Sugiyono, 2010: 173). So validity is related to accuracy (truth) that does not deviate from the data from reality. The instrument is said to be valid if the validator has declared conformity with the predetermined criteria. The correlation formula that can be used is the one proposed by Pearson, known as the product-moment correlation formula (Arikunto Suharsini) as follows:

$$r = \frac{N\sum xy - \left(\sum n.\sum y\right)}{\sqrt{\left\{N\sum x^2 - -\left(\sum x\right)^2 - \left\{N\sum y^2 - -\left(\sum y\right)^2\right\}\right\}}}$$

Information:
R-=-Product moment correlation Coefficient
X = Score of item
Y = Score of total items
N = Number of samples

With degrees of freedom (n-2) and = 0.05 then if r-count > r table, it means that the question item is declared valid and if count r table, it means that the question item is declared invalid.

*2. Reliability Test*

According to Sukardi (2003:68), an instrument has an adequate level of reliability, if the instrument is used to measure the aspects measured several times the results are the same or relatively the same. The more reliable a test is, the more confident we can be that the results of a test have the same results when the test is repeated.

There are two types of reliability, namely internal reliability and external reliability. This study, using an internal reliability test because the calculation is obtained by means of There are two types of reliability, namely internal reliability and external reliability. This study, using an internal reliability test because the calculation is obtained by analyzing the test data only. Various techniques for finding reliability are using the Spearman Brown formula, the Flanagan formula, the Rulon formula, the K-R 20 formula, the Hoyt formula, and the Alpha formula. In this study to find reliability using the Alpha formula with the following equation (Sumarna Surapranata):

$$r11 = \left[\frac{k}{k-1}\right].\left[1 - \frac{\sum s_1}{S_1}\right]$$

Information:
r11 = reliability value
Σ = Total score variance of each item
Si = total variance
k = Number of items

To interpret the magnitude of the correlation value is:
Between 0.00 to 0.20 : Very low reliability
Between 0.20 to 0.40 : Low reliability
Between 0.40 to 0.70 : Medium reliability
Between 0.70 to 0.90 : High reliability
Between 0.90 to 1.00 : Very high reliability

*3. Normality Test*

A normality test is used to determine whether the data to be analyzed is normally distributed or not. A data is normally distributed if the amount of data above and below the average is the same, as well as the standard deviation. In this study, the normality test uses the chi-square or chi-square formula. After comparison, the next step is to make a decision with the following conditions:

a. Significant level = 5%
b. $X^{count}$ $X^{Table}$ means that the data is normally distributed

*4. Homogeneity Test*

A homogeneity test is used to determine whether a data is homogeneous or not. In this study, the homogeneity test used the F test. The distribution of the data said to be normal or abnormal can be seen in the SPSS Tests of Normality output table by looking at the significance level. The decision rule is if the value of sig.> 0.05 then the data is declared normally distributed. This normality test uses the SPSS 21 for windows program, namely the One-Sample Kolmogorov-Smirnov Test.

*5. Average Similarity Test*

After going through the normality and homogeneity tests of the data, then the experimental class and the control class will be tested for their average similarity. The average similarity test uses a two-part test with the aim of knowing whether the sample has the same average or not. The average similarity test uses the SPSS 21 for the windows program, which uses One-Way Anova. The data obtained are said to have the same or not the same average as can be seen from the sig value. on the SPSS ANOVA output table. The decision rule is if the value of sig. > 0.05, then the data tested is having the same average.

*6. Differentiation Test*

After the normality test, data homogeneity, and the average similarity test, the difference test will then be carried out. This difference test was carried out after it was known that there were differences in the average posttest data on learning outcomes and learning motivation of students in the experimental class using problem-based learning strategies and the control class using conventional learning strategies. This difference test uses the t-test to determine whether the average learning outcomes of the experimental class are better than the control class or not. This t-test analysis uses the SPSS 21 for the windows program, namely the paired-samples t-test menu. The decision rule, if the value of sig. in the paired-samples test table < 0.05, then the average learning outcome of the experimental class is better than the control class.

