Improving the Natural Science Learning Result through the Implementation of Teams Games Tournament Learning Model Aided with Video Learning

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ABSTRACT
The aim of this research is to know the improvement of student learning outcomes in science subjects using the cooperative model type TGT-assisted video learning media at grade IV SDN 02 Lebak Grobogan. This type of research is Research Action class. The subject of this research is the grade IV. Data collection used are tests, documentation, and observations. Data analysis technique used is the comparative descriptive analysis to quantitative data i.e. Comparing test scores initial conditions, test scores after the cycle I and cycle II after the test value. The results of this study showed that after a given learning by applying a model of learning occurs learning video berbatuan TGT improved pre conditions from cycle to cycle I and cycle II. An increase in the application of the model proves that media video assisted learning TGT can improve the learning results of IPA students 4th grade State 02 Lebak Grobogan.

Keywords: Teams Games Tournament (TGT); Learning Video; The Learning Results Of The Scientic Subject.

INTRODUCTION

Natural Science (IPA) in elementary school is the subject that aims to increase the students' knowledge related to their surroundings which is gained through the experience of a series scientific processes including the investigation, preparation and testing of ideas which are packed to confirm the needs in basic education (Rini et al, 2011: 67). Natural Science subject is needed to instill knowledge from the new experiences that the student have gained to develop a better understanding on a particular thing. Desstya (2014: 194) stated that in teaching science, teacher should consider its essence as a process, product, attitude and technology so that it can become a suggestion to develop the cognitive and affective aspect and science process skill which is packed as an educational process in school. A similar view was also expressed by Patandung (2017: 10) stating that teaching science in the elementary school should emphasize the provision of direct learning experience through the use and development of processing skills and scientific attitudes. In line with this, Agustina (2015: 31) stated that science learning should emphasize the direct experience to develop the competence so that students are able to scientifically explore and understand the nature around them in accordance with the material being studied. One solution that can be applied to achieve this is by planning a good learning process.

Widiantono & Harjono (2017: 200) stated that science learning should be conducted systematically to make it more effective in assisting students developing their ability to think and work more scientifically. Therefore, the selection of learning models to teach the IPA needs to be considered carefully. This idea confirms Mawardi & Sari (2015: 83) revealing that to be able encouraging students to be active and have a curiosity in the science lesson, the appropriate learning model is required. In this case, Wuryaastuti (2008) stated that in designing the learning process, a teacher needs to pay attention to the problems related with the science learning that is conducted in the field. One of the conditions that often occur, as disclosed by Wuryaastuti (2008), is the students' lack of opportunities to develop their creativity. This is because the learning model chosen by the teacher often focuses on the exercises or asks the students to memorize the various concepts without any understanding of the concept. Conventional science lessons only prepare learners to pursue higher education instead of preparing critical, environmentally, creatively, and tech-savvy human resources that are present in the community. The similar view is also expressed by Selvi (2016: 47) stating that the low level of student learning results can be caused by the teaching model used by the teacher which is less attractive, therefore it causes boredom to the students. Thus, the selection of appropriate learning model is needed.

Such problem was also experienced by SD Negeri 02. Based on observation result and information collected from the teacher at SD Negeri 02 Lebak Grobogan, especially in class IV, there were problems faced by students that was the low score on their daily examination. This statement was based on the result of student's daily test score in science subjects which were quite low and students absorption was classically still below the standard minimum of 85%. In more detailed, among 27 students of class IV in Elementary School Lebak Grobogan, there were 13 students who did not reach the minimum required score of 48.15%, and 14 other students were reported completing that minimum targeted score (the percentage of completeness was 51.85%). This fact shows that the students of SD Negeri 02 Lebak Grobogan had not reached the minimum score requirement on science subjects.

This problem indicates that the teaching and learning process which had been conducted by the teacher was still less successful. To identify the causes of this failure, it was necessary to conduct classroom action research to improve the learning plan, so that the teaching and learning process could be optimum. In the next stage, the researchers, assisted by their colleagues, conducted a more direct in-depth observation on the learning process in the classroom. From the observation and discussion with colleagues, it was identified that children's inability to understand the material about the root structure was caused by following reasons: (1) The students' ability in understanding the material was still low. (2) Students tended to be passive and paid less attention to the teacher explanation. (3) The outcomes of science learning were still low.

