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Teams Games Tournament Learning Model to Improve Elementary School Students' Mathematical Creative Thinking Skills

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ABSTRAK

Kemampuan berpikir kreatif matematis siswa masih tergolong rendah dan perlu untuk ditingkatkan. Perlu adanya model pembelajaran yang dapat meningkatkan kemampuan berpikir kreatif matematis siswa. Model pembelajaran kooperatif Teams Games Tournament menjadi solusi pada masalah ini. Penelitian ini bertujuan untuk menganalisis pengaruh model pembelajaran kooperatif TGT terhadap kemampuan berpikir kreatif matematis siswa kelas IV. Penelitian ini menggunakan desain penelitian eksperimen semu dengan rancangan desain penelitian non-equivalent control group design. Populasi penelitian ini sebanyak 251 siswa. Teknik penentuan sampel yang digunakan adalah cluster random sampling. Metode pengumpulan data menggunakan tes berbentuk uraian. Data kemampuan berpikir kreatif matematis yang diperoleh dari hasil post-test dianalisis dengan teknik statistika deskriptif dan analisis statistik inferensial dengan Uji-t polled varians. Hasil Uji-t polled varians menunjukkan bahwa thitung (4,73539) > ttabel (1,67528) pada taraf signifikansi 5%, sehingga disimpulkan bahwa model pembelajaran kooperatif TGT dapat secara signifikan mempengaruhi kemampuan berpikir kreatif matematis siswa kelas IV SD. Model pembelajaran kooperatif TGT dapat membantu siswa memahami konsep materi pelajaran melalui penyelesaian permasalahan yang nyata dengan kehidupan sehari-hari, kegiatan tutor sebaya untuk memperdalam pemahaman materi, bermain games, dan kegiatan turnamen.

ABSTRACT

The mathematical creative thinking skills of students are still relatively low and need to be improved. Thus, they need a learning model that can enhance their mathematical creative thinking skills. One of the solutions to this problem is the cooperative learning model using the Teams Games Tournament method. This research aims to analize the result of the Teams Games Tournament cooperative learning model on grade IV students' mathematical creative thinking skills. This study used a quasi-experimental design with a non-equivalent control group design. The population of this study consists of 251 students, selected using a cluster random sampling technique, with a description test used as the data collection method. Data on mathematical creative thinking skills, obtained from post-test results, were analyzed with descriptive statistical techniques and inferential statistical analysis, specifically the polled variance t-test. The polled variance t-test resulted in tcount (4.73539) > ttable (1.67528) with 5% significance level. According to the test results, it can be concluded that the Teams Games Tournament cooperative learning model significantly affects the grade IV students' elementary school mathematical creative thinking skills. The TGT cooperative learning method can help students understand the concept of subject matter through solving real problems with daily life, peer tutor activities to deepen understanding of the material, playing games, and tournament activities.

1. INTRODUCTION

Human potential can be developed through education (Kusadi et al., 2020; Wardani & Sulistya, 2020). The curriculum is one of the most important things in education that serves as a guideline in

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implementing learning. In 2022, the *Merdeka Belajar* curriculum was launched, which focuses on the main material that students must master (Nikma & Rozak, 2023; Syafriani et al., 2022). Learning with the concept of independent learning is designed to be centered on students or is called student centered (Utari & Muadin, 2023; Pertiwi et al., 2022). Students are given the freedom to organize and determine their own learning methods, so that students can build a more enjoyable learning atmosphere. By implementing the independent learning curriculum, it is hoped that it can create students with an independent spirit and not feel constrained by the provisions or regulations in learning. Thus, students can find their respective potential and abilities.

Educational institutions must be able to balance the education system with current developments so that they must have the power to innovate and be able to collaborate (Hadi & Khojir, 2021; Yamin & Syahrir, 2020). For that, the education system is expected to be able to create students who have the skills to think critically, solve problems, be creative, innovative, have communication skills, and collaborate. This hope is stated in the independent curriculum, namely realizing an advanced Indonesia that is sovereign, independent, and has personality through the creation of Pancasila students who have noble morals, critical reasoning, creativity, mutual cooperation, independence, faith, devotion to God Almighty, and global diversity (Zarkasi et al., 2022; Rahayuningsih, 2021).

The situation in the field shows that these expectations have not been met because the creative thinking skills of students in Indonesia still need to be improved. The results of the Trend International Mathematics and Science Study (TIMSS) survey, the level of creative thinking skills of students in Indonesia is relatively low (Purwanti et al., 2024; Amirulloh et al., 2020). Only 6% of students can work on high category problems that require creative thinking skills. Many Indonesian students have difficulty in dealing with situations that require problem-solving skills using mathematics (Hadi & Novaliyosi, 2022; Mulyati, 2016).

