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THE IMPLEMENTATION OF THE MAKE A MATCH STRATEGY TO IMPROVE ELEMENTARY SCHOOL STUDENTS' ADDITION SKILLS

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Abstract

Background: *Addition is a fundamental mathematical skill in elementary education, yet some students experience difficulties solving addition problems in elementary mathematics. Initial assessment in Grade II at SD Negeri 012 Sialang Panjang showed a mean score of 55, with only two of five students meeting the minimum learning criterion of 70.* ***Objective:*** *This study aimed to examine the implementation of the Make a Match strategy to improve second-grade students' addition skills.* ***Method:*** *This Classroom Action Research was conducted in two cycles, each comprising planning, action, observation, and reflection. The participants were five second-grade students, comprising three boys and two girls. Data were collected through written assessments, classroom observations, and documentation and analyzed using descriptive quantitative and qualitative techniques.* ***Results:*** *Students' mean assessment score increased from 55 in Cycle I to 71 in Cycle II. The number of students achieving the minimum score of 70 increased from two (40%) to four (80%), while the number not achieving mastery decreased from three to one. Classroom observations in Cycle II also showed that students became more able to match question and answer cards, discuss their matches, ask questions, and present learning conclusions. However, the classroom mastery rate remained below the predetermined success criterion of 81%.* ***Novelty:*** *This study applies card-matching activities to addition instruction while examining both individual assessment results and students' classroom participation.* ***Conclusion:*** *The Make a Match strategy was accompanied by improvements in addition scores and classroom participation. Nevertheless, the 80% mastery rate did not meet the study's 81% success criterion. The increase represents progress observed between the two action cycles; however, the predetermined classroom mastery target was not achieved.*

Keywords: *Make a Match Strategy; Addition Skills; Mathematics Learning; Elementary School Students; Classroom Action Research.*

INTRODUCTION

Mathematics is a fundamental subject in primary education because it plays an important role in developing logical, systematic, and analytical thinking, as well as problem-solving skills. One of the basic competencies that students need to master from the early grades is addition, which serves as a foundation for learning more complex arithmetic operations. However, mathematics achievement at the primary school level continues to face various challenges. Syamsi and Dharma (2023) identified learning difficulties in mathematics among elementary school students. Similar problems in mathematics learning were also reported by Yabashiru et al. (2025).

Mathematics instruction in elementary schools requires approaches that are appropriate to students' cognitive development, particularly through concrete, interactive, and participatory activities. Learning conditions that are not supported by adequate educational facilities may further increase challenges in delivering instructional materials. This situation is relevant to the conditions at SD Negeri 012 Sialang Panjang, Tembilahan Hulu District, Indragiri Hilir Regency, Riau Province, which is located in a plantation and rice-field environment and lacks access to electricity, telecommunications, and the internet. Elliyani et al. (2025) explained that gaps in digital infrastructure affect access to learning. Yusriani and Patiro (2026) emphasized the importance of interactive learning.

Based on these empirical conditions, mathematics instruction at SD Negeri 012 Sialang Panjang requires a strategy that can be implemented without relying on digital technology. The main problem concerns the addition skills of second-grade students, which still need improvement. Learning activities that do not sufficiently involve direct experiences may cause students to have difficulty understanding relationships between quantities and calculation procedures. Musaropah et al. (2022) demonstrated that games can be used in teaching addition and subtraction operations. Byrne et al. (2023) also examined the contribution of concrete manipulatives to children's learning.

One instructional strategy that can be implemented to address these problems is Make a Match. This strategy is a cooperative learning approach that uses cards containing questions and answers, which students must match within a specified time. The activity of finding matching pairs allows students to learn through interaction, direct participation, and an enjoyable game-based atmosphere. Kondolele et al. (2022) demonstrated that implementing Make a Match can improve mathematics learning outcomes. Similarly, Kencono and Harjono (2023) reported improvements in students' interest and mathematics learning outcomes through this strategy.

