

# Improving Science Learning Outcomes Through a Make a Match Type Cooperative Learning Model for Elementary School Students

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**ABSTRACT.** Natural Sciences (IPA) learning in elementary school has an important role in developing students' critical thinking, logic, and understanding of scientific concepts. However, the reality is that science learning is still dominated by conventional methods that are centered on teachers so that students tend to be passive and less actively involved in the learning process. This condition has an impact on the low learning outcomes of students, as found in grade IV B students of SD Negeri 200213 Padangsidimpuan. This research aims to improve students' science learning outcomes through the application of the Make a Match type cooperative learning model to plant body parts. This research is a Class Action Research (PTK) with a qualitative descriptive approach supported by quantitative data. The subjects of the study were 15 students of class IV B consisting of 6 male students and 9 female students. The research was carried out in two cycles, each consisting of the planning stage, implementation of actions, observation, and reflection. Data collection techniques use learning outcome tests, observation of student activities, and documentation. The data was analyzed qualitatively using the Miles and Huberman models and quantitatively through the calculation of student learning completeness. The results of the study showed that there was a significant increase in students' science learning outcomes. In the pre-cycle stage, learning completeness only reached 20%, increasing to 53.3% in Cycle I, and reaching 86.7% in Cycle II. In addition, student learning activities also increased in terms of activeness, cooperation, and motivation to learn during the learning process. The implications of this study show that the Make a Match type cooperative learning model can be used as an effective learning alternative in improving science learning outcomes in elementary schools. This model not only improves the cognitive aspect, but also develops students' social skills through active, interactive, and fun learning.

**Keywords:** *Make a Match, Science Learning Outcomes, Cooperative Learning, PTK, Elementary School.*



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## INTRODUCTION

Natural Science (IPA) learning in elementary school plays an important role in developing students' critical, logical, and systematic thinking skills (Romansyah et al., 2022)(Retnowati et al., 2021). Science not only emphasizes mastery of concepts, but also the process of discovering knowledge through hands-on learning experiences (Astawa & Tegeh, 2019; Baihaqi et al., 2023; Maqfirah et al., 2026)(Retnowati et al., 2021). Ideally, science learning encourages students' active involvement in observing, asking questions, conducting experiments, and drawing conclusions based on phenomena in the surrounding environment (Amin et al., 2025; Asrohah et al., 2025; Lellya et al., 2026; Retnowati et al., 2021).

In addition, science learning is also directed to develop 21st century skills, namely critical thinking, communication, collaboration, and creativity skills (Syahla et al., 2024), (Nurhayati et al., 2025). Therefore, learning is not only oriented to the delivery of material, but also to providing opportunities for students to interact, work together, and solve problems actively. In this case, teachers play an important role in creating an active and meaningful learning atmosphere through the selection of the right learning model (Alam & Ohidujjaman, 2025; Asrohah et al., 2025; Asy'Ari et al., 2025; Baidho & Bz, 2026; Panggabean et al., 2021)(Andini et al., 2024).

However, science learning in elementary schools is still dominated by teacher-centered lecture methods. This condition causes low student inactivity, limited interaction between students, and a lack of optimal understanding of science concepts that tend to be abstract. As a result, students' motivation and learning outcomes become low. Therefore, a learning model is needed that is able to create an active, collaborative, and fun learning atmosphere (D. A. Putri & Taufina, 2020), (Syuhaimi, 2022).

The results of initial observations on grade IV students of SD Negeri 200213 Padangsidempuan showed that out of 15 students, only 3 students reached the Minimum Completeness Criteria (KKM) which was 75, while the other 12 students had not reached completeness. Students are also less active in learning, less involved in group discussions, and have difficulty understanding science material. The learning that takes place is still dominated by lecture methods with limited media, so that it does not attract students' interest in learning.

The results of an interview with a grade IV teacher, Mrs. Elvina Sari Nasution, corroborated these findings. He stated that the low learning outcomes were caused by the lack of active student involvement. Students tend to be passive, lack the courage to ask questions, and rely on the teacher's explanations. In addition, the limitations of learning media also make the learning process less interesting and cause students to feel bored quickly.