Factors that can influence the low creative thinking ability in Indonesia can come from within or from the student's environment. Factors from within the student include knowledge factors, learning motivation, and student characteristics such as courage, self-confidence, curiosity, and daring to try. Environmental factors include the school environment, classroom atmosphere, friends, family, learning support facilities and infrastructure, family environment, and teachers. The teacher factors that can influence are from determining methods, models, techniques, mastery of materials, mastery of technology, and teaching media.

The ability to solve a problem is shown from the way students think from another perspective and requires students to develop an idea or other idea without having to be fixated on the method taught by the teacher. The learning model is one of the most important factors that determines the success of students in understanding learning. The use of the right model will determine the effectiveness of the learning process, various learning models can be used so that activities (Ulandari et al., 2019; Saharsa et al., 2018). In determining the teaching model, teachers should pay attention to the characteristics of the students who will be taught in class.went well and was enjoyable as expected by the students (Adawiyah, 2021; Prasetiyo & Rosy, 2021).

Based on the results of the interviews conducted, most teachers at SDN Cluster II, North Kuta District still use conventional learning models. The delivery of materials is carried out using the lecture method accompanied by the division of tasks and practice questions. The lecture method chosen is considered easier for teachers to practice and teachers have mastered the techniques or methods of lecturing. Inadequate learning resources, facilities and infrastructure, memorization materials, broad objectives and subject matter are also reasons why teachers prefer to use the lecture method.

Based on the results of field observations, teachers who use the lecture teaching method can easily control and lead learning activities in the classroom. The teacher provides an explanation on the board, then the teacher directs students to take notes in the student's notebook. Then the students listen, pay attention, and take notes on important things written by the teacher on the board. The teacher's activeness when explaining, while students look unfocused and confused when giving responses during the learning process.

The observation results also show that when teachers give a problem related to learning materials, students tend to have difficulty in describing the problem and finding answers to the problem. Students' ability to think creatively is still relatively low and alternatives are needed that can support the learning process. This makes students reluctant to ask questions because learning activities are always focused on the teacher or called teacher centered. Therefore, students lose the opportunity to ask questions they want to know.

In the lecture method, students are given all the materials they must learn and understand directly. This results in students being unable to carry out the information discovery process which results in learning becoming meaningless. Meaningless learning can cause students to easily forget the material that has been learned and make it more difficult to relate it to the material that will be learned next. Less

meaningful learning has an impact on students' low thinking skills. The use of the lecture method does seem like an effective method. When used in learning, this method provides many conveniences that can be seen from the teacher's point of view. However, when viewed from the student's point of view, the lecture method is not entirely effective if used continuously.

Using the lecture method too often can cause students to become bored during learning (Fasya et al., 2024; Adawiyah, 2021).Student boredom can be observed during the learning process, such as students who are less attentive, sleepy, or chatting with their deskmates to avoid boredom. The lecture method tends to be teacher-centered, resulting in students not having the opportunity to explore learning materials and find important information in learning for themselves (Ardelina et al., 2021; Sutama et al., 2014).

One way that can be used to solve the above problems is to apply the Teams Games Tournament (TGT) cooperative learning model. In mathematics lessons, students are more encouraged to have the ability and speed of thinking and solving problems related to everyday life. This is in accordance with the purpose of implementing the TGT cooperative learning model, namely to improve students' ability or speed of thinking and improve students' ability to express opinions clearly. Learning with the TGT cooperative learning model can improve creative thinking skills, communication skills, and collaboration (Cartono, 2020; Setianingsih et al., 2018).

Previous research has shown that use can improve student learning (Loko, 2023; Alfira & Syofyan, 2022). Other studies also reveal that TGT can improve students' creative thinking skills (Nisa & Amalia, 2021; Fitrianawati & Hartono, 2016). From the results of the study that has been conducted, it can be seen that the TGT cooperative learning model has an influence on the determined dependent variables. The difference between this study and other studies lies in the focus of the study on the influence of the TGT cooperative learning model on students' mathematical creative thinking abilities.

Based on the description of the problem above, the research conducted aims to analyzing the influence of the TGT cooperative learning model on the mathematical creative thinking abilities of grade IV students.This research was conducted in elementary school cluster II North Kuta. The results of this study are expected to improve students' mathematical creative thinking skills. In addition, the results of this study are also expected to be a reference for innovative learning. With these references, teachers can create quality learning.

2. METHOD

This research is a quantitative research with a quasi-experimental design. The quasi-experimental design used is the non-equivalent control group design model. With the use of this design, the research was conducted in two classes. The sample class was used as the experimental class and was treated with the modelTGT cooperative learning. The control class was not given any treatment and only learned with the methods usually used by the teacher in class. Conditions did not allow for randomization of previously arranged classes. The experimental and control groups used were designed without researcher intervention.

Experimental group and control groupgiven a pre-test and post-test to measure their mathematical creative thinking skills. The data analyzed in this study were post-test data. This is because the pre-test is usually only used to measure group equivalence. To conduct research using a quasi-experimental non-equivalent control group design, there are several stages that need to be carried out, namely the preparation stage, the preparation stage, and the final stage.