Previous studies have demonstrated the potential of Make a Match to support successful mathematics learning in elementary schools. Kriswinarso et al. (2023) found an improvement in mathematics learning mastery following the implementation of the Make a Match strategy through classroom action research. Aisyah et al. (2024) also reported increased mathematics learning mastery through the implementation of this model. These findings reinforce the relevance of Make

a Match as an alternative cooperative learning strategy, particularly in creating learning activities that encourage student participation and collaboration.

Nevertheless, previous studies still leave room for further investigation, particularly because discussions of Make a Match have primarily focused on general mathematics learning outcomes or topics other than addition. For example, Salimah and Pritasari (2024) examined general cognitive mathematics learning outcomes, whereas Ependi et al. (2026) investigated its implementation in plane geometry. Therefore, further research is needed to specifically investigate the implementation of Make a Match to improve the addition skills of second-grade students in schools with limited learning infrastructure. The novelty of this study lies in its specific subject matter, student characteristics, and school context. The specific contribution of this study is therefore not the introduction of a new learning model, but the examination of how the established Make a Match strategy is implemented for addition instruction in a small Grade II classroom with limited access to digital facilities. This context makes it important to examine both students' assessment results and their participation during the learning process.

Based on the foregoing discussion, this study aims to describe and analyze the implementation of the Make a Match strategy in improving the addition skills of second-grade students at SD Negeri 012 Sialang Panjang, Tembilahan Hulu District, Indragiri Hilir Regency. Specifically, this study examines the implementation process of the Make a Match strategy in mathematics instruction and the changes in students' addition skills following its implementation. The findings are expected to provide practical contributions to the development of active, enjoyable, and contextually appropriate mathematics instruction for elementary schools with limited educational facilities.

METHODS

This study employed the Classroom Action Research (CAR) method, with the implementation of the Make a Match strategy as the intervention to improve students' addition skills. The research was conducted at SD Negeri 012 Sialang Panjang, Sungai Cambai, Tembilahan Hulu District, Indragiri Hilir Regency, Riau Province. The study was scheduled for the odd semester of the 2026/2027 academic year over a period of two months, from July to August 2026. The research was conducted in two cycles, each consisting of four stages: planning, action, observation, and reflection (Arikunto et al., 2019). However, the participant information requires clarification: this section reports six enrolled students, whereas the abstract and the assessment tables in both cycles report data for five students. The authors should verify and explain the number of students who actually participated in the research and ensure that the same number is reported consistently throughout the manuscript.

The research subjects comprised all second-grade students of SD Negeri 012 Sialang Panjang in the odd semester of the 2026/2027 academic year, totaling six students, consisting of four boys and two girls. The researcher was directly involved as both the action implementer and the classroom teacher throughout the learning process. The research object was the

implementation of the Make a Match strategy to improve students' addition skills. The sampling technique was not specified in the source manuscript; therefore, confirmation is needed as to whether all second-grade students were selected using a total sampling technique or another sampling method.

The research instruments included teaching materials in the form of teaching modules and student worksheets (LKPD), observation sheets, and written essay tests. Data were collected using three techniques: observation, testing, and documentation. Observation sheets were used to obtain data on teacher activities, student activities, collaborative skills, and the development of addition skills during the implementation of Make a Match. Tests were administered to measure students' addition skills, while documentation was used to collect data on school conditions, teachers, students, infrastructure, curriculum, and evidence of research implementation.

The research data were analyzed using qualitative and quantitative approaches. Qualitative analysis was employed to describe teacher and student activities, as well as the learning implementation process, based on observations and documentation. Meanwhile, quantitative analysis was used to process the results of the addition skills tests. Each student's score was calculated by dividing the score obtained by the maximum possible score and multiplying the result by 100%. Classical learning mastery was calculated based on the percentage of students who achieved the minimum mastery criterion relative to the total number of students. The Learning Objective Achievement Criteria (KKTP) was set at 70, with the research considered successful if at least 81% of students achieved learning mastery.

