

IMPLEMENTATION OF COOPERATIVE LEARNING MODEL TEAMS GAMES TOURNAMENT TO IMPROVE STUDENT SCIENCE LEARNING OUTCOME OF JUNIOR HIGH SCHOOL

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Abstract: This study aims to describe the improvement in science learning outcomes for junior high schools on the Digestive System material with the Teams Games Tournament TGT. The study was carried out at junior high school SMPN 28 Surabaya, Indonesia. Pre-experimental designs were used in the study. This study was aimed at 33 students in grade eight. Data were collected by observation, written test, and response questionnaire. This study obtained the average learning implementation with a very good percentage (93%). It can be concluded that the average N-gain is high. Student responses during learning also gave a positive response. The student response questionnaire shows a high percentage (89.14%), which means that they agree with the implementation of learning using this model. In conclusion, the TGT in the learning process can improve student learning outcomes, especially in the material of the human digestive system.

Keywords: *Learning Outcomes, Cooperative Type TGT, Digestive System.*

INTRODUCTION

Education is a primary need for every human being to develop the quality of human resources (HR). Education also affects every nation's progress, so education needs to be considered [1]. To improve the quality of education, schools must organize more optimal learning. One is the method of delivering knowledge, and the skills approach teachers must have when carrying out the learning process. The cooperative learning model with the TGT is a teaching strategy or technique that the teacher masters of conveying knowledge that is easily accepted, understood, and applied by students [2].

Teachers have a very important role in occupying a neutral position in the education system because of how well experts create educational programs. If the teacher cannot implement it properly, the learning outcomes and objectives will differ. Therefore, the role taken by the teacher is the main factor in the success of science learning [3]. The experience by SMP Negeri 4 Nisam, Aceh Regency, where observations of the science learning process are known to have not been active in the learning process, can impact low learning outcomes. It can be seen in the daily test scores by obtaining 40% of data on science lessons for class VIII students. The teacher has determined the Minimum Completeness Criteria for science lessons, namely: 65. A similar problem was also experienced by SMP Negeri 4 Wonosari, which stated that the value in science lessons was low. It can be seen from the average science lesson, which is still below the minimum completeness criteria, while the average score criteria the school approved is 76 [4]. Researchers conducted a further survey and obtained low data on science lessons, and students

felt that science lessons were considered very difficult it affected grades in the learning process [5].

The human digestive system material is included in the science subject of SMP Class VIII semester 1, which is quite complex. Generally, learning about material about the human digestive system still uses the general method, namely the blackboard media and pictures through ppt, which are less attractive. Students must memorize writing and pictures through textbooks and ppt, so they do not hone their critical and logical thinking skills. It then triggers a lack of interest and motivation in learning for students during learning [6].

Regarding the human digestive system, the food we often consume cannot always be digested and needed by our bodies. Several stages must be passed to be digested by the body. There are two types of digestion in the body: mechanical digestion and chemical digestion. This mechanical digestion process involves the digestive organs such as the mouth, teeth, tongue, and others. Meanwhile, the glands are needed to digest food in the process of chemical digestion. This process occurs through several stages, including the mouth, then enters the esophagus, which will be continued in the stomach, then the small intestine, large intestine, and anus [6].

The same problem was also experienced by one of the SMP Negeri 28 Surabaya. During the learning process, it was still using the old method and had not been maximized in increasing the interest and motivation of students. Based on surveys and interviews with science teachers, the material delivery still uses the conventional model where the teacher is the center and only one-way interaction during the teaching and learning process, so students tend to be passive. It affects

the learning activities and the final results obtained by students when they are in class. As a result, the average score in these subjects has not reached the school minimum completeness criteria (MCC). Meanwhile, science subjects also greatly affect graduation and being one of the subjects tested (UN). There must be a change in the teaching atmosphere to overcome this problem [3].

