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THE EFFECT OF TEAM GAMES TOURNAMENT LEARNING MODEL ON COOPERATION ABILITY, MOTIVATION AND COGNITIVE LEARNING OUTCOMES OF GRADE XI IPA STUDENTS

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ABSTRACT

This study was aimed to determine the effect of the TGT learning model on students' cooperation skills, motivation and cognitive learning outcomes on the Blood Circulatory System in class XI SMA Negeri 13 Medan academic year of 2023/2024. This type of research is a quasi-experimental with Pre- and Post-test Control Group Design. This study used two classes, namely class XI 6 as the experimental class taught with the TGT learning model and class XI 5 as the control class with Direct Instruction learning model. The results showed that the average score of students' cooperation skills in the experimental class 86%, was higher than the control class 64% (t test, $p < 0.05$). The average score of student motivation in the experimental class (80.13) was significantly higher than the control class (67.67) (t test, $p < 0.05$). While the average post-test score of student learning outcomes in the experimental class (80.00) was significantly higher than the control class (72.22). Based on these results, it is concluded that the TGT learning model has an significant effect to improving students' cooperation skills, motivation and cognitive learning outcomes in the Blood Circulatory System material in class XI SMA Negeri 13 Medan TP 2023/2024.

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INTRODUCTION

In the 21st century students are required to have problem solving skills, critical thinking skills, collaboration skills, communication skills, and creativity skills (Miroh, 2019). To achieve these skills, teachers and students must work together in learning. The concept of cooperation in learning is expected to increase students' motivation and competitive spirit. It will also give students the opportunity to gain learning resources and knowledge to solve problems to achieve learning objectives (Fatirul, 2022). Cooperation in student groups will allow them to express different opinions or ideas to each other (Marita, 2023). Low cooperation skills will have an impact on learning outcomes and learning motivation. The low cooperation ability of students can be caused by not conducive group activities because schools are still too concerned with cognitive aspects only while students' social skills are still less considered (Aisyah, 2023). As a result, there is often a mismatch between members in the study group, uneven division of tasks, friends who do not respect each other and rarely help fellow friends (Lestari, 2020) and a lack of sense of responsibility of students in the group (Firgiyawan, 2019). Whereas social skills are one of the factors that influence student learning motivation (Priyanggani, 2023).

Motivation is one of the determining factors in learning, without adequate motivation learning will not run effectively. Therefore, it is important to pay attention to the level of student motivation (Santosa & Us, 2016). Uncommunicative relationships between teachers and students and between students and other students can create a monotonous and boring learning atmosphere, thus reducing student motivation (Syafii, 2021). Unmotivated students tend to be more passive in learning, which is characterized by a lack of courage to ask questions, resulting in unsatisfactory learning outcomes (Budiariawan, 2019). Learning outcomes will be better if there is proper motivation (Syafii, 2021; Sadirman, 2014). Student learning outcomes are also influenced by the role of teachers and peers in learning. Teacher-centered learning will tend to reduce student engagement. In addition, monotonous and unvaried learning approaches will make students less involved in learning activities, which in turn has a negative impact on their learning outcomes (Charli et al., 2019).

Observations at SMA Negeri 13 Medan revealed that students' interest in learning was still low, and consequently students' learning outcomes were still low, students could only master 40% of the learning outcomes. Study group discussion activities did not go well because study groups were divided based on ranking. According to Sarumaha (2021), biology subjects are considered difficult because students do not understand the terms, lack of relevant learning resources, and lack of student interest and motivation. It was also found that 75% of students failed to reach the KKM due to the ineffective learning process, low student motivation, and inappropriate learning models that made students passive (Arizka, 2022). The selection of the right learning model is very important to ensure the achievement of goals (Friani et al., 2017) and mistakes in choosing and applying learning models can cause student failure (Sambawarana, 2022). The use of inappropriate models can cause difficulties for students in understanding the material, finding and solving problems (Friani et al., 2017). Low learning motivation can affect interest in learning which ultimately reduces student academic achievement. Students with low cognitive learning outcomes tend to leave school more easily because they experience difficulties in achieving their potential and goals (Rusniyanti, 2022).