RESULTS AND DISCUSSION

RESULTS

This classroom action research was conducted to examine the implementation of the *Make a Match* strategy in improving addition skills among second-grade students at SD Negeri 012 Sialang Panjang, Tembilahan Hulu District, Indragiri Hilir Regency. The research was conducted in two action cycles, namely Cycle I and Cycle II. Each cycle was designed to examine changes in students' addition skills through written assessments, observations of classroom activities, and reflections on the implementation of the instructional intervention. Based on the research data, five students participated in the assessments.

1. Results of the Addition Skills Assessment in Cycle I

The intervention in Cycle I was implemented using the *Make a Match* instructional strategy. During the learning activities, students participated in matching question cards with corresponding answer cards related to addition. Following the instructional activities, students completed an assessment consisting of addition problems to evaluate their ability to solve arithmetic operations. The assessment results for the five students showed a highest score of 75 and a lowest score of 40, with a mean score of 55. The individual assessment results are presented in Table 1.

Table 1. Students' Addition Assessment Results in Cycle I

No.	Student Name	Gender	Grade	Score
1	Ahmad Mushonif Kholis	Male	II	40
2	Muhammad Zaini	Male	II	40
3	Raudhatul Jannah	Female	II	70
4	Sakhi Alhafizah	Female	II	75
5	Saputra Dani Rahmat	Male	II	50
	Mean			55

Source: Classroom action research data, 2026.

As shown in Table 1, students' addition assessment results in Cycle I varied considerably. Two students received a score of 40, one student received a score of 50, one student received a score of 70, and one student received a score of 75. These findings indicate that students' addition skills had not yet developed evenly. Therefore, further analysis was needed to determine the percentage of individual achievement and students' learning mastery based on the Learning Objective Achievement Criteria (KKTP) established by the school, which was 70.

2. Percentage of Students' Addition Skills in Cycle I

To determine the percentage of each student's addition skills, assessment scores were converted using a maximum possible score of 100. The percentages were based on the scores obtained by individual students in the learning assessment. The results of the percentage analysis of students' addition skills in Cycle I are presented in Table 2.

Table 2. Percentage of Students' Addition Skills in Cycle I

No.	Student Name	Assessment Score	Percentage
1	Ahmad Mushonif Kholis	40	40%
2	Muhammad Zaini	40	40%
3	Raudhatul Jannah	70	70%
4	Sakhi Alhafizah	75	75%
5	Saputra Dani Rahmat	50	50%

Source: Research data analysis, 2026.

As shown in Table 2, the percentages of students' addition skills in Cycle I varied. The highest percentage was achieved by Sakhi Alhafizah, at 75%, while the lowest percentages were obtained by Ahmad Mushonif Kholis and Muhammad Zaini, both at 40%. These findings indicate that some students still experienced difficulties in solving addition problems. The assessment results were subsequently analyzed based on the learning mastery standard of 70.

3. Students' Learning Mastery in Cycle I

The learning mastery analysis was conducted to identify the number of students who had and had not achieved the Learning Objective Achievement Criteria (KKTP) of 70. Based on the assessment results, two students achieved learning mastery by obtaining scores of at least 70, while the remaining three students did not meet the required standard. The analysis of students' learning mastery in Cycle I is presented in Table 3.

Table 3. Analysis of Students' Learning Mastery in Cycle I

No.	Description	Number of Students	Percentage
1	Students who achieved learning mastery (score ≥70)	2	40%
2	Students who did not achieve learning mastery (score <70)	3	60%
	Total	5	100%

Source: Research data analysis, 2026.

As shown in Table 3, of the five second-grade students at SD Negeri 012 Sialang Panjang who participated in the Cycle I assessment, two students (40%) achieved learning mastery by obtaining scores of at least 70. Meanwhile, three students (60%) did not achieve learning mastery because their scores were below 70. These findings indicate that overall classroom learning mastery had not yet met the predetermined research success criterion, which required at least 81% of students to obtain scores of 70 or higher. Therefore, instructional improvements were necessary in Cycle II to improve students' addition skills.