After considering the above description, this study is titled "Efforts to Improve the Results of Science Learning Through Cooperative Model Type TGT Assisted by Media Learning Video In Grade 4 SDN 02 Lebak Grobogan". TGT is one type of cooperative learning model. Sitorus & Surya (2017: 17) explained that cooperative learning model is a learning approach that directs students to learn in groups. These activities make students more comfortable in learning. The TGT learning model was selected because it has unique characteristics which are not found in other learning methods. In TGT learning, there are games and tournaments that bring particular nuances in teaching and learning activities (Purnamasari, 2014). In addition, Darmawati (2016: 7) stated that the TGT learning model helps students to improve their inter-group cooperation skills, and trained them to be responsible and to have the positive attitude towards the competition in learning. Noviana and Okimustava (2016: 16) stated that Teams Games Tournament (TGT) is a learning model that encourages students to be more active in learning activities and able to work together in groups.

The TGT model is suitable to be applied in science learning because it allows interaction between students in the learning process by discussing material with each other to resolve some questions in each group. Irviana (2016) also revealed that the TGT model is the learning approach that creates a condition which is able to stimulate students to be more active in group

activities thus they can help each other in answering questions from the presented material. This is in accordance with the principle of science learning that: as the development of science is so rapid and this subject as well as its paradigm is increasingly needed in various fields, the teacher needs to deliberately design a learning model that allows educational values in science to be actively taught to the students. The teacher shoud deliberately design the science lesson that enables many activities that can support the growth of student personality. Yudiyanto et al (2014: 324) stated that the TGT learning model is one of the cooperative learning models that is easy to apply, involving all students activity without considering their status and involving the role of students as peer tutor which are supported by the element contained in the game and other reinforcements. Furthermore, Steve Parson (Slavin, 2010: 167) stated that the TGT type cooperative learning model that has the hallmark of games and tournaments creates a positive color in the classroom because of the students' pleasure with the game. This model can avoid learners from boredom so they can get the maximum benefit from learning result.

Slavin (2010: 166) explained that in the TGT learning model, there are 4 main steps: class presentation, group activity (teams), games, and tournaments. In classroom prerequisite activities, teachers are obliged to introduce learning materials. Teachers guide students so that they understand what is learned next, and then teacher directs students to form groups. At this stage, students are grouped heterogeneously, the goal being that the ability of each group is equal. After the formation of groups, students are prepared to do the activities in the game (game) or match (tournament). Usually, the tournament is held on weekends, after teachers make class presentations and groups accomplish their duties. For the first tournament, teachers group students with similar abilities that represent each team. This activity aims to create a learning model that is fun.

Slavin (2010) states that in the implementation of TGT learning model, some aspects which must be considered are 1) Student-centered learning; 2) The learning process with an atmosphere of competition; 3) Learning is active (students compete to solve problems); 4) Learning is conducted by grouping students into teams; 5) students get points based on their achievement on the competition; 6) the competition is matched with the student's ability or the equality of their academic performance; 7) The progress of a group is followed by the all students in the class and reported in a weekly class journal; 8) In giving guidance, teachers refers to the journal; 9) There is a reward system for students who earn many points. By applying the above steps, the cooperative learning model of TGT type (Teams Games Tournament) is expected to be one of the learning models that enable learners to learn easily, fun, and can achieve the learning objectives as expected so that students learning outcomes can increase.

TGT model is applied by using video as its media. , it is to attract students' attention when the teacher conveys the material. It also helps the teacher to arrange the material coherently. The same idea was expressed by Erniwati et al (2014: 270) stating that learning videos are able to transfer the material more practically as well as to attract students' attention so that students can always focus on the material being studied. Busyaeri (2016: 118) stated that videos are appropriate media in learning science as students can see the objects learned directly without having to go out of class therefore the classroom order can be maintained.

From the above background, the purpose of this study is to determine the improvement of student learning outcomes in science subjects by applying the cooperative model TGT type using media video on the fourth year students of SDN 02 Lebak Grobogan.

METHOD

This is a Classroom Action Research (CAR) which was conducted collaboratively, meaning the authors collaborate with the science teacher who teaches the fourth grade students of SD Negeri 02 Lebak Grobogan. Teachers and researchers discussed research issues and determined the action plans. The research was also conducted with participative approach, meaning that the authors with the help of fellow colleagues were directly involved in the research.

The research was conducted in the classroom by grouping the students during studying. The research was implemented in the

classroom and the data was retrieved during the learning process. The fourth grade class was selected on the basis of the agreement between the researchers and its teacher. The main sources of the data in this study were students, teachers, and observation results during the implementation of actions in the classroom, field notes, interviews with students and teachers, and test results.

