THE USE OF THE COOPERATIVE LEARNING MODEL MAKE A MATCH TO IMPROVE MATHEMATICS LEARNING OUTCOMES

TRI SUTRISNO
Institut Agama Islam Negeri Madura
trisutrisno@iainmadura.ac.id

Abstrak

This study aims to enhance the mathematics learning outcomes of sixth-grade students at SDN Kalianget Barat III, Sumenep, by implementing the cooperative learning model known as Make a Match. The research employs Classroom Action Research (CAR), structured in two cycles, each comprising the stages of planning, action, observation, and reflection. Data collection involved administering a questionnaire with 10 targeted questions about the learning process, alongside observational assessments of student engagement and interactions during activities. The findings reveal a significant increase in student understanding and engagement. In the first cycle, only 57.6% of students responded positively regarding their learning experiences. By the second cycle, this figure surged to 96.1%. Such results indicate that students were not only more involved but also more enthusiastic about cooperative learning. This model encouraged active participation, allowing students to collaborate and interact, which in turn fostered a deeper comprehension of mathematical concepts. Reflections on the implementation process further support the conclusion that the Make a Match cooperative learning model effectively enhances student learning outcomes, especially in the context of fraction division. The engaging nature of this method appears to resonate well with students, promoting not just academic success but also a positive attitude towards learning mathematics. Given these promising results, this study advocates for the widespread adoption of the Make a Match model as a reliable educational strategy. By fostering a collaborative learning environment, educators can significantly improve student engagement, understanding, and overall quality of education in the classroom. Future research may explore the long-term effects of this model on various mathematical topics and its adaptability across different educational contexts.

Keywords: Cooperative, Make a Match, Learning Outcomes

INTRODUCTION

Fathurrahman (2015) state that one of the challenges teachers face in delivering instruction is how to effectively motivate and cultivate students' intrinsic drive to learn. The success of teaching is significantly influenced by the motivation provided from within the students themselves to study mathematics. Often, teachers encounter difficulties in motivating their students due to the lack of specific tools, methods, or techniques that can inspire students in a uniform manner or yield consistent results. By utilizing cooperative learning methods, it is hoped that both the learning process and the outcomes in mathematics can be enhanced.

The cooperative learning model is widely used and recommended by educational experts. Research conducted by Slavin (1995) indicates that (1) the use of cooperative learning can improve students' academic achievement while also enhancing social relationships, fostering tolerance, and valuing others' opinions; (2) cooperative learning meets students' needs for critical thinking, problem-solving, and integrating knowledge with experience Indriana (2020). For these reasons, cooperative learning strategies are expected to enhance the quality of classroom instruction. With this cooperative method, students are more active participants in their learning, leading to optimal learning processes and outcomes, particularly for elementary school students.

Indriana (2020). asserts that learning is a process of behavioral change in individuals as a result of their experiences interacting with the environment. Learning is not merely memorization but a mental process occurring within an individual. Through learning, one gains knowledge and experiences transformative changes in life. To motivate learning, creativity in instructional models is necessary to prevent boredom, whether in formal or informal settings. One such cooperative learning model is the Make a Match type. According to Rahayu, this method is effective in increasing student engagement in the classroom. Developed by Lurna Curran, the Make a Match method addresses the challenges young students face in developing social skills and collaborating with others in mathematics.

When children experience boredom and fatigue in learning, it can negatively affect their academic performance. Learning outcomes refer to the abilities students acquire after engaging in learning activities. Learning itself is a process through which an individual seeks to achieve lasting behavioral change. Learning outcomes are also influenced by students' intelligence and their prior knowledge of the material to be studied. This implies that teachers must set learning objectives that align with students' cognitive capacities, and

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achieving these objectives requires using previously mastered materials as a springboard to understand new content. Additionally, learning outcomes are affected by the opportunities provided to students, necessitating that teacher design and manage learning experiences that allow students to explore their environments freely (Suhantoro, 2017).

Mathematics is a fundamental subject in basic education, and a strong understanding of mathematical concepts is essential for succeeding in subsequent levels of education. However, based on observations at SDN Kalianget Barat III, many sixth-grade students struggle to grasp mathematical concepts. This low achievement is influenced by several factors, including less interactive teaching methods, minimal student participation, and a lack of motivation to learn.

