

**Efforts To Improve Understanding of The Concept of Counting
Number Operations Through *The Team Games Tournament* (TGT)
Learning Model With Interactive Games**

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ABSTRACT (Bold, TNR 10)

This research aims to: (1). Knowing the application of the Team Games Tournament learning model with Interactive Games in Class V Mathematics Lessons at SD Negeri 3 Karangtengah, (2). Knowing the increase in students' understanding of learning concepts, and (3). Knowing the improvement in student learning outcomes. This research was carried out in 2 cycles, each cycle consisting of 1 meeting. Each meeting consists of 4 stages, namely planning, implementation, observation, and reflection. The data analysis techniques used in this research are quantitative data analysis techniques using tests and qualitative data analysis techniques through observation. The results of classroom action research using the Team Games Tournament Model with Interactive Games are proven to be able to improve students' understanding and learning outcomes, where based on test results it shows that the percentage of students' understanding in cycle I was 63%, increasing to 71% in cycle II, as well as classical completion in cycle I. by 61%, increasing in cycle II to 82%.

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INTRODUCTION

Schools as part of the learning environment are places to provide education. The success of an effective learning process is determined by several components, including students, teachers, and the learning model used. Thus, an effective learning process will succeed well if teachers can use the right learning model and involve students actively in every learning activity. Teachers are responsible for creating situations that encourage student activity in learning. Learning will be more interesting if teachers are able to create a pleasant learning atmosphere so that students become more enthusiastic in participating in learning. Consequently, the expected learning outcomes can be achieved across all subjects.

However, in reality, teachers have not been able to create meaningful learning that requires students to actively participate in every learning process. Learning is still dominated by teachers, while students only listen and accept what is conveyed by the teacher. Afterward, students are merely assigned to answer questions from textbooks. Such learning practices are inconsistent with the characteristics of effective learning, which emphasize students' active involvement in constructing knowledge (Slavin, 2020).

Mathematics learning for elementary school students requires special strategies that are supported by teachers' ability to plan and implement learning effectively, thereby creating active, innovative, creative, effective, and enjoyable learning (PAIKEM) (Ari Pertiwi, 2018). Mathematics is often perceived as a difficult and frightening subject by elementary school students. Weak mastery of mathematics is caused by several factors, including students'

difficulties in understanding mathematical concepts, the limited availability of mathematics teaching aids, and the lack of instructional media that support learning. In addition, inappropriate conceptual understanding during instruction also contributes to students' weak mastery of mathematics.

Elementary school students generally like playing, moving, working in groups, and learning through direct experiences. According to Piaget, they are in the concrete operational stage, in which children are able to perform logical thinking but remain dependent on concrete objects. Therefore, mathematics learning should provide concrete learning experiences supported by interactive learning media that facilitate students in understanding abstract mathematical concepts (Piaget, 1973).

Based on observations and interviews conducted at SD Negeri 3 Karangtengah, several learning problems were identified, particularly regarding students' understanding of number operation concepts. Students experienced difficulties when solving problems involving the development of mathematical concepts, especially in explaining and completing number operation tasks. These difficulties indicate that students' conceptual understanding and problem-solving abilities remain limited. Furthermore, students showed low levels of collaboration with peers and inadequate understanding of the learning material. The limited use of learning media and instructional activities that relied solely on textbooks resulted in students paying less attention to the teacher's explanations and becoming passive during classroom instruction. If this condition continues, students will be reluctant to ask questions whenever they encounter learning difficulties, while teachers also face limitations in providing individual assistance to every student.

The preliminary learning outcomes also indicated unsatisfactory achievement. Based on the pre-cycle conducted in Grade V of SD Negeri 3 Karangtengah on the topic of number operations, only 15 out of 34 students (44.12%) achieved the Minimum Mastery Criterion (KKM) of 65, while 19 students (55.88%) scored below the required standard. These findings demonstrate that more than half of the students had not yet mastered the concept of number operations, indicating the need for more effective learning strategies.

Several previous studies have shown that the Team Games Tournament (TGT) learning model can improve students' motivation, participation, and academic achievement through cooperative learning and structured competition (Slavin, 2020). Likewise, interactive game-based learning has been reported to enhance conceptual understanding and student engagement by providing meaningful and enjoyable learning experiences (Sailer & Homner, 2020). However, studies specifically integrating the Team Games Tournament (TGT) learning model with interactive games to improve elementary students' understanding of number operation concepts remain limited, particularly in the context of Indonesian elementary schools.

Based on these conditions, efforts are needed to improve students' understanding of mathematical concepts through innovative learning approaches. The novelty of this study lies in integrating the Team Games Tournament (TGT) learning model with interactive games as learning content to enhance students' conceptual understanding of number operations. Therefore, this study aims to improve Grade V students' understanding of number operation concepts at SD Negeri 3 Karangtengah through the implementation of the Team Games Tournament (TGT) learning model supported by interactive games.

