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ENHANCEMENT OF STUDENTS' CONCEPT COMPREHENSION THROUGH TEAM GAME TOURNAMENT-BASED COOPERATIVE LEARNING MODEL

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ABSTRACT

Team Games Tournament as one of types in Cooperative learning model is assumed to be able to engage students learning science concepts both individually and in groups actively. The research aims to determine the effectiveness of the Team Game Tournament-based (TGT) cooperative learning model assisted by the Jenga game to improve the students' understanding of the concept of science lessons on force material. The research used quantitative research of the pre-experimental type with a one group pretest and posttest design which was carried out in four meetings with the research flow starting from giving a pretest followed by giving treatment using the TGT model assisted by the Jenga game then students were given a posttest. The sample of this study was 21 students of SDN 1 Terkesi. Furthermore, the data collected in this study were in the form of observations, interviews, documentation. In addition, the test results were analyzed quantitatively with stages using normality tests, tests and using the N-Gain test. The results obtained from this study are a significant increase in the understanding of science concepts after being given treatment using the TGT model assisted by the Jenga game, the results of the N-Gain test that has been carried out obtained the results that the average value is 76.70% with a very effective category when used in science lessons on force material. According to the findings, it can be concluded that the implementation of the TGT model assisted by the Jenga game can improve the students' understanding of science concepts.

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Introduction

To achieve success in learning, of course, various ways are needed to support students to achieve the goals of learning. Therefore, if a teacher is wrong in designing learning, it will also have an impact on students, thus inhibiting students from being able to achieve the learning goals to be achieved (Hanif et al., 2024), Even easy level subject matter is sometimes considered difficult to develop and be accepted by students, because the method used is not appropriate or not right. However, this can happen the other way around with a material that is said to be difficult can be easily accepted by students, because the method delivered or the method used can be easily understood, appropriate and interesting (Ningsyih et al., 2022).

There are many ways that can be used by a teacher in choosing learning methods and media to help in the learning process which is useful for making students understand the subject matter that students are studying. Learning media is a tool that can help and make it easier for teachers to explain and convey information in the learning process so that they can achieve the learning objectives expected by the teacher (Zulherman et al., 2021).

Science subjects are subjects that have been combined when the independent curriculum was implemented, before being combined, there were Natural Sciences and Social Sciences, with the existence of this Science subject, students will learn about history, sociology, economics, geography and their interactions with humans and the natural and social environment (Hayat et al., 2023). So that the expected results with the results of science lessons can provide good and maximum understanding to students through materials related to human interaction with the natural and social environment that occurs in everyday life and society.

However, in reality there are still many students who do not really understand the meaning of the material that has been delivered by the teacher, one of which is in grade IV students of SDN 1 Terkesi, where during the science lesson on the material of force there are still many students who cannot understand the concept of the material being studied. Based on the results of observations and interviews, which have been conducted by researchers on grade IV teachers and grade IV students of SDN 1 Terkesi, the results are that in grade IV students of SDN 1 Terkesi there are 21 students with the number of boys being 9 and girls being 12. Grade IV students of SDN 1 Terkesi were used as research subjects because researchers found a problem, namely the low level of understanding of concepts in science lessons. Grade IV students in understanding the material then conveying it back into a language that students understand still have difficulty, this finding was obtained from the results of the initial test before the researcher conducted the research, where from 21 grade IV students of SDN 1 Terkesi the results obtained were still below the standard that had been implemented at SDN 1 Terkesi.

The low level of students' conceptual understanding was found from the results of observations conducted by researchers, namely that it was influenced by the learning method used by the fourth grade teacher of SDN 1 Terkesi which was less suitable for the character of the fourth grade students of SDN 1 Terkesi, where based on the results of observations and interviews, it was concluded that the teacher still used the conventional method, namely using the lecture method from the beginning to the end of learning, which made many students less focused and sleepy.