In this context, cooperative learning models can serve as an effective solution. This model emphasizes collaboration among students, allowing them to learn from and support one another during the learning process. One promising type of cooperative model is Make a Match. This method involves a card-matching game that contains questions and answers, making it engaging for students and encouraging active interaction among them.
The implementation of the Make a Match cooperative learning model in the sixth grade is expected to improve students' mathematics learning outcomes by creating a more enjoyable and interactive atmosphere. With this method, students not only learn independently but also collaborate with their peers, facilitating a better understanding of mathematical concepts.

Given this background, the purpose of this research is to explore and analyze the effectiveness of using the Make a Match cooperative learning model to enhance the mathematics learning outcomes of sixth-grade students at SDN Kalianget Barat III, Sumenep. It is hoped that the results of this study will provide new insights for teachers in developing more engaging and effective teaching methods, ultimately improving students' overall learning outcomes.

RESEARCH METHOD

This study employs the Classroom Action Research (CAR) method, designed to improve the mathematics learning outcomes of sixth-grade students at SDN Kalianget Barat III, Sumenep. The CAR method was chosen for its relevance in the classroom learning context and its focus on addressing the problems faced by students.

Susilo (2022,) The CAR is conducted in two cycles, each comprising four stages: planning, action implementation, observation, and reflection. During the planning stage, the researcher designs learning activities using the cooperative learning model known as Make a Match. This plan includes the preparation of materials, teaching aids, and the scheduling of activities.

In the action implementation stage, the learning model is applied in the classroom. Students are divided into small groups, and each group is given cards containing questions and answers related to the material being taught. This activity aims to encourage interaction and collaboration among students. Each group is tasked with matching question cards to the correct answers, creating an active and enjoyable learning environment.

Throughout the implementation, observations are made to assess the learning process and student engagement. These observations are conducted by the researcher and peers, who note student activities and their responses to the applied method. The data obtained from these observations serve as feedback for improvements in subsequent cycles.

Data collection on student learning outcomes is carried out through formative tests after each cycle. These tests are designed to measure students' understanding of the mathematical material taught. Assessment is conducted using clear rubrics, with students deemed proficient if they achieve a minimum score of 75, and class proficiency determined if 85% of students reach this score.

After each cycle, a reflection is conducted to analyze the results obtained. The researcher evaluates the success of the implemented learning model and identifies aspects that need improvement. Based on the reflection results, necessary adjustments are made for the next cycle, both in terms of learning strategies and content delivery.

Mudrikah (2022), The collected data are analyzed quantitatively and qualitatively. Quantitative analysis is conducted to calculate the percentage of students achieving learning proficiency, while qualitative analysis describes classroom dynamics and interactions among students during the learning process. The results of this analysis will be used to draw conclusions about the effectiveness of the Make a Match cooperative learning model in improving mathematics learning outcomes.

With this approach, it is hoped that this research will significantly contribute to the enhancement of mathematics learning outcomes for students at SDN Kalianget Barat III and provide insights for teachers in implementing more innovative and effective teaching methods.

RESEARCH RESULTS AND DISCUSSION

The Make A Match method has been implemented successfully in the second cycle. The data source for this study consists of 26 sixth-grade students at SDN Kalianget Barat III, Sumenep, comprising 7 male students and 19 female students, specifically focusing on the topic of fraction division.

This section will elaborate on the discussion and findings of the research conducted. The results and discussion are formulated based on the application of the method used in the study. This Classroom Action Research (CAR) aims to improve the abilities of sixth-grade students at SDN Kalianget Barat III, Sumenep, in the material of fraction division using the Make A Match method. The research was conducted over two action cycles, with each cycle consisting of one meeting. The first cycle took place on October 2, 2022, with a duration of 2x40 minutes, while the second cycle was conducted on October 10, 2022, also for 2x40 minutes.