4. Reflection on Cycle I

Based on the implementation of the instructional intervention, classroom observations, and assessment results in Cycle I, the application of the *Make a Match* strategy in addition instruction had not yet produced optimal results. This was reflected in the students' mean score of 55 and the classroom learning mastery rate of only 40%. In addition, several problems were identified during the learning process, indicating the need for improvements in the subsequent cycle.

The reflection findings and planned instructional improvements for Cycle I are presented in Table 4.

Table 4. Reflection Findings and Planned Instructional Improvements for Cycle I

No.	Problems Identified in Cycle I	Reflection and Planned Improvements
1	The classroom environment was less conducive because the classroom was in considerably poor physical condition.	The teacher needed to exercise firmer classroom management during instruction and request building and facility maintenance from the school principal and the local education office.
2	Some students had difficulty finding matching cards because their addition skills were still limited.	The teacher needed to reinforce the material, provide more detailed explanations, and give students additional practice problems to improve their understanding of addition.
3	Some students were hesitant to present their conclusions about the learning material.	The teacher needed to encourage students and reassure them that making mistakes when presenting conclusions or expressing opinions was part of the learning process.
4	Most students were not yet accustomed to solving two-digit addition problems.	Cycle II needed to incorporate more varied and enjoyable *Make a Match* activities to increase students' learning motivation.

Source: Classroom action research reflection, 2026.

As shown in Table 4, the improvements planned for Cycle II focused on strengthening students' understanding of addition, improving classroom management, providing additional practice, and encouraging students to participate more confidently in learning activities. Variations of the *Make a Match* strategy were also planned to make instruction more engaging and provide

students with opportunities to understand the material through matching question and answer cards.

5. Results of the Addition Skills Assessment in Cycle II

Cycle II was conducted as a follow-up to the reflections from Cycle I. Instructional improvements focused on strengthening students' understanding of addition and increasing their participation in finding matching cards. Following the learning activities, students completed another addition assessment to measure changes in their skills. The results showed a highest score of 80 and a lowest score of 60, with a class mean score of 71. The detailed assessment results for students' addition skills in Cycle II are presented in Table 5.

Table 5. Students' Addition Assessment Results in Cycle II

No.	Student Name	Gender	Grade	Score
1	Ahmad Mushonif Kholis	Male	II	60
2	Muhammad Zaini	Male	II	70
3	Raudhatul Jannah	Female	II	75
4	Sakhi Alhafizah	Female	II	80
5	Saputra Dani Rahmat	Male	II	70
	Mean			**71**

Source: Classroom action research data, 2026.

As shown in Table 5, the assessment results in Cycle II indicated improvements in students' scores. Ahmad Mushonif Kholis's score increased from 40 to 60, Muhammad Zaini's from 40 to 70, Raudhatul Jannah's from 70 to 75, Sakhi Alhafizah's from 75 to 80, and Saputra Dani Rahmat's from 50 to 70. The class mean score also increased from 55 in Cycle I to 71 in Cycle II. The scores were subsequently converted into percentages to determine each student's level of addition achievement.

6. Percentage of Students' Addition Skills in Cycle II

The percentage of students' addition skills in Cycle II was determined using the same approach as in Cycle I, based on the maximum possible score of 100. The results of the percentage analysis of students' addition skills in Cycle II are presented in Table 6.

Table 6. Percentage of Students' Addition Skills in Cycle II

No.	Student Name	Assessment Score	Percentage
1	Ahmad Mushonif Kholis	60	60%
2	Muhammad Zaini	70	70%
3	Raudhatul Jannah	75	75%
4	Sakhi Alhafizah	80	80%
5	Saputra Dani Rahmat	70	70%

Source: Research data analysis, 2026.