Puspita (2020) explained that there are several factors that influence the low understanding of science concepts of students, one of which is the learning models and media applied during the science learning process are less varied and less visualizing abstract material due to limited media and facilities. So the lack of understanding of science concepts in students requires action in changing learning methods when teaching which makes this learning method suitable for student character and learning style that students want during the learning process.

The TGT learning model is a type of cooperative learning model, where this model has learning characteristics by holding game competitions between groups and also learning in groups (Widyatama & Amalia, 2021). In the TGT model, students play games and tournaments related to the learning material with other team members to gain points for their respective teams. This greatly helps the learning process because elementary school students prefer games.(Nabila et al., 2022). The TGT cooperative learning model is a learning model that invites students to participate in learning without looking at student status, inviting students to become peer tutors and play games (Suseno et al., 2023). The TGT learning model helps build trust among group members, collaboration, and competition (Purnaningtyas et al., 2020).

To show how effective the use of the TGT learning model is, the researcher collaborated the TGT model with a jenga game that had been modified by the researcher which was added with question cards as an aid when conducting a tournament. The jenga game is Jenga is a game of skill in taking blocks in an arrangement and then placing them back on the top pile of blocks while maintaining the balance of the block arrangement. Players only need to take one block at a time from the pile and place it on the tower without making the pile fall (Astuti, 2021).

Jenga is a game of wooden blocks arranged neatly with three blocks in each stack. Participants

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must have the skill to take blocks from the stack and place them on top of the stack without causing them to fall (Azizah et al., 2022). With the help of the jenga game, it is expected to make the effectiveness of the use of the TGT learning model assisted by the jenga game so that it creates a new experience for students, namely learning while playing so that students become enthusiastic and happy during the learning process. because the jenga game is a type of strategy game where students will arrange 54 colorful blocks with one dice which on its side has a color mark to determine which player will later take the block and take the card that matches the color of the dot on the dice that appears after being shaken.

The urgency of this research lies in the importance of finding concrete solutions to the low understanding of the concept of science and natural sciences in elementary school students, especially on the theme of style. The conventional approach that is still dominant in class IV of SDN 1 Terkesi needs to be replaced with a more active, collaborative approach that is in accordance with the learning characteristics of elementary school-age children.

The novelty of this study lies in the combination of the TGT model with the Jenga game as a modified learning medium. The use of Jenga as a learning medium in science learning is still very rare in previous studies, let alone directly collaborated in a TGT competitive scheme that combines elements of games, collaboration, and evaluation. Thus, this study is expected to provide practical and theoretical contributions in the development of innovative and fun learning models to improve students' understanding of science concepts.

Based on several problems found above, the researcher is interested in conducting a study to aim at determining the effectiveness of the Team Game Tournament-based (TGT) cooperative learning model assisted by the Jenga game to improve the students' understanding of the concept of science lessons on force material.

Research Methods

The research method used in this study is quantitative research with a pre-experimental approach, using a one group pretest-posttest design. This design involves one group without a control group, so that measurements are taken before and after treatment to see the differences in the results obtained. This study aims to determine the effect of the Team Game Tournament (TGT) learning model assisted by the Jenga game on improving the understanding of the science concept of grade IV students of SDN 1 Terkesi.

The research was conducted at SDN 1 Terkesi, Klambu District, Grobogan Regency, on October 21, 26, 28, and November 2. The subjects in this study were all 21 fourth grade students, consisting of 9 male students and 12 female students. Because the population was less than 30 students, the sampling technique used was saturated sampling, namely the entire population was used as a research sample.

Data collection techniques were carried out in four ways, namely: tests, observations, interviews, and documentation. Tests were used to measure students' conceptual understanding through pretests and posttests consisting of 8 descriptive questions. Observations were conducted to observe learning activities in the classroom, especially before and during the implementation of the TGT model. Interviews were conducted with class teachers and students to gather information about the science learning process and the suitability of learning methods to student characters. Meanwhile, documentation was used to collect supplementary data in the form of photos, activity notes, and student learning outcomes.