Based on these conditions, efforts to improve learning are needed through the implementation of innovative and student-centered learning models. One of the models that can be used is the Make a Match type cooperative learning. This model is a cooperative learning based on a pair of questions and answers card games that encourages students to learn actively and fun. Through this model, students are trained to actively collaborate, discuss, and interact (Natoil, 2021), (Bowles & Hattie, 2016).

The Make a Match cooperative learning *model* also has the advantage of increasing social interaction, having the courage to express opinions, and creating a more interesting learning atmosphere. The activity of looking for card pairs makes students more active in moving and thinking, so that learning becomes more meaningful and easy to understand, especially in conceptual science materials (Meilani & Aiman, 2021), (Jeniah & Rigianti, 2025).

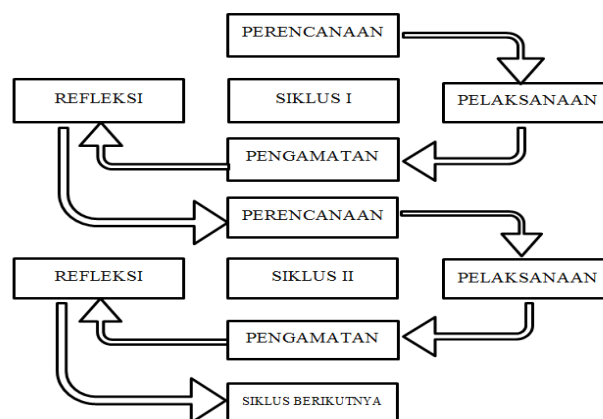
A number of previous studies have shown that the Make a Match model is effective in improving the activities and learning outcomes of elementary school students. Research (Budiartini et al., 2025; Fatimah et al., 2023; L. N. Putri & Mai Sri Lena, 2022) ) show an increase in the completeness of science learning and student motivation through the application of this model. In addition, the research (Sulhan Sulhan, 2020), (Hairunnisa et al., 2023) emphasized that cooperative learning is able to improve students' communication and cooperation skills. However, the study of the application of the Make a Match model in the context of science learning in elementary schools through classroom action research is still limited

Based on these problems, efforts are needed to improve the quality of learning that is able to optimize student involvement as well as science learning outcomes. The application of the Make a Match type cooperative learning model is expected to be an alternative solution in creating active, interactive, and meaningful learning (Haruna, 2025; Listiana, 2022; Ma'arif et al., 2025), (Rahmasari & Nuriadin, 2022). Thus, this study was conducted to improve science learning outcomes through a Make a Match type cooperative learning model in grade IV elementary school students.

## METHOD

This research is a Class Action Research (PTK) with a qualitative descriptive approach supported by quantitative data. The qualitative approach is used to understand the learning conditions in the classroom in depth, while quantitative data is used to measure the improvement in student learning outcomes (Harahap et al., 2023). This research was carried out at SD Negeri 200213 Padangsidempuan with the aim of improving students' science learning outcomes through the application of the Make a Match type cooperative learning model.

PTK is a reflective research conducted by teachers in the classroom to improve the learning process and improve the quality of learning outcomes. In addition, PTK also contributes to the development of teacher professionalism through the stages of problem identification, implementation of actions, observation, and reflection systematically (Batubara et al., 2023). This study uses the Kemmis and Mc. Taggart model which consists of planning, implementing actions, observation, and reflection which is carried out in two cycles, with each cycle consisting of two meetings (Anggita et al., 2023).



**Figure 1.** PTK design of the Kemmis and Mc. Taggart model

The subjects of this study are 15 students in grade IV B of SD Negeri 200213 Padangsidempuan which consists of 6 male students and 9 female students. This research is focused on improving science learning outcomes through the application of the Make a Match type cooperative learning model.