One solution to overcome this problem is the cooperative learning model, which encourages students to work together to achieve a common goal (Akbar, 2023). The Team Games Tournament (TGT) model, as a form of cooperative learning, can be applied in learning biology. TGT requires students to work together in groups and participate in tournaments to achieve learning objectives (Lestari, 2023). This method increases student motivation, encourages cooperation, and tackles problems in groups. Cognitive learning focuses on problem identification and effective solutions, which helps students enhance their learning experience through understanding, execution, and systemic awareness (Kao, 2023).

The purpose of this study was to determine the effect of the Team Games Tournament learning model on cooperation skills, motivation, and

cognitive learning outcomes of students on the material of the Blood Circulatory System Class XI IPA SMA Negeri 13 Medan.

RESEARCH METHODS

Place and Time of Research. This study was conducted at SMA Negeri 13 Medan, located on Jl. Brigjen Zein Hamid Km 7, Titi Kuning, Medan Johor District, Medan City, North Sumatra. The research took place during the academic year 2023/2024, specifically from June to August.

Population and Sample. The population in this study were all students of class XI IPA in the academic year 2023/2024 at SMA Negeri 13 Medan consisting of 12 classes with a total of 432 students. Two sample classes, namely XI IPA 5 (control class) and XI IPA 6 (experimental class), were taken by cluster random sampling.

Research Type and Design. This type of research is a quasi-experiment following a non equivType and Research Design. This type of research is a quasi-experiment following a non-equivalent Post-test Only Control Group design.

Research Instruments. The instruments used in this study were test and non-test instruments (observation sheets and questionnaires). The test instrument was used to measure student learning outcomes in the form of multiple choice tests with a total of 20 questions that had been validated by expert lecturers and predictive validation tests. The non-test instrument is an observation sheet containing 25 statements from five indicators, namely contributing to each other, taking responsibility together, respecting individual opinions, being in a work group during activities and completing tasks on time. The observation sheet is used to measure students' cooperation skills which are observed with the help of observers during the learning process and the questionnaire is used to measure students' learning motivation which contains 34 statements after being validated by expert lecturers, the questionnaire given is a semi-open questionnaire with a Likert scale and a descriptive scale consisting of answers strongly agree (SS), agree (S), disagree (KS), and disagree (TS).

Research Procedure. Starting with giving a test at the beginning in both classes to measure students' initial motivation and student learning outcomes. This research was conducted for 3 meetings and students' cooperation skills were measured at each meeting. Furthermore, treatment was given in the experimental class with a team games tournament learning model with circulatory system material. Learning is carried out group-based with 7 heterogeneous groups of students with 5 students per group, then LKPD is distributed to each group. Then, the teacher briefly explained the summary of the material and explained the procedures for implementing the tournament and working on the LKPD. After that, each group sent 1 representative to answer the questions that had been provided at the tournament table. The teacher acts to supervise each game. Each student takes turns coming forward until the questions on the tournament table run out. During the learning process, the observer will observe the cooperation ability of each student using the observation sheet. After getting the score, the winner is then determined and awarded as agreed before the learning is carried out. Then it ends with an evaluation of the learning activities that have been carried out. In the control class, learning was carried out with a direct instruction model, with a group discussion method as well but not TGT. After dividing students into 7 groups, the teacher then explained the learning material. Then proceed with distributing LKPD to each group of students. The teacher acted to supervise the students' group discussion activities. In the control class, students' cooperation skills were measured by an observation sheet with the help of an observer. Then the results of student discussions are presented in front of the class and other students act as responders and questions to students who present in front. Then it ended with a reflection of learning.

After the learning ended, both groups were given a post-test to measure students' cognitive learning outcomes using the same test instrument as the pre-test. Then continued to measure students' final motivation in both classes using the same questionnaire used to measure students' initial motivation at the beginning of learning.

Data Analysis. The value of student learning outcomes is determined by the formula of the number of correct answers divided by the number of questions multiplied by 100, learning motivation

is determined by the formula of the score obtained divided by the maximum score and multiplied by 100, and cooperation skills, determined by the formula of the score obtained divided by the maximum score and multiplied by 100. Data were first tested for normality (Shapiro-Wilk test) and homogeneity (Levene test). Data were presented as mean ± SD. The effect of TGT on motivation and learning outcomes was tested with an independent sample t-test at a significance level of $p < 0.05$ using SPSS 29. As for cooperation skills, it was seen from the average increase in cooperation skills at each meeting.