David DeVries and Keith Edwards first developed the Teams-Games Tournament, including the first learning method from Johns Hopkins. In this learning model, students are randomly formed into small groups containing 5 to 6 students with different thinking skills, ethnicity, and gender. With this learning model, students can blend into heterogeneous groups, motivate other students, and exchange opinions and insights from each child [7]. In addition, this learning model is one model that makes students enter into games and reinforcement. Students are also required to be responsible in groups, work together, and foster healthy competition during teaching and learning activities so that students are required to be more active, creative, and competitive [8]. One of the differences in this study is the use of the TGT on the material of the human digestive system. According to Slavin, this learning model consists of five learning steps, including (1) class presentation (class presentation), (2) study groups (teams), (3) games (tournament), and (4) giving rewards (group awards) [9].

From the problems above, other alternatives are needed that can change students' understanding of the material to be taken to be fun during the teaching and learning process. The researcher chose the TGT type of cooperative learning model. Besides being able to make the learning process not boring, this learning emphasizes the cooperation of

each small group that students realize. The cooperative learning method type TGT (Teams Games Tournament) is expected to increase junior high school students' interest and learning outcomes in the human digestive system [3].

RESEARCH METHODS

In this study, researchers used the Pre-Experimental Design with the type of One Group Pretest-Posttest [10]. This activity is located at SMP Negeri 28 Surabaya, which will be held in the odd semester of 2020/2021. The independent variable in this study is the application of TGT by providing material about nutrition and the structure of the digestive system by playing games, and students are formed into 3-4 small groups, which consist of 5 people and follow directions or instructions from the teacher. After providing a learning method, the teacher guides students to fill out a response questionnaire at the end of the lesson. While the dependent variable in this study is the final result obtained by students, it is expected that the posttest is higher than the pretest or exceeds the Science minimum completeness criteria that the school, namely 75, has set. So there is an increase in learning outcomes. The success of learning indicators can be seen in Table 2.

Table 2. learning outcome indicators

MCC	Category	Description
90-100	Very High	Passed
80-89	High	Passed
60-79	Medium	Passed
45-59	Low	Did not Pass
0-45	Very Low	Did not Pass

[11]

Table 3. Learning Implementation Indicators

No.	Indicators	Criteria observed
1.	Preparation	Preparing Learning Equipment (Learning Tools)
2.	Introduction Activities	a. Saying Greetings and Praying Together b. Checking Attendance c. Providing Motivation d. Delivering Learning Objectives
3.	Core Activities	a. Presenting Information to Students b. Guiding Students into Groups 1. Dividing Students into Groups 2. Asking Learners to study for 10 minutes c. Guiding the Group 1. Explaining the Game Rules 2. Determining Serial Numbers Students Asking 3. Questions 4. Counting Points earned by Students
4.	Closing Activities	a. Giving Awards b. Evaluating the Learning Process c. Ending the Learning with Prayer and Greetings

The instruments used are (1) learning implementation sheets when collecting data, (1) written test instruments (pretest and posttest), and (2) student response questionnaire sheets after the learning process takes place. The indicators assessed on the implementation sheet are observed in Table 3.

The following are data collection techniques in the study, namely: (1) observation, (2) test, and (3) response questionnaire. Observations made to assess teacher activities, and the skills of each student when learning took place were observed through instruments. The written test method is given before and after the teaching-learning process to see the value of the final learning outcomes. The indicators and sub-indicators pretest and posttest are presented in table 4.

Table 4. Pretest and Posttest Ability Indicators.

Indicator	Number Pretest	Number Posttest
Nutrition	1,2,3	1,2,10
Structure and Function of the Digestive System	4,5,6,7,8,9,10	3,4,5,6,7,8,9

The purpose of the questionnaire is to see the results of student responses after participating in the learning process using the TGT by asking students to answer the questionnaire given. The following are nine statements presented in the student questionnaire in Table 5.

Table 5. Indicators of Student Response Questionnaire

Indicator	Number Statement
of Interest and Motivation	1,2,3,4, & 5
Satisfaction	6,7,8, & 9

The implementation of learning has assessment criteria at each meeting, then analyzed and obtained the percentage results with Equation 1.

$$\text{Implementation of lesson plans (\%)} = \frac{\text{score obtained}}{\text{maximum score}} \times 100\% \dots\dots\dots(1)$$

[12]

The value of the implementation of learning in the assessment instrument is converted into the value of the teacher's effectiveness during the learning process. Teachers can be said to be effective when they get good or very good criteria with a percentage of 61%. The following are the criteria for implementing learning by teachers in Table 6.