The data collection techniques in this study include learning outcome tests, student activity observation sheets, and documentation. Test instruments are used to measure science learning outcomes, while observation sheets are used to observe student activities during the learning process. Documentation is used as supporting data in the form of photos and notes of learning activities (Jumaita Nopriani Lubis, Rini Agustini, 2023).

Data analysis was carried out through two approaches, namely qualitative and quantitative analysis. The qualitative analysis uses the Miles and Huberman interactive model which includes data reduction, data presentation, as well as conclusion drawing and verification. Quantitative analysis is used to calculate the percentage of student learning completeness with the formula:

$$KB = \frac{T}{Tt} \times 100\%$$

Description:

KB = Learning Completeness

T = Total scores obtained

Tt = Total score

The success of the action in this study was determined based on the completeness of classical learning. The action is declared successful if at least 80% of students reach the Minimum Completeness Criteria (KKM) that have been set. If these criteria are met, the research is considered successful and the cycle is stopped.

## RESULT AND DISCUSSION

This study aims to improve the learning outcomes of science students in grade IV B of SD Negeri 200213 Padangsidempuan through the application of the Make a Match type cooperative learning model to plant body parts. The research was carried out through three stages, namely pre-cycle, Cycle I, and Cycle II with each cycle consisting of two meetings. Data collection was carried out through learning outcome tests and documentation. The research subjects amounted to 15 students. Learning outcomes were classified into the categories of Mastery ( $\geq 75$ ) and Not mastery ( $< 75$ ). The indicator of research success is determined if at least 80% of students achieve the Minimum Completeness Criteria (KKM).

### Pre Cycle Results

The pre-cycle stage is carried out before the implementation of the Make a Match model. At this stage, learning is still dominated by lecture methods so that student activity tends to be low. Students look passive, lack enthusiasm, and have difficulty understanding the material of plant body parts.

**Table 1. Science Learning Outcomes of Students in the Pre-Cycle Stage**

No	Category	Number of Students	Percentage
1	Mastery ( $\geq 75$ )	3 Students	20%
2	Not mastery ( $< 75$ )	12 Students	80%
<b>Quantity</b>		<b>15 Students</b>	<b>100 %</b>

The results of the initial test showed that out of 15 students, only 3 students (20%) had reached the KKM, while 12 students (80%) had not completed it. This condition shows that students' initial abilities are still low, so corrective actions are needed through the implementation of a more active and fun learning model.

### Results of Cycle I

Cycle I was carried out by applying the Make a Match type cooperative learning model. Students learn through activities of matching question cards and answers in groups. This learning began to increase student involvement in the learning process, although some students were still adapting to the new model. Based on the results of the first cycle test on 15 grade IVB students of SD Negeri 200213 Padangsidempuan, the following data was obtained.

**Table 2. Science Learning Outcomes of Students in the First Cycle Stage**

No	Category	Number of Students	Percentage
1	Mastery ( $\geq 75$ )	8 Students	53,3%
2	Not mastery ( $< 75$ )	7 Students	46,7%
<b>Quantity</b>		<b>15 Students</b>	<b>100 %</b>

Based on table 2 above, the results of the first cycle test show that 8 students (53.3%) have reached the KKM, while 7 students (46.7%) have not completed. These results show an improvement compared to the pre-cycle, but have not yet reached the research success indicator, which is 80% classical completeness. Some of the obstacles found are that students are still not used to the learning steps and need more intensive direction from teachers.

## Results of Cycle II

Cycle II was carried out based on the results of the reflection of Cycle I with improvements in the form of strengthening instruction, increasing teacher guidance, and optimizing group work. Students are starting to become more familiar with the Make a Match model so that learning takes place more actively and effectively. Based on the results of the second cycle test on 15 grade IVB students of SD Negeri 200213 Padangsidimpuan, the following data was obtained.