RESULTS AND DISCUSSION

Research Results

1. Student Cooperation Skills

For each meeting, the average cooperation ability of the experimental group was higher than that of the control group. The ability of cooperation between students in the experimental group experienced a real increase from the first meeting to the third meeting, while in the control group it was relatively stable. In the experimental class with the Team Games Torunament learning model, the average initial cooperation ability was 60.2 and the final cooperation ability was 86. Meanwhile, in the control class with the Direct Instruction learning model, the average initial cooperation ability was 57.78 and the final cooperation ability was 64.

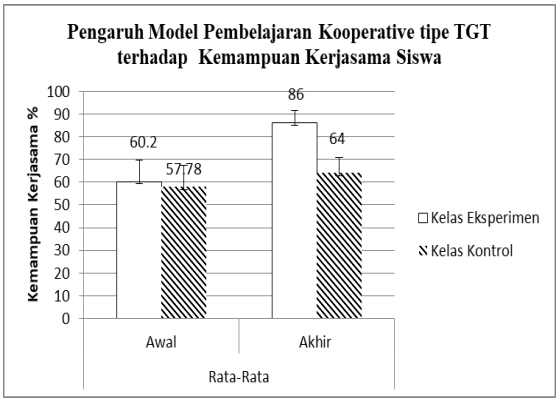


Figure 1 Effect of TGT type Cooperative Learning Model on Students' Cooperation Ability (* indicates significantly different than the control class (t test; $p < 0.05$)).

2. Student Learning Motivation

The average initial learning motivation in the experimental class was 57.97 (medium category) and increased rapidly to 80.13 (high category) after learning with TGT. In the control class, the average initial motivation was 53.36 (medium category) and slightly increased to 67.67% but remained in the medium category (Figure 2). Statistical test results showed that the final learning motivation of experimental group students was significantly greater than that of the control class (independent sample t-test, $p < 0.05$).

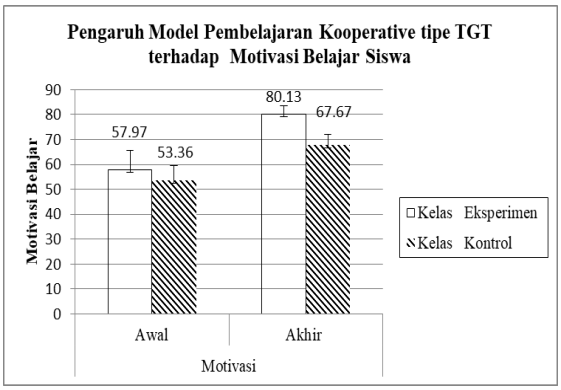
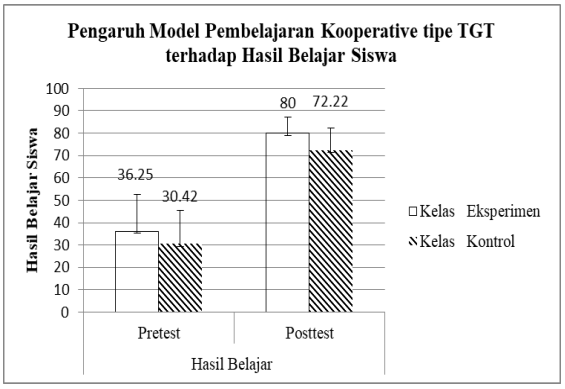


Figure 2 The effect of TGT learning model on Learning Motivation (Sign * indicates significantly different than the control class (t test; $p < 0.05$)).

3. Student Learning Outcomes

The initial cognitive learning outcomes of the two groups of students were not significantly different (36.25 control: 30.42 treatment). After treatment, the cognitive learning outcomes of the experimental class increased dramatically to 80.00 * while the control class amounted to 72.22. Statistical test results showed that the cognitive learning outcomes of experimental class students were significantly greater than those of the control class (independent sample t-test, $p < 0.05$).



The effect of TGT learning model on Student Learning Outcomes (The * sign indicates significantly different than the control class (t test; $p < 0.05$)).