**Result and Discuss**

The results of the research on the effect of the snowball throwing and Team Games Tournament learning models on the Science learning outcomes of class V heat transfer materials in elementary schools are

***The effect of the snowball type cooperative learning model throwing against class v learning outcomes in subjects science of heat transfer in elementary school***

Based on the results of the study through the frequency distribution, it was explained that before the Snowball Throwing type cooperative learning model was applied, student learning outcomes in the form of a pretest in class V at Kuwu 1 State Elementary School got a minimum score of 46.67 while the maximum value was 86.67 and the mean or average was 64, 44. the posttest experimental class 1 using the snowball throwing learning model has an average of 80.25, a minimum value of 60 and a maximum value of 100. The results of hypothesis testing using the paired samples test. obtained the value of Sig. (2-tailed) obtained 0.000 < 0.05, or t-count 9.657 > t-table 2.06390, it can be concluded that there is a difference in the average student learning outcomes for the pretest and posttest experimental class 1. Thus, it can be concluded that there is the Thus the overall sample amounted to 83 students. effect of the snowball throwing learning model on science learning outcomes in heat transfer material for class V Kuwu 1 State Elementary School, Dempet District, Demak Regency, and the magnitude of the effect is 15.80.

The results of the calculation of the gain index of science learning outcomes for heat transfer material for class V Kuwu 1 State Elementary School, Dempet District, Demak Regency, showed that Ngain's score was mostly in the medium category. These results can be concluded that the increase in science learning outcomes for fifth-grade students on heat transfer material using the snowball throwing learning model at the Kuwu 1 State Elementary School, Dempet District, Demak Regency experienced a moderate increase.

The results of this study indicate that the cooperative learning model of the Snowball Throwing type has an effect on the science learning outcomes of heat transfer material for class V Elementary School. This is supported by Piaget's learning theory which states that children's interactions with the objects around them (physical experience), children's mental activities in connecting their cognitive framework experiences, children's mental activities in connecting their

experiences with their cognitive framework (logico-mathematics experience), and interaction Children with their surrounding environment can improve children's cognitive development and make children more active in the learning process.

This is similar to Kusumawati (2017) who conducted research and showed the results of the average score of experimental class students who had been treated with the Snowball Throwing type cooperative learning model was 83.23 while in the control class which was only given the lecture learning model treatment was 71, 47. Based on these results, it shows that there is an influence from the application of the cooperative learning model with Snowball Throwing on the science learning outcomes of the fourth-grade students of SDN Bondrang, Sawoo District, Ponorogo Regency, 2016/2017 Academic Year. This study is also in line with research conducted by Dewi (2019:8). The results showed that there was a significant influence on science learning outcomes between students who used the Snowball Throwing learning model, which obtained an average score of 20.9 higher than the control class.

The implementation of the Snowball Throwing learning model, it can be one of the supporting factors for student success in learning. Because through the Snowball Throwing learning model students are able to discuss well and be responsive and create a fun learning atmosphere

***The effect of team games type cooperative learning model tournament on class v learning outcomes in the eyes heat transfer science lessons in elementary school***

Based on the results of the research through the frequency distribution, it was explained that before the Team Games Tournament type cooperative learning model was applied, student learning outcomes in the form of a pretest got a minimum score of 46.67 while the maximum value was 73.33 and the mean or average was 64.44. the posttest experimental class 2 using the Team Games Tournament type cooperative learning model has an average of 88.44, a minimum value of 73.33, and a maximum value of 100.

The results of hypothesis testing using the paired samples test. obtained the value of Sig. (2-tailed) obtained 0.000 < 0.05, or t-count 11.932 > t-table 2.05183, it can be concluded that there is a difference in the average student learning outcomes for the pretest and posttest experimental class 2. Thus, it can be concluded that there is the effect of the Team Games Tournament learning model on the science learning outcomes of heat transfer material for class V, Dempet 4 State Elementary School, Dempet District, Demak Regency, and the magnitude of the effect given is 23.99.

The results of the calculation of the gain index of learning outcomes for experimental class 2 students using the Team Games Tournament learning method for class V, Dempet 4 State Elementary School, Dempet District, Demak Regency, showed that the N-gain score was mostly in the high category. These results can be concluded that the increase in science learning outcomes for fifth-grade students in heat transfer material using the Team Games Tournament learning model at the Dempet 4 State Elementary School, Dempet District, Demak Regency has experienced a high increase.

The results of this study indicate that the Team Games Tournament type of cooperative learning model affects the science learning outcomes of heat transfer material for class V

Elementary School. With the Team Games Tournament learning model, students can learn with enthusiasm and enthusiasm in receiving lessons. Students can also interact well with their group friends. Students can accept differences and exchange ideas with their group friends.

The results of this study are in line with research conducted by Igati (2017). The results of the t-test in this study showed the significance value was 0.000 less than 0.05. The average activeness score of the experimental class is 80.3%, while the average of the control class is 71.6%. As well as having an effect on learning outcomes wherefrom the results of the t-test output the significance value of learning outcomes is 0.000 which is smaller than 0.05. With an average score of 68.1% learning outcomes to 80.3%. So in conclusion, the Team Games Tournament learning model has an effect on student activities and learning outcomes.