**Table 3. Science Learning Outcomes of Students in the Cycle II Stage**

No	Category	Number of Students	Percentage
1	Mastery ( $\geq 75$ )	13 Students	86,7%
2	Not mastery ( $< 75$ )	2 Students	13,3%
<b>Quantity</b>		<b>15 Students</b>	<b>100 %</b>

Based on table 3 above, the results of the second cycle test show that 13 students (86.7%) have reached the KKM, while 2 students (13.3%) have not completed. These results show that the success indicators of the research have been achieved because more than 80% of students have completed. In addition, students also show increased activeness, cooperation, and motivation to learn during the learning process.

## Discussion

The results of the study showed that the application of the Make a Match type cooperative learning model was effective in improving the learning outcomes of science students in grade IV B of SD Negeri 200213 Padangsidimpuan. The improvement in learning outcomes occurred gradually from pre-cycle to Cycle II.

In the pre-cycle stage, learning that is still conventional causes students to tend to be passive and lack understanding of the material. This condition is in line with opinion. This is in line with the opinion (Sudirman, 2019) which states that teacher-centered learning can hinder students' activeness in the learning process.

In Cycle I, an increase in learning outcomes began to be seen. The application of the Make a Match model encourages students to be more active through activities of matching question cards and answers, discussing, and working together in groups. These activities increase student engagement and motivation to learn (Widayanti & Sukirno, 2018). However, the learning outcomes are not optimal because students are still adapting to the learning model applied.

In Cycle II, the increase in learning outcomes took place more significantly. Students are familiar with the Make a Match model so that learning takes place more effectively. Students become more active, confident, and able to understand the material better. These results show that the Make a Match model is able to create active, interactive, and fun learning.

These findings are in line with research (Mutiasya et al., 2024) , (Nurwahid & Rochmania, 2026) which states that the Make a Match model is effective in improving science learning outcomes in elementary schools. In addition, the results of this study are also supported by (Widaswari & Cahyo Dwi Andita, 2024) who found that the model was able to improve learning outcomes through active and fun learning.

The Make a Match model also contributes to improving students' cooperative, communication, and social interaction skills. This is in line with (Ahwan & Karfida, 2025; Cahyani et al., 2026; Tunnisaai, 2024) which states that cooperative learning can improve students' social abilities in the learning process.

Theoretically, this research reinforces the theory of social constructivism which emphasizes that knowledge is built through interaction and cooperation between students. In the Make a Match model, students gain understanding through discussion and collaboration so that learning becomes more meaningful. Thus, this model not only improves learning outcomes, but also

develops students' social skills and thinking abilities. It is supported by (Faadiyah et al., 2025), (Novita et al., 2025) which states that cooperative learning is able to increase students' active involvement in learning.

Based on the results of the study, it can be concluded that the application of the Make a Match type cooperative learning model is effective in improving the learning outcomes of science students in grade IV on plant body parts. This learning model can be used as an innovative learning alternative that is able to create an active, fun, and student-centered learning atmosphere in elementary schools. These findings also reinforce the results of the study (Zalianti et al., 2023) about the effectiveness of the Make a Match model in improving the quality of science learning in elementary schools.

## CONCLUSION

This study shows that the application of the Make a Match type cooperative learning model is effective in improving the learning outcomes of science students in grade IV B of SD Negeri 200213 Padangsidempuan. This is shown by the gradual increase in student learning completeness from 20% in the pre-cycle, 53.3% in Cycle I, to reach 86.7% in Cycle II. These findings indicate that the Make a Match model has high effectiveness in increasing student engagement, motivation, and understanding of science concepts.

Scientifically, this study reinforces the findings of previous research that stated that cooperative learning contributes positively to improving the learning outcomes of elementary school students. In addition, this study contributes by emphasizing that the Make a Match model is an interactive, fun, and student-centered learning strategy, so that it can improve learning outcomes as well as students' social skills through cooperative activities.

However, this study has limitations, namely the relatively small number of samples, namely 15 students, so the results of the study cannot be generalized widely. In addition, this study only focuses on one learning material, namely plant body parts, and has not considered other factors such as learning styles and students' initial abilities. Therefore, further research is needed with a larger sample and more diverse variables to obtain more comprehensive results.

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