As shown in Table 6, the percentages of students' addition skills in Cycle II improved compared with Cycle I. The highest percentage was achieved by Sakhi Alhafizah, at 80%, while the lowest was obtained by Ahmad Mushonif Kholis, at 60%. Four students achieved percentages of 70% or higher, indicating that they had met the minimum learning mastery standard. These findings were subsequently analyzed to determine the overall classroom learning mastery rate in Cycle II.

7. Students' Learning Mastery in Cycle II

The learning mastery analysis in Cycle II was based on the school's KKTP of 70. Students who obtained scores of at least 70 were classified as having achieved learning mastery, whereas those who obtained scores below 70 were classified as not having achieved learning mastery. Based on the assessment results, four students achieved learning mastery, while one student did not meet the required standard. The analysis of students' learning mastery in Cycle II is presented in Table 7.

Table 7. Analysis of Students' Learning Mastery in Cycle II

No.	Description	Number of Students	Percentage
1	Students who achieved learning mastery (score ≥70)	4	80%
2	Students who did not achieve learning mastery (score <70)	1	20%
	Total	5	100%

Source: Research data analysis, 2026.

As shown in Table 7, the classroom learning mastery rate in Cycle II reached 80%, while the percentage of students who had not achieved learning mastery was 20%. This result represents an improvement over Cycle I, when the mastery rate was only 40%. Accordingly, the number of students achieving learning mastery increased from two to four. Nevertheless, the classroom learning mastery rate in Cycle II remained one percentage point below the predetermined research success criterion of 81%.

8. Observation Results of Student Activities

In addition to assessing students' addition skills, observations were conducted to examine their activities during instruction using the *Make a Match* strategy. These observations aimed to identify students' participation in learning activities, particularly in matching question and answer cards, discussing their matches, asking questions, and presenting conclusions.

Observations during Cycle II indicated that students were increasingly able to match questions with the corresponding answers. They also demonstrated enthusiasm when discussing the cards they had successfully matched. Furthermore, some students became more confident in asking questions about material they did not understand and presenting their conclusions. The observed student activities in Cycle II are presented in Table 8.

Table 8. Observation Results of Student Activities in Cycle II

No.	Observation Aspect	Observation Findings
1	Ability to match cards	Students were able to match question cards with the corresponding answer cards.
2	Enthusiasm for learning	Students demonstrated enthusiasm when discussing successfully matched cards.
3	Confidence in asking questions	Students began to ask questions about instructional material they did not understand.
4	Participation in learning activities	Students became more involved in finding and matching pairs of cards.
5	Confidence in presenting conclusions	Students began to demonstrate confidence in presenting conclusions about the learning material.

Source: Research observations, 2026.

As shown in Table 8, student activities during Cycle II demonstrated positive developments. Students became more actively involved in learning, particularly when searching for matching cards and discussing the answers they had found. Their willingness to ask questions and present conclusions also became more evident. These findings indicate that the implementation of the *Make a Match* strategy provided students with opportunities to participate more actively in the learning process.

9. Comparison of Individual Student Scores Across Cycles

The comparison of individual scores was conducted to examine changes in each student's addition skills after participating in instruction using the *Make a Match* strategy in Cycle I and Cycle II. The comparison focused on the difference between the scores obtained by each student across the two cycles. The individual score comparison is presented in Table 9.

Table 9. Comparison of Individual Students' Addition Scores Across Cycles

No.	Student Name	Cycle I Score	Cycle II Score	Improvement
1	Ahmad Mushonif Kholis	40	60	20
2	Muhammad Zaini	40	70	30
3	Raudhatul Jannah	70	75	5
4	Sakhi Alhafizah	75	80	5
5	Saputra Dani Rahmat	50	70	20
	Mean	55	71	16

Source: Research data analysis, 2026.

As shown in Table 9, all students experienced improvements in their assessment scores from Cycle I to Cycle II. The greatest improvement was achieved by Muhammad Zaini, whose score increased by 30 points. Ahmad Mushonif Kholis and Saputra Dani Rahmat each improved by 20 points. Meanwhile, Raudhatul Jannah and Sakhi Alhafizah each improved by 5 points. Overall, the mean score for students' addition skills increased by 16 points, from 55 in Cycle I to 71 in Cycle II.