This research was conducted on the fourth grade students of Lebak elementary School 02. Based on the observation, the 4th grade students of Lebak Elementary School 02 tend to be passive especially on science subjects. Teachers' instruction also often more focused on teachers than on students. This is the main factor why students tended to be passive.

The independent variable in this study is the cooperative learning type TGT assisted by media video learning. TGT is a learning group model that has two characteristics: using game and using tournament in the learning process. Video learning in this study refers to the learning media in the form of a video containing the material to be taught.

The dependent variable in this study is the result of the student learning. The learning result which was measured was the increase of value the student obtained in the science subjects after being given treatment by employing the TGT model with the instructional video.

This classroom action research was carried out in several cycles. Each cycle consisted of several stages including planning, action, observation and reflection in an interlocked spiral. The three stages of the above cycle are described as follows: first was the planning stage. At this stage, the researcher planned the instructional design based on the learning materials and the planned learning method. Also, at this stage the researcher designed the visual aids that could support the ongoing learning process by applying the last TGT cooperative model type. During the learning process, an observation sheet was also used as one of the measuring tools to perform the analysis and evaluation for the next planning. Secondly, after designing this plan, the next step was to carry out the planning, as well as to observe the implementation process. The implementation of this cycle was in accordance with the planning, including the constraints faced during the implementation process outside of the plan made. Third, after the implement-tation, then the last step was reflection. Reflection was intended to analyze and evaluate aspects that had not been planned in cycle I, and would be done in cycle II. However, in this study the implementation of observation (action) and observation were separated into different parts.

The success indicator of the implementation of TGT learning in natural science subject was how easy students can understand the material. This indicator is the plan and the implication which aim to boost the students' mastery in natural science subject. The students' success indicator in this class action research is if there are at least 85% of students who were taught with TGT method could get score higher than 70 (Minimum Criteria of Mastery Learning. The implementation of TGT approach will be categorized successful if at least 80% of learning scenarios made have been implemented.

The quantitative data that had been obtained was analyzed using comparative descriptive analysis technique, it is comparing the initial test value, the test value after cycle 1, and the test value after cycle 2. While, the qualitative data was analyzed using descriptive qualitative analysis based on the observation and reflection conducted on each cycle. The analysis of quantitative research data, in this case was the students learning result, was conducted by calculating its mastery percentage. If the percentage obtained minimum 70, the score is categorized passing the minimum learning mastery standard. The classical mastery will be achieved if there are at least 85% students obtained this minimum learning mastery standard. Followings are the formula:

$$\text{Individual mastery} = \frac{maximum\ obtained\ score}{maximum\ scire} \times 100\%$$

$$\text{Classical mastery} = \frac{the\ number\ of\ students\ achievign\ the\ minimum\ learning\ mastery\ standard}{the\ total\ number\ of\ students} \times 100\%$$

Note:

Minimum Individual learning mastery standard: If the student achieves a mastery score of> 70. Minimum classical learning mastery standard: If> 85% of all students achieve a mastery score of> 70.

The qualitative data obtained from the observation of student and teachers activities during the learning process was conducted descriptively. In the qualitative research, the presentation of data can be in the form of descriptions, tables, relationships between categories, graphs, matrices, charts and so on. However, the most commonly used in qualitative research is the narrative text.

RESULTS AND DISCUSSION

Results

In the initial condition when the learning by using TGT model aided with video learning had not been conducted, there were only 14 students or 51.85% of the 27 students reached the minimum learning mastery standard while the remaining 13 students (48.15%) did not. The condition shows that the students' mastery reached only 51.85%. It indicates that some students were categorized did not achieve the minimum learning mastery standard. It was also identified that the average score of the initial conditions only reached 67.2 and the highest value was 90 while the lowest one was 40. The average value is also below the minimum mastery criteria of 70. Based on that condition, the effort to improve the student learning outcomes was by applying the TGT learning model aided with video learning on science subjects.

The effort to improve natural science learning outcomes of the initial conditions was the application of TGT model assisted by video learning media. After conducting learning by applying TGT instructional model aided with instructional video, it was identified that the total number of students who obtained the minimum learning mastery standard increased to19 or 70,37% while the number of students who did not achieve the minimum learning mastery standard decreased to 29,63%. The average students' score in the first cycle was 71.1 with the highest score of 90 and the lowest score of 55. This condition indicates that there was an increasing number of students who achieved the minimum learning mastery standard score ie from 14 students to 19 students so it is identified that the increase number of students reaching the minimum learning mastery standard in cycle I was 18.52%. While there was a decrease in the number of students who did not complete minimum required score ie from 13 students on the initial conditions to 8 students in cycle I. In addition the students' average score also increased from 67.2 at the initial conditions to 71.1 in cycle I. The average value on the cycle I have reached the minimum learning mastery standard (KKM = 70). Although there was an increase from the initial condition to the first cycle, the number of students who achieved this score has not reached 85%, meaning the minimum performance criteria has not be accomplished. Therefore, a further action in cycle II was conducted.