Table 6. Criteria for Teacher Effectiveness in the Learning Process

Criteria	Average Value
Very Good	81% -100%
Good	61% - 80%
Enough	41% - 60%
Less	21% - 40%
Less Once	0% - 20%

[12]

In addition to assessing the implementation of teacher effectiveness when carrying out learning, student response questionnaires are also converted into percentages. Student questionnaire analysis can be calculated using Equation 2:

$$\text{Student response (\%)} = \frac{\text{score obtained}}{\text{maximum score}} \times 100\% \dots\dots\dots(2)$$

[12]

When students answer the questionnaire, 61% with a positive category, all students are considered to respond well to the ongoing learning process. Criteria can be seen in the form of percentages in Table 7.

Table 7. Criteria for Assessment Response Questionnaire

Percentage (%)	Information
0-20	Bad
21-40	Bad
41-60	Enough
61-80	Good
81-100	Very Good

[12]

After the pretest is done for the students, the next step is the normality test, which is tested to determine whether the sample used is normal. If the sample is normally distributed, the t-test can be carried out, which aims to see significant differences in test results before and after learning. After the results are obtained, the conclusion is that if Ho is rejected, it means that the value of t_{table} is smaller than t_{count} . If Ho is accepted, it means that the value of t_{table} is greater than t_{count} [13-15].

In addition to the paired t-test, the sample's normalized gain (N-gain) was also calculated to determine how much the increase in the test scores was before and after. [1] said that the test results tested before and after learning can be analyzed using the following formula:

$$g = \frac{\text{posttest-pretestscore}}{\text{maximum score}} \dots\dots\dots(3)$$

For results, The analysis that has been determined can be seen in the table of the N-gain equation according to [14] as follows:

Table 8. Criteria for gain score

Gain Score	Criteria
$g \geq 0.7$	High
$0.3 < g < 0.7$	Medium
$g < 0.3$	Low

RESULTS AND DISCUSSION

The results of the research with the title of applying the TGT type cooperative learning model to improve the learning outcomes of science students of SMP class VIII on the material of the digestive system carried out at SMP Negeri 28 Surabaya, research data have been obtained,

namely; learning implementation data, learning outcomes ability test data, and student response questionnaire data during the learning process. The data obtained will be discussed in this study.

Implementation of Learning

Implementation of learning carried out in class VIII-J aims to describe students' learning outcomes on the digestive system material, which was carried out in 2 (two) meetings. In the observation sheet, data on the implementation results have been obtained, which have been filled in by 2 (two) people during two meetings. The data obtained are as follows:

Table 9. Learning Implementation Data for 2 (two) meetings.

Aspects assessed	Average Score			
	Meeting 1		Meeting 2	
	O1	O2	O1	O2
Preliminary Activities	28	30	28	30
Core Activities				
Presenting Information	8	7	8	7
Organizing Students into Study Groups	7	8	7	8
Guiding Groups	16	14	16	14
Closing Activities	24	27	24	27
Total	83	86	83	86
Average (%)	90%	93%	90%	93%
Category	Very Good		Very Good	

Description:

- O1 : Observer 1
- O2 : Observer 2

Table 9 shows that the averages obtained are 90%, and 93% indicates a very good category. It means that the teaching and learning process activities using the TGT type cooperative learning model to improve the learning outcomes of science students at SMP class VIII in the digestive system material have been carried out according to the action plan made in the implementation sheet. The syntax in this learning process is; 1) The teacher provides motivation and conveys learning

objectives, 2) Provides detailed information, 3) Guides students into study groups, 4) Evaluation.

Learning Outcomes Student

learning outcomes obtained from test scores before and after were analyzed by descriptive analysis before proceeding with the normality test and paired t-test to determine whether the students' final scores increased or not. The descriptive analysis obtained can be observed in table 10.

Table 10. Descriptive Analysis of Student Learning Outcomes

Data	N	Minimum	Maximum	Total	Average
Pretest	3	20	60	1450	43.94
	3				
Posttest	3	80	100	2890	87.58
	3				

Table 10 descriptive analysis of student learning outcomes obtained pretest of 20 and a maximum of 60, then posttest of at least 80 and a maximum of 100. After obtaining these values, it is continued with the normality test using SPSS. The

results of the normality test that have been obtained can be observed in Table 11.