10. Comparison of Classroom Learning Mastery Across Cycles

The comparison of classroom learning mastery was conducted to identify changes in the number of students who achieved and did not achieve learning mastery following the implementation of the *Make a Match* strategy. In Cycle I, two students, or 40%, achieved learning mastery. This number increased to four students, or 80%, in Cycle II. The comparison of classroom learning mastery across cycles is presented in Table 10.

Table 10. Comparison of Classroom Learning Mastery Across Cycles

No.	Indicator	Cycle I	Cycle II
1	Total number of students	5	5
2	Students who achieved learning mastery	2	4
3	Students who did not achieve learning mastery	3	1
4	Learning mastery percentage	40%	80%
5	Percentage of students who did not achieve mastery	60%	20%

Source: Research data analysis, 2026.

As shown in Table 10, classroom learning mastery increased from 40% in Cycle I to 80% in Cycle II, representing an increase of 40 percentage points. The number of students who achieved

learning mastery increased by two, while the number of students who did not achieve learning mastery decreased from three to one. These findings indicate an improvement in students' learning mastery following the implementation of the *Make a Match* strategy.

11. Summary of Research Improvements

The research findings were summarized to provide an overall picture of the development of students' addition skills from Cycle I to Cycle II. The comparison included the highest score, lowest score, mean score, number of students achieving learning mastery, and classroom learning mastery percentage. The summary of improvements in students' addition skills is presented in Table 11.

Table 11. Summary of Improvements in Research Findings Across Cycles

No.	Indicator	Cycle I	Cycle II	Improvement
1	Highest score	75	80	5 points
2	Lowest score	40	60	20 points
3	Mean score	55	71	16 points
4	Number of students achieving learning mastery	2	4	2 students
5	Number of students not achieving learning mastery	3	1	Decreased by 2 students
6	Classroom learning mastery	40%	80%	40 percentage points

Source: Research data analysis, 2026.

As shown in Table 11, all assessment indicators demonstrated positive developments from Cycle I to Cycle II. The highest score increased from 75 to 80, while the lowest score increased from 40 to 60. The class mean score also increased by 16 points, from 55 to 71. In addition, the number of students achieving learning mastery increased from two to four. Classroom learning mastery increased by 40 percentage points, from 40% to 80%. These findings indicate an improvement in students' addition skills throughout the implementation of the instructional intervention.

12. Analysis of the Achievement of Research Success Criteria

The research success criterion was established as a minimum of 81% of students obtaining scores of at least 70, in accordance with the KKTP implemented at SD Negeri 012 Sialang Panjang. Based on the assessment results, classroom learning mastery reached 40% in Cycle I and increased to 80% in Cycle II. Although an improvement occurred, the Cycle II result did not reach the predetermined success criterion.

A comparison between classroom learning mastery and the research success criterion is presented in Table 12.

Table 12. Analysis of the Achievement of Research Success Criteria

No.	Component	Percentage
1	Classroom learning mastery in Cycle I	40%
2	Classroom learning mastery in Cycle II	80%
3	Research success criterion	81%
4	Improvement in learning mastery from Cycle I to Cycle II	40 percentage points
5	Difference between Cycle II mastery and the target	1 percentage point

Source: Research data analysis, 2026.

As shown in Table 12, classroom learning mastery in Cycle II reached 80%, whereas the research success criterion was set at 81%. Therefore, the Cycle II result remained one percentage point below the predetermined target. Given that the study involved only five students, four students achieving learning mastery resulted in an overall mastery rate of 80%. To meet the minimum target of 81%, all five students would need to obtain scores of at least 70, resulting in a classroom learning mastery rate of 100%. Because the assessment tables include five students, each student represents 20 percentage points in the classroom mastery calculation. Thus, four students achieving mastery produce an 80% rate, while reaching at least 81% would require all five students to achieve the minimum score, resulting in 100% mastery. This calculation should be interpreted in light of the small number of participants.