After some actions was carried out in cycle II, the number of students achieving the minimum learning mastery standard increased to 24 or 88.89% while students who did not were 11.11%. These results indicated that there was an increase in students' mastery from cycle I to cycle II ie from 19 students to 24 students. It experienced an increase of 18.52%. The number of students who did not achieve the minimum learning mastery score also reduced from 8 in cycle I to3 in cycle II. The average score in the second cycle reached 78.52 with the lowest value of 60 and the highest value of 100. Based on that condition, it can be identified that the learning achievement in cycle II successfully achieved the minimum performance criteria so that this action is stopped in cycle II. The students' learning result in the initial condition, cycle I and cycle II are presented in Figure 1.
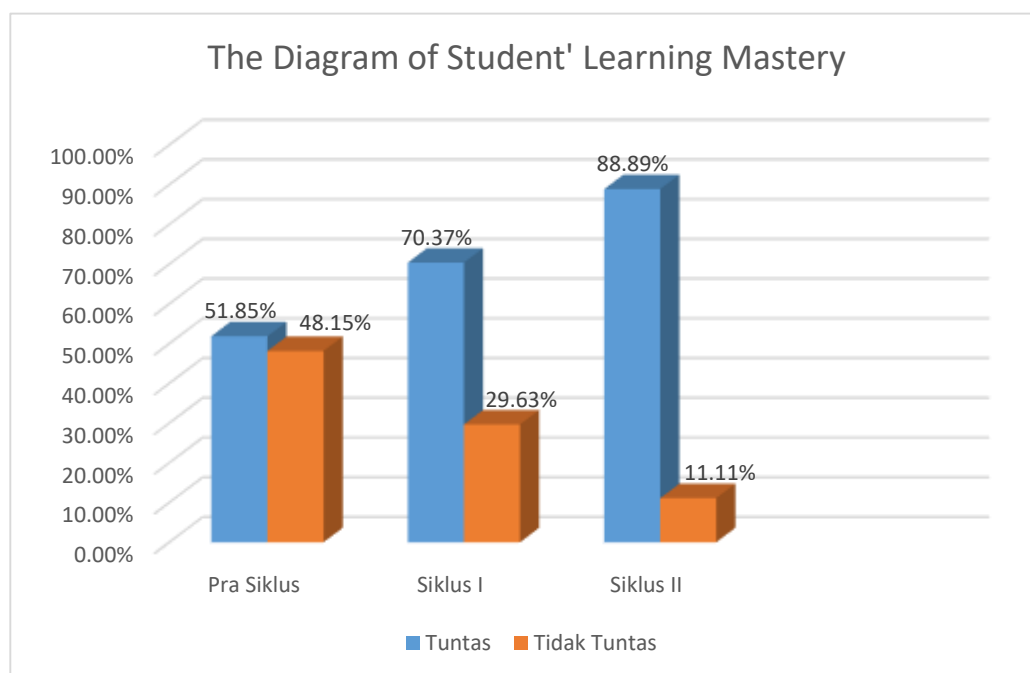
Figure 1. The diagram of Student' learning Mastery

Figure 1 compares the students' mastery from the initial condition to cycle II. Based on this figure, it can be identified that student learning outcomes experienced a significant improvement from pre-cycle condition (before the implementation of TGT aided with learning video) to cycle I and cycle II. Based on that condition, it can be recognized that the students' mastery could increase from the pre cycle to the 1st cycle because students felt happier due to the provision of the game, therefore they do not fell under pressure. In team work stage, students could work together in group. In games activity, students can complete some tasks in a fun way because it was conducted through group matches. Furthermore, in the tournament stage, although they struggle individually, they were spirit because of the balanced competition. Students were situated in the same table with other students with the same capability. These conditions allow students to learn better and help them to be more active in learning. Although there has been an increase, the learning mastery in the first cycle has not achieved a predetermined success indicator that is 85% of all students experience mastery, while the mastery in the first cycle only reached 70.37%. Therefore it is necessary to continue the learning to the next cycle.