The population of this study was all fourth grade students of SDN Gugus II Kuta Utara in the 2023/2024 academic year consisting of 6 schools with 10 classes and a total of 251 students. The sampling technique was carried out using the cluster random sampling technique by drawing lots. The drawing was done by writing the name of the school on each piece of paper totaling 6 schools, then the paper was rolled up and put into a box, to be drawn. After two classes with different schools were selected through drawing lots, the two samples were tested for equality with the polled variance t-test by administering a pre-test.

The method and data collection used in this study is a test method to measure students' mathematical creative thinking skills. The test used to measure critical thinking skills is a descriptive test. The descriptive test requires students' ability to organize, interpret, and connect the concepts they already have. In this study, the data analyzed was data on students' mathematical creative thinking skills using an instrument in the form of a descriptive test totaling 7. Each question item will be given a score that is adjusted to the assessment rubric. The aspects assessed in the grid of the mathematical creative thinking ability instrument for grade IV students are the content of mathematical sentences and calculations. The grid of the mathematical creative thinking ability instrument can be presented in Table 1.

Table1. The Grid of Mathematical Creative Thinking Ability Instruments

Learning Outcomes	Learning objectives	Question Indicator	Question Number
Students can know the value of a number up to 100.000. in the context of mathematical sentences calculating natural numbers to sorting, adding, subtracting, multiplying, and dividing in their arithmetic operations.	1. Students can implement the concept of arithmetic operations to solve problems.	Given a problem in the form of an illustration of a picture of fruit, students can determine the value of each picture of fruit which is solved using addition and subtraction arithmetic operations.	1
	2. Students can use brackets ( ) in applying arithmetic operations and understand the sequence of steps in arithmetic operations.	Presented with story problems about the rules of arithmetic operations, students can solve problems using arithmetic operations.	2, 3, 4, 5
		Given a mathematical expression without arithmetic notation, students are asked to complete the arithmetic notation so that it has a correct value.	6
	3. Students can apply commutative, distributive, and associative laws in calculations.	Given a magic square problem with dimensions of 4x4, students are asked to complete the magic square so that the results in each row and column are the same.	7

In this study, the collected data were then analyzed using descriptive statistics (mean, standard deviation, variance) and inferential statistics (prerequisite tests and hypothesis tests). The prerequisite tests used were the data distribution normality test and the variance homogeneity test. The data distribution normality test was conducted to determine whether the data came from a normally distributed population or not using the Kolmogorov-Smirnov formula. The variance homogeneity test was conducted to determine the homogeneity of the data from the results of mathematical creative thinking skills using the Fisher test formula. Meanwhile, hypothesis testing was conducted using the polled variance t-test.

3. RESULT AND DISCUSSION

Result

The data collected in this study were data on the mathematical creative thinking abilities of grade IV students of SDN Gugus II Kuta Utara in the 2023/2024 Academic Year. The data that had been collected were then analyzed according to the previously determined data analysis techniques. The experimental group in this study were 26 grade IV A students of SD No. 2 Tibubeneng. The experimental group was given learning treatment with the TGT cooperative learning model for 6 meetings.

At the end of the study, the experimental group was given a post-test. Furthermore, to determine the level of mathematical creative thinking ability possessed by students, the average (mean) post-test score of the mathematical creative thinking ability of students in the experimental group was converted to a five-point scale benchmark assessment (PAP). The average percentage of the mathematical creative thinking ability of students in the experimental group was80.35% and is included in the high category. The post-test data for the experimental group can be presented in Figure 1.

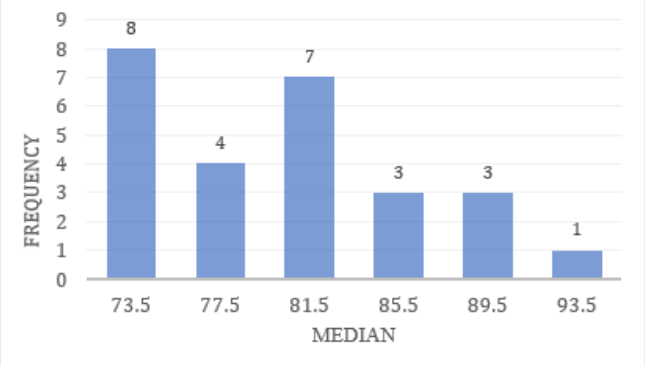

Figure1. The Histogram of Post-test Data of Experimental Group

Based on the results of the calculation, it can be seen that in the experimental group, there were 8 students who got scores between 72 - 75. There were 4 students who got scores between 76 - 79. There were 7 students who got scores between 80 - 83. Students who gotmarkbetween 84 – 87 as many as 3 people. Students who get scores between 88 – 91 as many as 3 people. Finally, students who get scores between 92 – 95 as many as 1 person.