This study is categorized as Classroom Action Research (CAR) because the researcher aims to improve or enhance the less-than-optimal learning outcomes by changing the usual methods, approaches, or strategies. The research was conducted in

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collaboration with another Indonesian language teacher. It employs two cycles, each consisting of two meetings.

The results of the first cycle are refined in the subsequent cycle, continuing until the learning completeness is achieved according to the established Minimum Competency Standards (SKM) of 75. Additionally, the research is considered successful (showing improvement) if the classical test results of the students reach 85%. Observations of teachers and students, as well as student responses, are categorized as good if they reach 85% - 100%, sufficient if they reach 70% - 84%, and poor if below 69%. According to Indana (2007:4), each cycle of classroom action research consists of four stages: planning, action implementation, observation, and reflection.

Cycle 1

Based on the tests/evaluations conducted, the level of student understanding regarding fractions was assessed. This can be seen from the assessment categories classified as follows:

Assessment of Student Learning Outcomes in Cycle 1

Range	Kriteria	Jumlah siswa
90-100	Sangat baik	-
70-89	Baik	4
50-69	cukup	20
30-49	kurang	2

From the table above, we can conclude that 4 students achieved a "good" rating, 20 students received a "sufficient" rating, and the remaining 2 students scored below the acceptable level in Cycle 1.

Additionally, the following shows the average scores of students in Cycle 1 before and after the interventions were applied in the sixth-grade class at SDN Kalianget Barat III, Sumenep:

Class Average Assessment (Pretest)

Nilai	Banyaknya
80	1
70	1
69	5
65	6
60	7
55	2
50	2
30	2
Rata-rata	**61,3**

95 ≤ average score ≤ 100: Excellent

85 ≤ average score < 95: Very Good

75 ≤ average score < 85: Good

65 ≤ average score < 75: Sufficient

55 ≤ average score < 65: Poor

average score < 55: Very Poor

Based on the table above, we can conclude that the class average score before the intervention was 61.3, which falls into the "Poor" category.

Class Average Assessment

Nilai	Banyaknya
80	1
75	4
70	13
65	7
60	1
55	-
50	-
30	-
Rata-rata	**70,1**

95 ≤ average score ≤ 100: Excellent

85 ≤ average score < 95: Very Good

75 ≤ average score < 85: Good

65 ≤ average score < 75: Sufficient

55 ≤ average score < 65: Poor

average score < 55: Very Poor

Based on the table above, we can conclude that the class average score after the intervention in Cycle 1 was 70.1, which falls into the "Sufficient" category. This represents an increase of one category from before the intervention in Cycle 1.

The level of student response to the learning model can be assessed using a questionnaire distributed to each student. This helps determine whether the Make a Match learning model can improve student learning outcomes and whether this learning experience is enjoyable. The results show that the highest score for students answering "yes" was from 15 students, while 7 students responded "sufficient," and 4 students answered "no." The following presents the percentages of responses for "yes," "sufficient," or "no":

Percentage of Student Response to Make a Match Learning

Responsi siswa	%
ya	57,6%
kurang	26,9%
tidak	15,3%

Based on the table above, we can conclude that students' responses regarding the Make A Match method indicate whether it can improve learning outcomes and the enjoyment of the students with this method. A total of 57.6% of students answered "yes," 26.9% answered "fair," and 15.3% answered "no."

The overall assessment of activities in Cycle 1 can be seen in the table below, which illustrates the criteria for learning outcomes using the Make A Match method.

Overall Assessment of Activities in Cycle 1

Range	Kriteria	Jumlah
90-100	Sangat baik	1
70-89	Baik	17
50-69	Cukup	2
30-49	Kurang	5

Based on the table above, we can see that the criteria for the overall implementation of learning activities in Cycle 1 indicate that "good" is the dominant category, with 17 students participating well in the activities. This shows that the Make A Match method is well-received by the students.

Reflection on Cycle 1

Based on data collection from planning, implementation, to observation and evaluation, there is generally an improvement in students' understanding of statistical material, specifically in determining measures of central tendency. This includes differentiating between mean, median, and mode according to their definitions, and calculating the mean, median, and mode for both individual and grouped data. This is evident in the comparison of class averages before and after the intervention.