METHOD

Write This research is a Class Action Research (PTK) which is carried out in the form of a repetitive cycle, where each cycle has four stages of activities, namely planning, implementation of actions, observation/observation, and reflection.

The steps of planning classroom action research can be presented in the form of the following cycles.

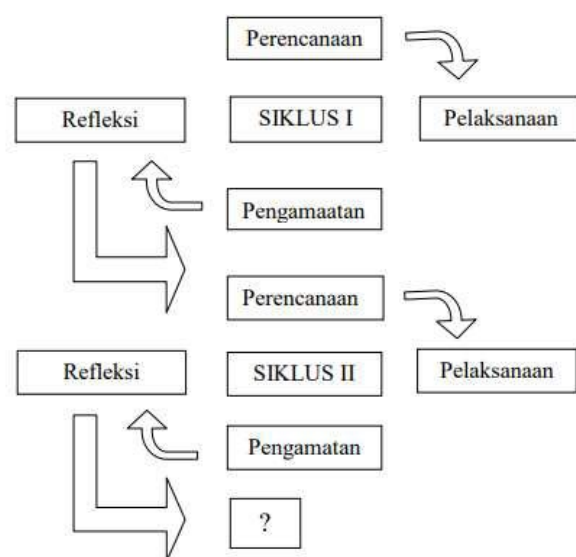


Figure 1. Hopkins Model Cycle Form Class Action Research

The data collection techniques used in the study were test and non-test.

1. Observations

Observation is an empirical scientific activity that is based on field facts and texts through the five senses directly. Observation activities function to observe the learning process carried out by class V students.

In this research activity, there are two types of observation sheets used, namely:

a. Teacher Activity Observation Sheet

Teacher activity observation sheets are a tool to find data about teacher activities when carrying out learning by applying *the Team Games Tournament learning model*. This sheet is in the form of a list of statements consisting of several items related to the observation of teachers' activities during the teaching and learning process.

b. Student Activity Observation Sheet

Student activity observation sheets are tools used to record data about student activities during the learning process. This sheet is in the form of a list of statements consisting of several items related to the observation of student activities by applying *the Team Games Tournament learning model* with interactive games.

2. Tests

Data collection with test techniques is used to reveal the success of student learning outcomes. The researcher does this by providing posttest questions at the end of learning related to the material on the operation of integers.

The written test form was carried out to determine the improvement of learning comprehension through the application of *the Team Games Tournament* (TGT) learning model assisted by interactive games after the actions of cycles I and II. The test used in this study is in the form of essay questions with the number of questions in cycle 1 as many as 3 questions, and cycle 2 as many as 2 questions.

The processing of this class action uses data analysis in a descriptive, qualitative, and quantitative manner. The data obtained in this study is in the form of interview data, learning observation results and students' comprehension ability tests.

1. Analysis of Observation Results

The data from learning observation is in the form of a checklist for the implementation of game-based learning with learning content on the number operation material.

2. Test Result Analysis

The test tested in this study is to measure students' critical reasoning ability in order to conclude the purpose of the questions provided. The selection of the question form is in the form of an essay/description test in the form of story questions accompanied by pictures. In addition,

the choice of a test in the form of a description is intended to give students the freedom to use their mathematical understanding in solving the given problems.

FINDINGS AND DISCUSSION

This research is a class action activity consisting of cycle I, and cycle II. This action has received significant results, namely increasing students' understanding of learning using *the Team Games Tournament* learning model with interactive games in grade V students of SD Negeri 3 Karangtengah.

Findings

The improvement that occurred can be seen in the following table:

Table 1. Comparison table of understanding of grade V students of SD Negeri 3 Karangtengah in Pre-Cycle, Cycle I and Cycle II activities.

Yes	Name	Pre-Cycle	Cycle I	Cycle 2
1	A J K	25%	25%	40%
2	A Z K	80%	90%	90%
3	A T M	80%	80%	85%
4	A A M	50%	65%	65%
5	A H A	40%	65%	80%
6	A F H	70%	70%	70%
7	A F M	40%	45%	65%
8	A I I	70%	70%	70%
9	B Y S	50%	50%	70%
10	B A R	40%	75%	75%
11	C S	75%	75%	75%
12	C & R	15%	20%	20%
13	F W	35%	65%	70%
14	F N A	65%	75%	75%
15	I M	70%	75%	85%
16	I A	35%	65%	65%
17	I D A	25%	50%	60%
18	I N F	75%	75%	75%
19	J A	50%	50%	65%
20	K S	50%	50%	55%
21	L M S	45%	65%	65%
22	L S P	30%	45%	65%
23	M R N	85%	85%	85%
24	M A P S	40%	40%	55%
25	N S D P	50%	50%	65%
26	N A P	50%	50%	50%
27	R M A	75%	75%	80%
28	R S S	60%	80%	85%
29	R F	50%	50%	50%
30	R M	55%	55%	70%
31	S N	70%	70%	75%
32	T S	85%	90%	90%
33	W P	70%	85%	85%
34	Z A R	75%	75%	75%
Quantity		1.880	2.150	2.400
Average		55%	63%	71%