The control group in this study was 27 fourth grade students of SD No. 4 Canggu. The control group was not given any treatment and only learned with the methods the teacher usually uses in class.as many as 6 meetings. At the end of the study, the control group was given a post-test. Furthermore, to determine the level of mathematical creative thinking ability possessed by students, the average post-test score of the mathematical creative thinking ability of students in the experimental group was converted to a five-scale benchmark assessment (PAP). The average percentage of mathematical creative thinking ability of students in the control group was 64.55% and is included in the low category. The control group post-test data can be presented in Figure 2.

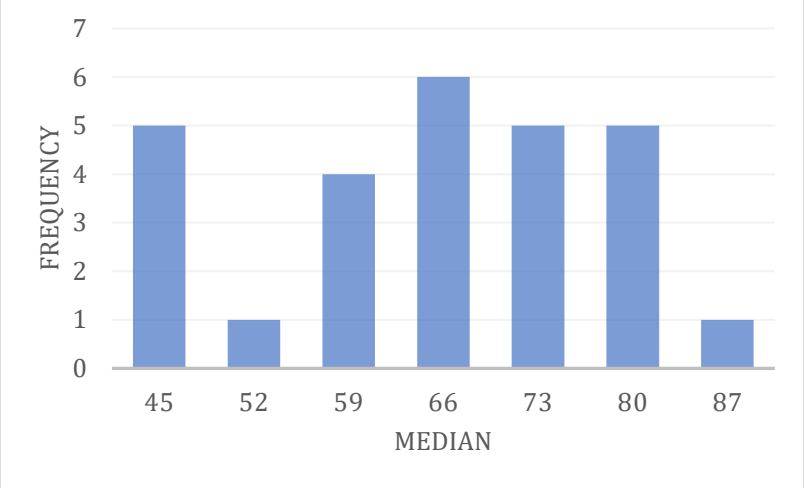

Figure2. The Histogram of Post-test Data of Control Group

Based on the calculation results, there were 5 students in the control group who got scores between 42–48. There was 1 student who got scores between 49–55. There were 4 students who got scores between 56–62. There were 6 students who got scores between 63–69. There were 5 students who got scores between 70–76. There were 5 students who got scores between 77–83. Finally, there was 1 student who got scores between 84–90.

Furthermore, the research hypothesis prerequisite test was carried out, namely the normality test of data distribution and homogeneity of variance. Based on the results of the Kolmogorov-Smirnov normality calculation, it was found that the experimental group (SD No. 2 Tibubeneng) with a sample size of 26 had a maximum A1/A2 value of 0.12 with a KS table value of 0.259. Because the maximum value (A1-A2) <the critical value of the Kolmogorov-Smirnov table at a significance level of 5%, the sample data of the experimental group was normally distributed.

Based on the results of the Kolmogorov-Smirnov normality calculation in the control group (SD No. 4 Canggu) with a sample size of 27, the maximum value (A1/A2) was 0.14 with a KS table value of 0.254. Because the maximum value (A1-A2) <the critical value of the Kolmogorov-Smirnov table at a significance level of 5%, the control group sample data is normally distributed. Based on the results of the calculations carried out with the Kolmogorov-Smirnov normality test, it is known that the post-test data on the mathematical creative thinking ability of the experimental group and the control group are normally distributed. This is because the maximum value (A1-A2) <the critical value of the Kolmogorov-Smirnov table at a significance level of 5%.

After conducting the data normality test, a homogeneity test of variance was conducted to show that the two groups of samples taken from one population had the same variance. In this study, the homogeneity test was conducted on the variance of pairs between the experimental group and the control group. The homogeneity test of variance was conducted using the Fisher test with the criteria that if Fcount <Ftable then the data is declared homogeneous. Based on the calculation results, it can be seen that the Fcount of the post-test results of the experimental and control groups is 1.51 while the Ftable of the two groups with a significance level of 5% is 4.03. This means that the variance of the mathematical creative thinking ability data of the experimental group and the control group can be declared homogeneous.

After the prerequisite analysis test was conducted, it was stated that the data was normally distributed and homogeneous, then parametric statistical analysis was conducted. The statistical analysis to test the hypothesis in this study was using the polled variance t-test. Based on the results of the polled variance t-test calculation, it was found that the experimental group (SD No. 2 Tibubeneng) with a sample of 26 students had an average post-test data of 80.35 and a variance of 35.46. Meanwhile, in the control group (SD No. 4 Canggu) with a sample of 27 students had an average post-test data of 64.56, a variance of 169.95, and dk 51, tcount =4.73539, andttable =1.67528with a significance level of 5%.

This shows that, tcount > ttable, namely 4.73539>1.67528, then H_0 is rejected and H_1 is accepted. Based on these results, it can be concluded that there is a significant difference in mathematical creative thinking skills between the group of students who are taught using the TGT cooperative learning model and the group of students who are not taught using the TGT cooperative learning model in grade IV students of SDN Gugus II Kuta Utara in the 2023/2024 Academic Year.