In addition to the improvement in learning outcomes, there are several areas that need to be addressed in Cycle 2. In Cycle 1, students faced difficulties adapting to the cooperative learning model, resulting in a noisy and chaotic classroom environment. Nevertheless, the teacher was able to manage the situation. It was apparent that the teacher had not yet reached all students, leading to some disruptions despite the established rules for the Make A Match activity.

Another weakness in Cycle 1 was the limited time available, allocated only for 2x45 minutes, while the activities from start to finish were too numerous. Overall, students felt they understood the material better and found the method more enjoyable. However, there were still some students who struggled to follow the lessons effectively. This was

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reflected in the final evaluation (post-test), where some students displayed a lack of confidence in answering the given questions.

Cycle 2

Based on the tests/evaluations conducted in Cycle 2, it is evident that students' understanding of fraction division has improved. This can be seen from the assessment categories of student comprehension, classified as follows:

Assessment of Student Learning Outcomes in Cycle 2

Range	Kriteria	Jumlah siswa
90-100	Sangat baik	16
70-89	Baik	8
50-69	cukup	2
30-49	kurang	-

From the table above, we can conclude that 16 students achieved the criteria of "very good," 8 students achieved the criteria of "good," and the remaining 2 students achieved the criteria of "sufficient" in Cycle 2.

Additionally, here are the average scores of the students in Cycle 2 for the sixth-grade class at SDN Kalianget Barat III, Sumenep:

Class Average Assessment

Nilai	Banyaknya
100	5
98	8
95	2
90	1
91	1
85	4
70	3
67	2
Rata-rata	**89,96**

$95 \leq$ average score ≤ 100: Excellent

$85 \leq$ average score < 95: Very Good

$75 \leq$ average score < 85: Good

$65 \leq$ average score < 75: Sufficient

$55 \leq$ average score < 65: Poor

average score < 55: Bad

Based on the table above, we can conclude that the average score of the class after the intervention in Cycle 2 is 89.96, which falls into the "very good" category, showing a significant improvement from Cycle 1.

The level of student response to the Make A Match learning model in the Statistics material, which differs from Cycle 1, can be assessed using a questionnaire distributed to each student. This is to determine whether the Make A Match learning model can improve student learning outcomes and whether the learning experience is enjoyable. The results show that the highest score of students answering "yes" is 25, while the highest score for "less" is 1 student, and there were no students who answered "no." Below is the percentage of responses indicating yes, less, or no:

Percentage of Student Responses to the Make A Match Learning Model

Responsi siswa	%
Ya	96,1%
Kurang	3,8%
Tidak	-

Based on the test results, students showed improvement and fell into the "very good" category. Thus, it can be concluded that the implementation of the cooperative learning model, specifically the Make A Match type, can enhance the average percentage of student understanding in the Statistics material. This means that the success indicators set in the problem formulation have been met, and the actions can be concluded.

The overall assessment of activities in Cycle 2 can be seen in the table below, which evaluates the criteria for learning outcomes using the Make A Match method after reflecting on Cycle 1.

Overall Assessment of Activities in Cycle 2

Range	Kriteria	Jumlah
90-100	Sangat baik	22
70-89	Baik	4
50-69	cukup	-
30-49	kurang	-

Based on the table above, we can conclude that the criteria for the overall implementation of learning activities in Cycle 2 can be considered complete in the basic competency of determining measures of central tendency and data distribution. The dominant criterion of "very good" was met by 22 students who participated well in the activities. This indicates that the Make A Match method has been successfully applied in the sixth-grade class at SDN Kalianget Barat III, Sumenep.

From the recorded data, including planning, implementation, observation, and evaluation, there is a general improvement in students' understanding of the material on fraction division, which is clearly evident between Cycle 1 and Cycle 2.

Improvements made by the researcher, based on reflections from Cycle 1, included more assertive rule-setting and guidance for individual students. This has led to enhanced student learning outcomes with the Make A Match cooperative model. The average class

scores increased from 70.1 in Cycle 1 to 89.96 in Cycle 2, indicating that nearly all students have grasped the statistics material. This signifies that the learning method not only improved students' academic results but also provided an enjoyable cooperative learning experience, achieving a satisfaction percentage of 96.1%.