Table 2. Comparison table of average scores of grade V students of SD Negeri 3 Karangtengah in Pre-Cycle, Cycle I and Cycle II activities.

Yes	Name	Pre-Cycle	Cycle I	Cycle 2
1	A J K	40	30	50
2	A Z K	100	100	100
3	A T M	80	100	100
4	A A M	60	70	65
5	A H A	60	70	75
6	A F H	80	60	65
7	A F M	60	60	70
8	A I I	80	70	70
9	B Y S	60	60	65
10	B A R	60	70	70
11	C S	100	70	80
12	C & R	20	30	20
13	F W	60	70	85
14	F N A	80	70	80
15	I M	80	100	90
16	I A	60	70	70
17	I D A	40	40	60
18	I N F	80	70	70
19	J A	60	60	70
20	K S	40	60	65
21	L M S	60	70	70
22	L S P	60	60	65
23	M R N	100	100	100
24	M A P S	40	40	60
25	N S D P	60	70	70
26	N A P	60	60	60
27	R M A	80	70	80
28	R S S	80	100	100
29	R F	40	40	65
30	R M	60	60	60
31	S N	80	70	70
32	T S	100	100	100
33	W P	100	100	85
34	Z A R	80	70	70
Quantity		2.300	2.300	2.480
Average		67,65	67,65	72,94

From the table above with the application of *the Team Games Tournament* model with interactive games, the average score of grade V students starting from pre-cycle activities is 67.65, then cycle I is still the same number and has not increased by 67.65 and in cycle II there is an increase in the average score of students to 72.94.

Discussion

Based on the information above, it proves that applying *the Team Games Tournament* learning model with interactive games has a positive impact on students, especially on the ability to improve their understanding of the concept of learning number operations. By applying this model, it has been proven to be able to improve the understanding of the concept of grade V students of SD Negeri 3 Karangtengah, Baturraden District, Banyumas Regency. Where in the first cycle the learning outcomes using new essay questions reached a classical completeness percentage of 61%, or from 34 new students, 21 children had a set minimum completeness score of 65. It is still not in accordance with the expected learning target, which is the minimum of students who achieve a minimum completion of 80%. Then the teacher again took action in cycle II and still used *the Team Games Tournament* learning model in the hope of improving students' learning understanding. In cycle II, student learning and understanding outcomes increased to 82% or out of 34 students in class V there were 28 students who had scores above the specified

KKM. This is enough for teachers to take class action because the student completion target has been met.

CONCLUSION

According to the results of the research and discussions that have been carried out, conclusions can be drawn, including:

1. The use of *the Team Games Tournament* learning model with interactive games in learning number operations in grade V students of SD Negeri 3 Karangtengah was able to improve students' learning understanding of the material presented by the teacher. This is evidenced by the increase in the level of student learning understanding in each learning. For pre-cycle activities, the average student learning comprehension was 55%, then in the first cycle it increased to 63% and in the second cycle also increased to 71%. Then for the average grade of the class at the pre-cycle stage, the average student score reached 67.65 and in the first cycle it has not increased, it is still at 67.65. However, in cycle II, the average grade of the class increased to 72.94. On the other hand, the percentage of student completeness in the pre-cycle stage only reached 44.12%, while in the first cycle the student completeness increased to 61.77%, because in the first cycle the student completeness level had not reached the expected completeness limit, the researcher carried out the second cycle and the results increased to 82.35%.
2. The use of *the Team Games Tournament* learning model with interactive games in the operation of numbers in grade V students of SD Negeri 3 Karangtengah can improve the quality of the teaching and learning process. This is evidenced by the increase in student activity during the learning process from the first cycle by 75% with the "good" category to 79% in the second cycle with the "good" category.
3. Teachers' activities in carrying out learning using the *Team Games Tournament* model with interactive games have increased. This is evidenced by the first cycle with a percentage of 77% of the category (good) and in the second cycle, which is with a percentage of 80% of the category (good). Thus, the data shows that teachers' activities in managing learning using *the Team Games Tournament* model with interactive games on the number operation learning material are in a good category. This is because teachers have been able to provide motivation to students.

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