DISCUSSION

This research was conducted in the second semester of the 2023/2024 academic year at SDN Gugus II Kuta Utara by making two classes as research samples. Students of class IV A of SD No. 2 Tibubeneng as the experimental group who were taught using the Teams Games Tournament cooperative learning model and students of class IV of SD No. 4 Canggu as the control group who were taught conventionally. In this study, the results of the hypothesis analysis were obtained, namely that there was a significant difference in mathematical creative thinking abilities between groups of students who were taught using the TGT cooperative learning model and groups of students who were taught conventionally.

The TGT cooperative learning model is a learning model that applies game and tournament elements in the classroom, so that in its implementation students become enthusiastic, do not get bored, and do not get sleepy during learning (Musdalipa & Alam, 2022; Hidayat, 2019). Students compete to get the highest score and become the winner in each tournament by preparing all group members through peer tutoring activities. All group members are responsible for preparing their group members to participate in the competition, because the score obtained by each student will affect the score of their group.

By implementing games and tournaments in learning, students will be encouraged to be more sensitive, faster, and think in a variety of ways, so that various ideas are obtained in a short time. Then students can connect, combine, and develop them, until a new solution is obtained to a problem (Manurung et al., 2020; Khikmawati, 2019). In learning with the TGT cooperative model, students are trained to construct their own knowledge from the material they learn during learning through group dynamics. The material provided in learning is around the real context of problems in everyday life that are used as problems.

The TGT cooperative model results in discussion activities becoming more active and less abstract in the eyes of students.Students have more group discussions, have more opportunities to ask questions to their group mates, and understand the material better. Students can relate their experiences and knowledge to solve the problem. On the other hand, teachers are only facilitators so that learning is student-centered. Students learning in groups with a specific goal can improve students' understanding of the material being studied.

Students can share knowledge with their group members, so that peer tutoring activities can occur from real problems in everyday life that are used as problems. Students can relate their experiences and knowledge to solve these problems and are able to think creatively. This is because creative thinking is one of the highest levels of thinking that starts from memory, basic thinking, critical thinking, and achieving creative thinking skills (Manurung et al., 2020; Musrikah, 2018).

Students appear more active in asking questions and finding out new things related to the problems or materials presented. When given a mathematical problem in trade, students' curiosity seems more stimulated, and when asked to solve the problem, students appear more creative in finding the right steps to solve it. Although there are some students who have difficulty understanding and finding solutions to the problem. Students become enthusiastic in participating in learning because games and tournaments are held. In addition, competition between groups to get the highest score makes students more serious when discussing and asking about things they do not understand, so that students understand more about the material being studied.

Conventional learning makes students less interested in participating in learning activities in class. Most learning is centered on teachers who are more dominant in providing material using the lecture method. Student activities in conventional learning are more dominated by listening to the teacher, taking notes, and answering questions in the book, not a few students do not understand what the teacher is doing which is caused by students experiencing boredom during learning (Adawiyah, 2021;(Nasution & Surya,

2017). Lack of student participation to actively ask questions, answer, and foster curiosity makes the class passive and boring. This is what makes students feel less interested and causes students to not understand the material given. Curriculum demands require teachers to have interesting and competent teaching skills in order to be able to foster students' interest in learning.

Each student certainly has a varied way of thinking, teachers have an active role to help students develop these thinking skills. The difference in mathematical creative thinking skills that occurs when taught to the experimental group and the control group can also be seen from the learning steps applied by the learning model used. In the TGT cooperative model there are 5 learning steps, namely (1) class presentation, (2) group learning (teams), (3) games, (4) matches (tournaments), (5) group awards (teams recognition) (Azwira et al., 2023; Slavin, 2015).

Meanwhile, the conventional learning model steps used are (1) listening to the material, (2) following the demonstration, (3) question and answer, (4) practice questions. Apart from the learning steps, the difference in creative thinking abilities of the two research groups can be seen from the results of the post-test, and the results of the hypothesis analysis. Therefore, the results of this study show that the TGT cooperative learning model is effective in increasing students' mathematical creative thinking abilities. This is in line with the results of previous studies which revealed that the use of the TGT cooperative learning model can increase students' creative thinking abilities (Ainiyah, 2022; Nisa & Amalia, 2021; Fitrianawati & Hartono, 2016). The application of the TGT cooperative learning model is also effective in improving students' mathematics learning outcomes (Alfira & Syofyan, 2022; Loko, 2023; Nisufuana, 2022).

The research conducted focuses more on the mathematical creative thinking skills of students in grade IV of elementary school. Based on the results of the data analysis conducted, it can be seen that students who are taught with the TGT cooperative model obtain a higher average percentage compared to students who are taught conventionally. Based on the results of the polled variance t-test conducted, it can be seen that there is a significant difference between students who are taught with the TGT cooperative learning model and students who are taught conventionally.