Data analysis in this study began with a normality test to ensure that the data were normally distributed. After that, an N-Gain test was conducted to measure the effectiveness of learning, namely the extent to which students' understanding of the science concepts increased after the TGT learning model assisted by the Jenga game was applied.

Results and Discussion

The results of the study obtained through pretest and posttest activities of grade IV students of SDN 1 Terkesi after the implementation of the Team Game Tournament (TGT) learning model assisted by the Jenga game. The data obtained were analyzed to see an increase in students' understanding of the concept of science, especially in the material "Forces Around Us". The results of this study were then discussed by linking the findings obtained with theories and relevant previous research results, in order to strengthen the interpretation of the effectiveness of the learning model used. The discussion was carried out in a structured manner to answer the formulation of the problem and test the previously proposed hypotheses.

Before conducting the learning effectiveness test through the N-Gain test, a normality test was first conducted on the pretest and posttest data. This normality test aims to determine whether the data is normally distributed or not, so that it can determine the type of statistical test that is appropriate to use.

Table 1. Normality Test Results

Shapiro Wilk Normality Test	Sig.	Information
Pretest	0.614	Normal
Posttest	0.325	Normal

Based on the table above, the results are obtained through calculations using SPSS Version

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22 on the significance of the pretest value is 0.614, then according to the basis for decision making in the Shapiro-Wilk normality test that 0.614 > 0.05 or the data is normally distributed. Furthermore, the value of the posttest on students' understanding of the concept of science is 0.325, then according to the basis for decision making in the Shapiro-Wilk normality test that 0.325 is > 0.05 or the data is normally distributed. So that the data that has been normally distributed above, the next step will use parametric analysis techniques. After the data is normally distributed, the N-Gain test is continued to determine how much the students' conceptual understanding has increased after being given learning treatment. Below are the results of the N-Gain test:

Table 2. N-Gain Test Results

Descriptive Statistics

		Minimum	Maximum	Mean	Std. Deviation
NGain_Score	1	,54	1,00	,7670	,10469
NGain_Percent	1	53,70	100,00	76,7011	10,46861
Valid N (listwise)	1				

In the table above, the results of the N-Gain test obtained an average value of the results of the science concept understanding test of 76.70% with the criteria for increasing the N-Gain Test above 0.70. These results indicate that there is an increase in the understanding of the concept of grade IV students of SDN 1 Terkesi after the implementation of the TGT learning model assisted by the Jenga game. So it can be concluded that by implementing the TGT learning model assisted by the Jenga game, students' understanding of the concept can increase. The results above are also reinforced by the results of the understanding of the concept on each indicator, below are the results of the N-Gain Test on each indicator of understanding the science concept:

Table 3. Results of Improvement of Each Indicator

No	Indicator	Pretest	Post-test	Post test-Pretest	N-Gain	Category
1.	Restating the concept	47	76	28	0.54	Moderate
2.	Classify objects according to their concepts	62	96	35	0.95	High
3.	Give examples and non-example	35	76	40	0.62	Moderate
4.	Presenting concepts in story form	33	80	47	0.71	High
5.	Applying concepts according to procedures	30	92	61	0.71	High

The results of the N-Gain test showed that there was an increase in the understanding of the concept of science in grade IV students of SDN 1 Terkesi after the Team Game Tournament (TGT) learning model was applied with the help of the Jenga game. Before the N-Gain test was carried out, a normality test was first carried out to ensure that the data was normally distributed. Furthermore, the N-Gain test was carried out to determine the extent of the increase in each indicator of concept understanding.