The Teams Games Tournament method is more concerned with group success than individual success. The award obtained by the group is largely determined by the success of each group member's mastery of the material. Teams Games Tournament uses academic game tournaments. In this tournament, students compete on behalf of their team with other team members who are equal in academic performance (Nur, 2015).

***The different effects of the type cooperative learning model snowball throwing and team games tournament against class v learning outcomes in transfer science subjects calories in elementary school***

Based on the results of the paired samples statistic, it is known that the posttest mean value of the experimental class 1 using the snowball throwing learning model at the Kuwu 1 State Elementary School is 80.25 while the posttest mean value of the experimental class 2 using the Team Games Tournament learning model at the Dempet 4 State Elementary School is 88.44. These results can be interpreted that the mean posttest value of the experimental class 2 using the Team Games Tournament learning model is greater than the experimental class 1 using the snowball throwing learning model at the Kuwu 1 State Elementary School.

In addition, the difference in influence can be seen from the difference in the magnitude of the influence given, from the table Paired Samples Test above, the effect of the snowball throwing learning model on science learning outcomes for heat transfer material for class V Elementary School Kuwu 1, Dempet District, Demak Regency is 15.80 scores. This effect is smaller than the magnitude of the influence given by the Team Games Tournament learning model on the science learning outcomes of heat transfer material for class V, Dempet 4 State Elementary School, Dempet District, Demak Regency, which is 23.99.

Based on the results of the study, there was a difference in the effect of the snowball throwing learning model and team games tournament on improving science learning outcomes for class V heat transfer material in elementary schools, and it was known that experimental class 2 using the Team Games Tournament learning model increased learning outcomes. higher than the experimental class 1 which uses the snowball throwing learning model. The results of this study are in line with Susilawati's research (2018). The results of the study explain that the average obtained by students who use the Team Games Tournament learning model is higher, namely 82.4 while the average for those who use the Snowball Throwing learning model is 79.2. This is evidenced through calculations using a t-test with a level of = 0.05 obtained t count = 5.17 > t table = 2.01, indicating that t-count is outside the area of H0 acceptance, so H0 is rejected and Ha

is accepted. Thus, there is a significant comparison of student learning outcomes between experimental class I and experimental class II.

In the application of the Snowball Throwing type learning model students are more motivated to compete and dare to express their income, because the questions come from questions made by their own friends. Snowball Throwing learning can improve learning achievement because the learning process is very fun. Meanwhile, in the application of the Team Games Tournament type of cooperative learning model, students become tense and anxious when they get question cards with unexpected questions, so they ask questions whether they can answer questions from the teacher or not, that is what makes students not calm when following the process. learning. Based on the observations in the research conducted in the classroom using the Team Games Tournament type cooperative learning model and the Snowball Throwing type, the learning outcomes of the two samples experienced an increase in learning outcomes. However, the Team Games Tournament type of cooperative learning model is superior to the Snowball Throwing type.

**Conclusion**

Some of the findings in this study can be concluded that in accordance with the formulation of the problem are:. There is an effect of the snowball throwing learning model on the science learning outcomes of heat transfer material for class V Kuwu 1 State Elementary School, Dempet District, Demak Regency, this is based on hypothesis testing using the paired samples test. obtained the value of Sig. (2-tailed) obtained 0.000 < 0.05, or t-count 9.657 > t-table 2.06390 the magnitude of the influence is 15.80. There is an influence of the Team Games Tournament learning model on the science learning outcomes of heat transfer material for class V, Dempet 4 State Elementary School, Dempet District, Demak Regency based on the results of hypothesis testing using the paired samples test. obtained the value of Sig. (2-tailed) obtained 0.000 <0.05, or t-count 11.932 > t-table 2.05183 while the magnitude of the effect given is 23.99.

There is a difference in the effect between the snowball throwing learning model and the team games tournament on improving science learning outcomes for class V heat transfer material in elementary schools. It is known that experimental class 2 by using the Team Games Tournament learning model increases learning outcomes higher than the experimental class 1 which uses the snowball throwing learning model. Based on the results of the research, the suggestions that can be given are that teachers should be able to apply the Snowball Throwing and Times Games Tournaments learning models because they can improve learning outcomes and can arouse students' enthusiasm for learning so they are not bored in following the learning process.

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