The TGT cooperative learning model can be selected and used by teachers in the learning process, especially in understanding certain material concepts such as mathematical sentence material and calculations to increase student activity during learning. In addition, this model can also support a conducive learning atmosphere and effective learning activities so that learning objectives can be achieved properly. The selection of the right learning model is carried out to support a conducive learning atmosphere in order to improve students' mathematical creative thinking skills and achieve the expected learning objectives.

Teachers must be able to present interesting learning activities and encourage students to be more active during learning activities with fun activities. The TGT cooperative learning model requires supporting media used during games and tournaments that can encourage students' motivation and curiosity in participating in learning. Therefore, teachers need preparation to be able to design learning activities by considering the estimated preparation and work in the classroom so that this learning model can be implemented optimally. Teachers should also prepare a backup plan in case of unexpected things that can hinder learning activities.

The results of this study can provide the latest information on the effectiveness of the TGT cooperative learning model. This study can alsohelping students understand the concept of subject matter through solving real problems in everyday life, peer tutoring activities, playing games, and tournament activities.The implication of this study is that it can be used as a reference or source of information for relevant research studies, especially on mathematical creative thinking skills with the TGT cooperative learning model. The limitations of this study are that not all variables that influence the dependent variable are controlled. Generalization of the research results obtained also only applies to schools with the same characteristics as the place where the research was conducted. Further research can conduct further studies involving other variables and using a larger number of samples to expand generalization.

4. CONCLUSION

Use of models learning TGT cooperative learning model in the learning process has a positive influence on the mathematical creative thinking ability of fourth grade students in Cluster II North Kuta. This can be seen from the average value of the mathematical creative thinking ability of students in the experimental group which is in the high category, while the average value of the mathematical creative thinking ability of students in the control group is in the low category. The results of this study can provide the latest information regarding the significant influence of the TGT cooperative learning model on the mathematical creative thinking ability of fourth grade students.

5. REFERENCES

Adawiyah, F. (2021). Variasi Metode Mengajar Guru Dalam Mengatasi Kejenuhan Siswa Di Sekolah Menengah Pertama. *Jurnal Paris Langkis*, *2*(1), 68–82. https://doi.org/10.37304/paris.v2i1.3316.

Ainiyah, N. (2022a). Penerapan Model Pembelajaran Kooperatif TGT Untuk Meningkatkan Hasil Belajar Matematika. *Edumath*, *14*(2), 9–15. https://doi.org/10.32682/edumath.v14i2.2759.

Alfira, A., & Syofyan, H. (2022). Pengaruh model pembelajaran kooperatif tipe teams games tournament (TGT) terhadap hasil belajar IPA daur kehidupan hewan siswa SD. *JPGI (Jurnal Penelitian Guru Indonesia)*, *7*(1), 177. https://doi.org/10.29210/022080jpgi0005.

Amirulloh, S., Carlian, H. Y., & Rohmah, S. K. (2020). Kemampuan Berpikir Kreatif Matematis Siswa Melalui Penggunaan Strategi Mathematical Bet Line. *Muallimuna: Jurnal Madrasah Ibtidaiyah*, *5*(2), 85–94. https://doi.org/10.31602/muallimuna.v5i2.2725.

Ardelina, A. Y., Ain, N., & Ayu, H. D. (2021). Pengaruh Model Pembelajaran Discovery Learning Berbantuan Media Audio Visual Untuk Meningkatkan Keaktifan Dan Prestasi Belajar Siswa. *RAINSTEK: Jurnal Terapan Sains & Teknologi*, *3*(4), 300–312. https://doi.org/10.21067/jtst.v3i4.4903.

Azwira, A., Atiq, A., Hidasari, F. P., Yunitaningrum, W., & Triansyah, A. (2023). Penerapan model pembelajaran kooperatif tipe team game tournament (TGT) terhadap hasil belajar shooting sepakbola. *Jurnal Porkes*, *6*(1), 246–265. Retrieved from https://e-journal.hamzanwadi.ac.id/index.php/porkes.

Cartono, C. (2020). Penerapan model pembelajaran kooperatif tipe tgt (teams-games tournament) untuk meningkatkan kemampuan teknik dasar bermain kasti di kelas v sd negeri 179/ix tanjung harapan semester i tahuan ajaran 2019/2020. *Jurnal Literasiologi*, *3*(3). https://doi.org/10.47783/literasiologi.v3i3.109.

Fasya, A. H., Maulana, A. A., & Ermawati, D. (2024). Analisis Faktor Penyebab Kurangnya Keaktifan Siswa Dalam Pembelajaran Matematika di Kelas 5 Suan Sawan WIttaya School Thailand. *Jurnal Pendidikan Multidisipliner*, *7*(1). Retrieved from https://edu.ojs.co.id/index.php/jpm/article/view/209.

Fitrianawati, M., & Hartono, H. (2016). Perbandingan keefektifan PBL berseting TGT dan GI ditinjau dari prestasi belajar, kemampuan berpikir kreatif dan toleransi. *Jurnal Riset Pendidikan Matematika*, *3*(1), 55–65. https://doi.org/10.21831/jrpm.v3i1.9684.