To clarify further, below is a table comparing the average class scores in Cycle 1 and Cycle 2, along with the percentage increase and overall activity assessments in both cycles using the Make A Match cooperative learning model.

Comparison of Student Learning Outcomes in Cycle 1 and Cycle 2

Range	Kriteria	Siklus 1	Siklus 2
90-100	Sangat baik	-	16
70-89	Baik	4	8
50-69	cukup	20	2
30-49	kurang	2	-

Based on the table above, we can conclude that the implementation of actions in Cycle 1 and Cycle 2 has shown improvement. This is evident from the assessment criteria in Cycle 1, where there were no "very good" ratings, while in Cycle 2, "very good" ratings were achieved by sixth-grade students at SDN Kalianget Barat III, Sumenep. This indicates that a good level of mastery has been reached.

Comparison of Average Class Scores

Nilai	Siklus 1	Siklus 2
100	**-**	5
98	**-**	8
95	**-**	2
90	**-**	1
91	**-**	1
85	**-**	4
80	1	-
75	4	-
70	13	3
67	-	2
65	7	-
60	1	-
55	-	-
50	-	-
30	-	-
Rata-rata	**70,1**	**89,96**

$95 \leq$ average score ≤ 100: Excellent

$85 \leq$ average score < 95: Very Good

$75 \leq$ average score < 85: Good

65 ≤ average score < 75: Satisfactory

55 ≤ average score < 65: Poor

average score < 55: Bad

Based on the table above, we can see the comparison of average class scores between Cycle 1 and Cycle 2. In Cycle 1, the average score was "satisfactory," while in Cycle 2, it improved to "very good." By Cycle 2, students had adapted well to the cooperative learning model, resulting in very good scores.

Comparison of Student Responses to the Make a Match Learning Model

Responsi siswa	siklus 1	Siklus 2
ya	57,6%	96,1%
kurang	26,9%	3,8%
tidak	15,3%	-

Based on the table above, we can see the changes in the percentages of scores for responses of "yes," "less," and "no." According to the questionnaire provided to each student, which contained 10 short questions regarding learning with the cooperative learning model of Make a Match, there was a significant change from Cycle 1 to Cycle 2. The percentage of students responding "yes" in Cycle 1 was only 57.6%, while in Cycle 2, it nearly reached perfection at 96.1%. This indicates that students experienced a different learning approach with this model and enjoyed the cooperative learning environment. They were no longer just sitting and listening to the teacher but actively engaging in understanding concepts through this learning model.

Based on the reflection conducted, the researcher concludes that the use of the cooperative learning model of Make a Match led to an improvement in the learning material on fraction division in the sixth grade at SDN Kalianget Barat III, Sumenep.

Comparison of Overall Activity Assessment
Between Cycle 1 and Cycle 2

Range	Kriteria	Siklus-1	Siklus-2
90-100	Sangat baik	1	22
70-89	Baik	17	4
50-69	cukup	2	-
30-49	kurang	5	-

Based on the table above, we can observe the differences in the overall activity assessment, where in Cycle 1 there were still many "less" ratings, while in Cycle 2 the "very good" criteria dominated the classroom learning. It can be stated that the cycle has concluded in Cycle 2, as the students' learning outcomes with the cooperative learning model of Make a Match are considered complete or aligned with the initial hypothesis.

CONCLUSION

Based on the data obtained from the questionnaire given to the students, there was a significant change between Cycle 1 and Cycle 2 in the use of the cooperative learning model of Make a Match. In Cycle 1, the percentage of students who answered "yes" was only 57.6%, while in Cycle 2, this percentage increased to 96.1%. This indicates that students felt more pleased and engaged in learning with this cooperative model, as they were not just passively listening to the teacher but actively understanding the concepts being taught.

Reflections from this study indicate that the implementation of the cooperative learning model of Make a Match has successfully improved students' understanding, particularly in the topic of fraction division in the sixth grade at SDN Kalianget Barat III, Sumenep. Therefore, the use of this method can be recommended as an effective strategy to enhance students' learning outcomes in the future.

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