The first indicator, namely restating the concept, increased with an N-Gain score of 0.54 in the moderate category. This shows that students are better able to restate the concept of force after learning is linked to everyday life. This is relevant to the opinion of Wahyuningsih et al. (2021) which states that science learning will be more effective if it is linked to students' real experiences, thus helping them to re-express concepts in their own language. In line with the opinion of Rusyani et al. (2021) linking learning materials to everyday life makes it easier for students to understand and apply abstract concepts. In line with the opinion of Pratama et al.(2023), meaningful learning occurs when students are able to connect new knowledge to their experiences, which supports increased conceptual understanding.

The second indicator, classifying objects according to their concepts, obtained an N-Gain of 0.95 with a high category. This significant increase occurred because the use of the Jenga game made students more active in distinguishing the types of styles. This is relevant to the opinion of Astuti (2021) who stated that game media in science learning can increase students' motivation and activeness in understanding concepts. In line with Kurniawati's opinion(2020), concrete media can help students classify abstract concepts more clearly through direct experience. In line with the opinion of Oktayana et al. (2020),Contextual learning that involves real activities is very effective in improving students' understanding and classificatory thinking skills.

The third indicator, giving examples and

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non-examples, shows an N-Gain of 0.62 in the medium category. Students find it easier to understand the concept of force after being given concrete examples and relating them to their experiences. This is relevant to the opinion of Azis et al. (2021) which states that the relationship between learning materials and students' real experiences makes the concept easier to understand and more meaningful. In line with the opinion of Hasibuan et al. (2022), Science learning that is linked to the context of everyday life can help students distinguish between examples and non-examples of a concept. In line with Deyu's opinion (2023),contextual approach can encourage students to think critically in identifying and compiling appropriate examples according to the material being studied.

Furthermore, the fourth indicator, namely presenting concepts in the form of stories, obtained an N-Gain of 0.71 with a high category. This increase occurred because students were able to relate everyday events to the concept of style being studied.This is relevant to the opinion of Munir et al. (2022) which states that connecting learning materials with real life makes learning more meaningful and contextual. In line with the opinion of Hasibuan et al. (2024), effective science learning must emphasize the relationship between theory and everyday phenomena so that students are better able to convey their understanding. In line with Sekarsari's opinion (2023), the contextual approach encourages students to construct narratives based on experiences, which strengthens their understanding of the concepts being taught.

Finally, the fifth indicator, namely applying concepts according to procedures, also showed a high increase with an N-Gain of 0.71. Students became more skilled in applying the concept of force because they were given concrete media during the learning process. This result is supported by several previous studies showing that game-based learning and concrete media can significantly improve conceptual understanding. This is relevant to Theana's opinion (2020) which states that the use of concrete media has a significant effect on students' understanding of science concepts. In line with Amelia's opinion (2023), game-based learning media can create a fun learning atmosphere and increase students' active involvement in understanding concepts. In line with Singgih's opinion (2020) that the use of concrete media in a cooperative learning approach makes concepts easier to understand because students directly experience the learning process in a contextual and applicable manner.

By understanding the characteristics of students' learning styles who tend to prefer playing activities, and to overcome the boredom that often arises during the learning process which has an impact on decreasing conceptual understanding the application of the TGT learning model combined with the Jenga game has been proven to be able to improve the understanding of science concepts of grade IV students at SDN 1 Terkesi.

Conclusion

The implementation of the TGT model assisted by the Jenga game in the subject of science on the grade IV students of SDN 1 Terkesi reached a significant increase in terms of understanding the concept of science, from the results of the paired sample T-Test test showed that the significance value ≤ 0.05, then Ho was rejected and Ha was accepted, so that the results showed a difference in the average value of students' understanding of the concept of science, from the results of the N-Gain test also showed that the average value was 76.70%. Therefore, it can be concluded that by applying the TGT learning model assisted by the Jenga game based on the interpretation of the effectiveness of the N-Gain value, it gets a very effective category. These results indicate that by providing treatment using the TGT model assisted by the Jenga game, it can improve students' understanding of the concept of science.

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