Hadi, N. F., & Khojir. (2021). Analysis of the Relationship between "merdeka belajar" and the Progressivism Philosophy. *Almufi Journal of Measurement, Assessment, and Evaluation Education*, *1*(2). Retrieved from https://almufi.com/index.php/AJMAEE/article/view/101.

Hadi, S., & Novaliyosi. (2022). Pengaruh Model Problem Based Learning Terhadap Keterampilan Computational Thinking Matematis Siswa Kelas Iv Sdn Kebon Bawang 03 Jakarta. *Didaktik : Jurnal Ilmiah PGSD STKIP Subang*, *8*(1), 375–385. https://doi.org/10.36989/didaktik.v8i1.302.

Hidayat, I. (2019). *Strategi Pembelajaran Populer*. Yogyakarta: Diva Press.

Khikmawati, N. (2019). Pengaruh Model Pembelajaran Team Games Tournament Terhadap Berpikir Kreatif dan Hasil Belajar Siswa Pada Mata Pelajaran IPA Kelas V SD Alislah Surabaya. *Education And Human Development Journal*, *4*(1), 63–71. https://doi.org/10.33086/ehdj.v4i1.1084.

Kusadi, N. M. R., Sriartha, I. P., & Kertih, I. W. (2020). Model Pembelajaran Project Based Learning Terhadap Keterampilan Sosial Dan Berpikir Kreatif. *Thinking Skills and Creativity Journal*, *3*(1), 18–27. https://doi.org/10.23887/tscj.v3i1.24661.

Loko, E. H. L. (2023). Upaya Meningkatkan Hasil Belajar Siswa Kelas III Pada Mata Pelajaran Ilmu Pengetahuam Alam (IPA) Di SDK Wilain Dengan Menggunakan Metode Kooperatif TGT (Team Games Tournament). *Jurnal Pendidikan Dan Ilmu Sosial*, *1*(1). https://doi.org/10.54066/jupendis-itb.v1i1.82.

Manurung, A. S., Halim, A., & Rosyid, A. (2020). Pengaruh Kemampuan Berpikir Kreatif untuk meningkatkan Hasil Belajar Matematika di Sekolah Dasar. *Jurnal Basicedu*, *4*(4), 1274–1290. https://doi.org/10.31004/basicedu.v4i4.544.

Mulyati, T. (2016). Kemampuan pemecahan masalah matematis siswa sekolah dasar. *EduHumaniora| Jurnal Pendidikan Dasar Kampus Cibiru*, *3*(2). https://doi.org/10.17509/eh.v3i2.2807.

Musdalipa, F. R., & Alam, A. J. (2022). *Buku Panduan Model Pembelajaran Kooperatif Tipe Teams Games Tournament (TGT) Berbasis Media Ular Tangga*. Tim Mitra Cendekia Media.

Musrikah, M. (2018). Higher Order Thingking Skill (Hots) Untuk Anak Sekolah Dasar Dalam Pembelajaran Matematika. *Martabat: Jurnal Perempuan Dan Anak*, *2*(2). https://doi.org/10.21274/martabat.2018.2.2.339-360.

Nasution, N. R., & Surya, E. (2017). Penerapan Model Pembelajaran Berbasis Masalah (Problem Based Learning) Terhadap Kemampuan Berpikir Kreatif Matematika Siswa. *Jurnal Mahasiswa PPS*, *1*(1), 98–102. Retrieved from https://www.researchgate.net/profile/Nurul-Rafiqah-Nasution/publication/320726603.

Nikma, S., & Rozak, A. (2023). Kurikulum merdeka dalam tinjauan filsafat pendidikan. *Qiro'ah: Jurnal Pendidikan Agama Islam*, *13*(1), 36–48. Retrieved from https://www.ejurnal.iiq.ac.id/index.php/qiroah/article/download/875/349.

Nisa, C., & Amalia, F. (2021). Perbedaan Kemampuan Berpikir Kreatif dan Kemampuan Pemahaman Konsep Matematika Siswa dengan Strategi Pembelajaran Kooperatif Tipe Co Op Co Op dan Teams Games Tournament (TGT). *JTMT: Journal Tadris Matematika*, *2*(1), 9–18. https://doi.org/10.47435/jtmt.v2i1.642.

Nisufuana. (2022). Cooperatif Learning Tipe Teams Games Tournaments Untuk Meningkatkan Hasil Belajar Matematika. *Teaching: Jurnal Inovasi Keguruan Dan Ilmu Pendidikan*, *2*(4), 5–24. https://doi.org/10.51878/teaching.v2i4.1888.

Nuni Fitriarosah. (2016). Pengembangan Instrumen Berpikir Kreatif Matematis Untuk Siswa SMP. *Prosiding Seminar Nasional Pendidikan Matematika*, *1*(2). Retrieved from https://repository.unikama.ac.id/840/30/243-250 PENGEMBANGAN INSTRUMEN BERPIKIR KREATIF MATEMATIS UNTUK SISWA SMP.pdf.