Discussion

Data on the results of research on student learning abilities were obtained using observation sheets whose assessment was assisted by observers. Observers observed students' cooperation skills during the learning process of circulatory system material in the experimental class with the Team Games Tournament (TGT) learning model and in the control class with the direct instruction learning model.

The average score of the experimental class students' cooperation skills (86, high category) was significantly higher than that of the control class (64, medium category) (Figure 1). Based on this, it can be concluded that the application of the TGT learning model can improve students' cooperation skills. This model succeeds in creating a collaborative learning atmosphere, where students in their groups are able to work together to achieve common goals. The social system in this learning model is in groups and then a match is held. Students in their groups will work by discussing and giving opinions to each other (Fadly, 2022). In the discussion activities, there will be interaction between members. Based on the results of observations of student abilities, an increase in student cooperation skills was obtained at each meeting. Based on this, it can be seen that students began to understand the importance of cooperation and began to be more active in supporting the success of their group so that there was an increase in cooperation in the next meeting. Students are not only trying to win the tournament, but also focus more on the learning process that emphasizes collaboration and mutual support for fellow students who hone their cooperation skills. The results of this study are in accordance with what was reported by Rosyida (2023) and Hidayati (2024) by using heterogeneous groups with different abilities, can encourage students to help each other and learn from each other. Cooperation in groups of students will express different opinions or ideas to each other so that students become more aware of something as a result of the exchange of ideas and opinions (Marita, 2023).

Maskani (2020) reported that TGT made learners more active, more confident, better mastered the learning material and increased the cooperation of learners thus improving their cooperation skills.

Further findings showed that TGT also significantly influenced and increased students' learning motivation (Figure 2). This can happen because students not only accept what is given by the teacher but students actively participate in the game. During the learning process with the TGT model, students were more active. The element of competition in learning makes students more encouraged to participate actively. The game element in this learning makes the learning process not monotonous. Tournament-based learning, with awards given for individual and group achievement, creates a competitive yet fun learning atmosphere. Winning motivates students to improve their performance and encourages other groups to work harder. A fair reward system triggers the spirit of learning, so students are encouraged to explore their potential to the fullest. Thus creating interactive learning. This is in line with the Nugraha (2020) and Widyastuty (2023) reports. The TGT model requires students to collaborate in heterogeneous small groups and requires students to work together in teams in a tournament to achieve common goals. The existence of tournament elements in learning will create an atmosphere of healthy competition between groups, thus increasing the learning effect by fostering instrinsic motivation and interest in learning so as to increase their motivation in learning. Students not only listen to the teacher's explanation, but they also actively discuss with their teammates so that they are more courageous to ask and answer questions given so as to create good interaction between teachers and students, students and other students.

Finally, this study found that TGT has an effect and can significantly improve cognitive learning outcomes when compared to students taught with the direct instruction model (Figure 3). Similar results have been reported by Lakapu (2023) who found that TGT model collaborative learning has a positive effect on student learning

outcomes, showing an increase in student learning completeness in each cycle. The tournament element in the TGT model creates a healthy gaming atmosphere, motivates students to achieve team victory, and encourages better understanding of the material. TGT focuses on active participation, cooperation, and problem solving, which increases students' interest in learning. High learning motivation makes the learning process in the classroom more conducive and makes it easier for students to understand the material (Abdillah, 2023). According to Andriani & Rasto (2019), learning outcomes will be optimal if students have the right motivation. The previous data analysis showed that students in the experimental class had high motivation, which contributed to the improvement of their learning outcomes. The interaction of students with their group mates will help students understand the material. With a learning atmosphere that is a tournament, it makes the learning atmosphere fun for students. At the end of the game, the awards that will be given encourage students to take responsibility and work actively to achieve common.

CONCLUSIONS

Based on the results of research and discussion, it can be concluded that the application of the Team Game Tournament model in learning:

1. Significant effect on students' cooperation ability on circulatory system material in class XI IPA SMA Negeri 13 Medan.
2. Significant effect on students' learning motivation on the material of circulatory system in class XI IPA SMA Negeri 13 Medan.
3. Significantly influenced the students' learning outcomes on the material of circulatory system in class XI IPA SMA Negeri 13 Medan.

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