From the Kolmogorov-Smirnov normality test data above, it is obtained (Sig) > 0.05 of 0.710, which means that the data is normally distributed when (Sig) <0.05. After performing the normality

test, which obtained normal data, a paired t-test was performed. At this stage, it is carried out to test 2 hypotheses where $H_0: 1 > 2$, which means that the students' post-test is smaller than the pretest. If $H_a: 1 < 2$ means that the students' posttest is greater than the pretest. If the significance of $t > 0.05$, then H_0 is accepted, but if $t < 0.05$ is rejected. These results can be observed in Table 12.

Table 12 paired t-test above, Sig (2-tailed) < 0.05, it can be said that H_0 is rejected and H_a is accepted. Therefore, it can be concluded that the posttest is higher than pretest, so learning outcomes can be said to be increasing or significant. Then,

Table 12. Paired t-test results

data	Mean	StdDeviation	Std. Error Mean	t	df	Sig. (2-tailed)
Pre-Post	-43.636	13.421	2.336	-18.678	33.000	<0.05

Table 13. Results of N-Gain

Analysis Criteria for Analysis Results	Total
High	25
Medium	8

In the table of N-gain above, it can be seen that in 33 students, there are 25 students. In the high category, which has the highest N-gain of 1.00 then, 8 students have an average N-gain value of 0.60 in the medium category, so the cooperative learning model type TGT can affect student learning outcomes.

Student Responses

Table 14 shows that student's response to the learning process at the end of the learning process obtained a percentage of > 61%, which has an average of 89.14%, which states that students strongly agree with the learning model. These results are also supported by learning outcomes through the posttest, which have improved. Positive responses from students were also shown during the learning process. The TGT learning model has a very good effect on students because, with this learning, students can develop creativity and active speech in games that look relaxed and fun [18-19]. Activities in this learning have been designed as well as possible so that students relax while studying. It can also foster a sense of responsibility, cooperation, and healthy competition between students [20].

In the description of the discussion above, it can be concluded that several factors can improve student learning outcomes. One of them is the condition of a spacious and comfortable study room that makes the learning process students run smoothly. Then the learning interest of students in participating in learning. This type of TGT cooperative learning model encourages students to be active and creative in study groups to encourage

the gain index value was calculated, and obtained the data in table 13.

Table 11. Normality Test Results

data	pretest
N	33
on average	.0000000
Std. Deviation	13.05255326
Absolute	.122
Positive	.086
Negative	-.122
Sig. (2-tailed)	.710

students to participate and pay attention to learning. The third is the achievement motive, where students with more perseverance can be developed and improved through the interests students to improve learning outcomes [15-17].

Table 14. Recapitulation of Student

Responses	
Indicator	Percentage (%)
	84.84
	90.15
Interest and Motivation	92.42
	93.93
	93.93
	88.62
Satisfaction	84.09
	87.12
	87.12
Total	802.22
Average	89.14

CONCLUSION

On the research that has been carried out and the data analysis above, it is drawn concluded that learning with the TGT on the digestive system material can attract students' interest in learning so that it can improve learning outcomes. The ongoing learning process supports this statement. Students can create active learning groups and are creative in answering questions and increasing the average N-gain from the pretest-posttest. In addition, cooperative learning using the TGT carried out twice in this meeting triggered the enthusiasm and curiosity of students to learn material about the digestive system. Of the weaknesses in learning using the TGT is the time and place of the research.

This limitation occurs because learning during the pandemic is very limited. It starts with classes that are allowed to do research and classrooms that are used alternately and for a short time. The school only allows one class to be used as research, so this study has no control variables. In addition, the time needed by researchers to conduct research lasted only two days. At the same time, the material in the digestive system includes complex materials. It has many sub-chapters, so in this study, only a few sub-chapters, including the Digestive System material, are taken. Of course, this greatly affects the results of the study. However, the researchers tried their best to ensure that the results obtained were what was expected with limited time and space.

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