Pertiwi, A. D., Nurfatimah, S. A., & Hasna, S. (2022). Menerapkan Metode Pembelajaran Berorientasi Student Centered Menuju Masa Transisi Kurikulum Merdeka. *Jurnal Pendidikan Tambusai*, *6*(2), 8893–8848. https://doi.org/10.31004/jptam.v6i2.3780.

Prasetiyo, M. B., & Rosy, B. (2021). Model Pembelajaran Inkuiri Sebagai Strategi Mengembangkan Kemampuan Berpikir Kritis Siswa. *Jurnal Pendidikan Administrasi Perkantoran*, *9*. Retrieved from https://journal.unesa.ac.id/index.php/jpap.

Purwanti, Hayat, M. S., Rita, E., & Roshayanti, F. (2024). The Analisis Keterampilan Berpikir Kreatif Siswa Kelas VIII SMPN 1 Jumo dalam Pembelajaran IPA. *Titian Ilmu: Jurnal Ilmiah Multi Sciences*, *16*(1), 17–24. https://doi.org/10.30599/jti.v16i1.3042.

Rahayuningsih, F. (2021). Internalisasi filosofi pendidikan ki hajar dewantara dalam mewujudkan profil pelajar pancasila. *SOCIAL: Jurnal Inovasi Pendidikan IPS*, *1*(3), 17–187. https://doi.org/10.51878/social.v1i3.925.

Saharsa, U., Qaddafi, M., & Baharuddin, B. (2018). Efektivitas penerapan model pembelajaran problem based learning berbantuan video based laboratory terhadap peningkatan pemahaman konsep fisika. *JPF (Jurnal Pendidikan Fisika) Universitas Islam Negeri Alauddin Makassar*, *6*(2), 57–64. https://doi.org/10.24252/jpf.v6i2.5725.

Setianingsih, D., Yuniarsih, T., & Rozali, R. D. Y. (2018). Pengaruh Model Pembelajaran Kooperatif Tipe Teams Games Tournament terhadap Kemampuan Berfikir Tingkat Tinggi Siswa. *UTILITY: Jurnal Ilmiah Pendidikan Dan Ekonomi*, *2*(2), 72–84. https://doi.org/10.30599/utility.v2i2.313.

Slavin, R. . (2015). *Cooperative Learning: Teori, Riset, dan Praktik*. Bandung: Nusa Media.

Sutama, I. N., Arnyana, I. B. P., & Swasta, I. B. J. (2014). Pengaruh model pembelajaran inkuiri terhadap ketrampilan berpikir kritis dan ketrampilan proses sains pada pelajaran biologi Kelas XI IPA SMA Negeri 2 Amlapura. *Jurnal Pendidikan Dan Pembelajaran IPA Indonesia*, *4*(1). Retrieved from https://ejournal-pasca.undiksha.ac.id/index.php/jurnal_ipa/article/view/1091.

Syafriani, Y., Ramadhani, S., Harahap, F. A., Zuraira, T., & Fadilla, A. S. (2022). Peran dan Tugas Guru dalam Manajemen Kurikulum. *Edumaspul: Jurnal Pendidikan*, *6*(1), 572–575. https://doi.org/10.33487/edumaspul.v6i1.2752.

Ulandari, E., Putri, R., Ningsih, F., & Putra, A. (2019). Efektivitas Model Pembelajaran Inquiry terhadap Kemampuan Berpikir Kreatif Siswa pada Materi Teorema Pythagoras. *Jurnal Cendekia: Jurnal Pendidikan Matematika*, *3*(2). https://doi.org/10.31004/cendekia.v3i2.99.

Utari, D., & Muadin, A. (2023). Peranan pembelajaran abad-21 di sekolah dasar dalam mencapai target dan tujuan kurikulum merdeka. *Jurnal Pendidikan Islam Al-Ilmi*, *6*(1), 116–123. https://doi.org/10.32529/al-ilmi.v6i1.2493.

Wardani, W. Y., & Sulistya, N. N. (2020). Meta Analisis Pengaruh Pendekatan Discovery Learning terhadap Kemampuan Berpikir Kritis Siswa Kelas V Tematik Muatan IPA. *Thinking Skills and Creativity Journal*, *3*(1), 1–7. https://doi.org/10.23887/tscj.v3i1.27959.

Yamin, M., & Syahrir Syahrir. (2020). Pembangunan pendidikan merdeka belajar (telaah metode pembelajaran). *Jurnal Ilmiah Mandala Education*, *6*(1). https://doi.org/10.58258/jime.v6i1.1121

Zarkasi, A., Muslihatun, M., & Fajri, M. (2022). Madrasah Dalam Platform Kurikulum Merdeka. *Jurnal Gema Nurani Guru*, *1*(2), 71–79. Retrieved from https://jurnal.pgriaikmel.or.id.