After considering the various shortcomings that occurred in cycle I, the researcher did some improvements on the learning in cycle II. In cycle II, it was identified that 24 out of 27 students had reached the mastery level, gaining the average value of 78.52. So that the students who are achieved the mastery level in cycle II reached 88.89%. Referring to this result, it can be stated that there was an improvement on student' learning mastery from cycle I to cycle II which was 18.52%. by looking at the mastery level in learning cycle II which reached 88.89%, the learning mastery in that cycle is regarded having exceeded the determined indicator of success, thus efforts to improve student learning outcomes have been successfully implemented. Based on these results, learning with TGT cooperative model was regarded to be able to improve learning outcomes in accordance with the planned. The results are also accompanied by the teachers' success in applying TGT cooperative model that is indicated by the improvement of applying the TGT model on science learning in each meeting. In addition, students can follow the TGT learning well which is indicated by the result of the assessment through an observation sheet.

When the lesson with cooperative learning model of TGT type was implemented, students could more easily understand the material

because of the provision of team activities where students could exchange their ideas and express opinions freely. In addition, activities on team foster a spirit of cooperation. Students who were excellent in learning could help weaker students so that in team activities there was a good cooperation. This result is in line with the of Frianto et al's (2016: 75) opinion which stated that the TGT model encourages the development of students' special abilities in doing social interaction. This group activity encouraged students to learn to communicate well.

The existence of games and tournaments activities make learning more fun for students therefore they do not feel burdened by the problems given by the teacher. Although at the beginning of the meeting there were still students who felt confused about the task, such conditions were successfully resolved in the next meeting. Tournament activities train students to compete well, because students competed to do things. Overall activities at TGT have helped students to master the material without coercion, and students feel the need to master the material with their own willingness, and have a desire to be the most excellent participant in tournament activities. It triggers student learning outcomes to increase. This condition is in line with the opinion of Nadrah, et al (2017: 124) explaining that the TGT model is able to train students' skills, encouraging students to be more eager in learning because of the game, finally it can help students to improve their learning outcomes.

The results of this study strengthens the research results that has been done by some parties, including the one which was conducted by Widayanti and Slameto (2016) showing that the TGT model can improve science learning outcomes. Other research results that also show success in improving learning outcomes through cooperative model type TGT is the one which was conducted by Susyanto (2015) which indicated that there was an improvement of student learning outcomes after applying such model. In addition, the results of this study support the findings of Virgiana and Wasitohadi (2016) which through his research, they showed that the use of audio visual media is more effective in improving science learning outcomes. This is in line with the findings in this study that the learning video media helps students to understand the material well and

support the increase of science learning outcomes.

Furthermore, the results of this study also supports the theory proposed by Isjoni (2011) which stated that the cooperative model of TGT type can arouse students' desire to learn because of the presence of fun activities such as games and tournaments, the condition triggers a conducive learning environment that can help students in learning and ultimately will affect student learning outcomes. This is in line with the results of this study which shows that the TGT model can improve student learning outcomes, as evidenced by the increase of students' learning mastery in cycle II.

CONCLUSIONS AND SUGGESTIONS

Based on the results and discussion that is presented, the results of this study indicate an increase in natural science learning of students grade IV SDN IV Lebak 02 Grobogan. Results of data analysis showed that the number of students who achieved the minimum learning mastery standard before the action or pre cycle was 14 (51.85%). After the action was given in cycle I, there was an increase in the learning result mastery to 19 (70.37%). Increased mastery also occurs again in cycle II, ie 24 out of 27 students achieved the minimum learning mastery standard which equaled to 88.89%.

In addition to the increased percentage of learning completeness to 85% in cycle II, the increase can also be seen from the average student learning outcomes, where the average value increased from 71.1 in the first cycle to 78.52 in cycle II. Based on this result, it can be concluded that the implementation of cooperative learning model type Teams Games Tournament (TGT) in fourth grade students of SDN Lebak 02 Grobogan in second semester of academic year 2016/2017 can improve student learning outcomes.

Based on those conclusions, here are some suggestions that can be considered.(1) for school. Schools are recommended to arrange an innovative learning workshop about cooperative learning model TGT type. (2) for teacher. Teachers are recommended to design and simultaneously try to apply the TGT model to other materials or subjects. (3) for student. It is recommended for students to work together in learning to help their friends in math and other

lessons. Students can form study groups out of school hours, so group learning is not only conducted during school hours and but also at home thus it will help students to improve their learning outcomes.

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