Overall, the research findings indicate that the implementation of the *Make a Match* strategy was accompanied by improvements in the addition skills of second-grade students at SD Negeri 012 Sialang Panjang. These improvements were reflected in the increase in the mean score from 55 to 71, the increase in the number of students achieving learning mastery from two to four, and the increase in classroom learning mastery from 40% to 80%. In addition to improvements in assessment results, students' classroom activities also demonstrated positive developments, including their ability to match cards, enthusiasm for discussing matched pairs, willingness to ask questions, and confidence in presenting conclusions. However, based on the predetermined research success criterion, classroom learning mastery in Cycle II did not reach the minimum target of 81%.

DISCUSSION

1. Improvement in Addition Skills through the Make a Match Strategy

The research findings indicate that the implementation of the Make a Match strategy was accompanied by an improvement in the addition skills of Grade II students. This improvement is reflected in the increase in the mean score and the number of students achieving learning mastery in Cycle II. These findings suggest that learning through matching question and answer cards provides a more active learning experience than instruction focused solely on delivering learning materials. This activity allows students to connect addition problems with their corresponding answers through searching and interaction.

Theoretically, the Make a Match strategy is associated with the principles of cooperative learning, which emphasize interaction, responsibility, and student involvement in achieving learning objectives. Through a meta-analysis of cooperative learning research, Talkhan et al. (2025) demonstrated that cooperative approaches positively contribute to elementary school students' mathematics achievement. These findings support the view that learning activities involving interaction among students can serve as an alternative for promoting mathematical understanding. However, the improvement observed in this study should be interpreted as

progress occurring during the implementation of the intervention, rather than as evidence of causality established through a control group.

The use of cards as a learning mechanism also enables students to gain learning experiences through concrete representations of problems and answers. Siller and Ahmad (2024) found that the use of concrete manipulatives combined with virtual representations can improve elementary school students' mathematics achievement compared with conventional instruction. Although their study employed a different approach, its findings support the importance of using concrete media in mathematics instruction. In this study, question and answer cards served as visual aids that helped students recognize the relationship between addition operations and their calculated results. The score increase from Cycle I to Cycle II should also be interpreted alongside the instructional adjustments made after reflection, including additional explanations, practice opportunities, classroom-management improvements, and encouragement for students to present their ideas. Therefore, the observed progress occurred during the combined process of implementing Make a Match and refining the instruction, and cannot be attributed to the strategy in isolation.

2. Changes in Student Activities and Engagement

The improvement in assessment results was also accompanied by changes in students' learning behaviors during Cycle II. Students began to demonstrate greater confidence in asking questions, matching cards, discussing answers, and presenting learning conclusions. These changes indicate that the implementation of Make a Match was not only associated with cognitive achievement but also provided opportunities for developing participation and communication during learning. The card-matching activity encouraged students to become directly involved, while the discussion of matched cards provided opportunities to express and confirm their understanding.

These findings are consistent with the study by Setiana et al. (2025), which demonstrated that the cooperative learning model of Team Games Tournament can improve elementary school students' motivation and mathematics achievement. Although it employs a different type of cooperative learning, both approaches share the use of game-based activities and interaction to foster student engagement. Furthermore, Angraini et al. (2026) found that a mathematics snakes-and-ladders game equipped with question and answer cards could support improvements in the mathematics learning outcomes of Grade II students. The similarities in the use of games and cards reinforce the relevance of activity-based learning for students in the early elementary grades.

Yahya et al. (2026) also demonstrated that educational games can serve as a concrete, interactive, and affordable strategy for mathematics instruction. These findings are relevant to the implementation of Make a Match, which uses simple card-based media without requiring digital devices. In the context of SD Negeri 012 Sialang Panjang, the use of nondigital media offers practical advantages because learning activities can be conducted without depending on internet

access or technological devices. Therefore, this strategy can be considered an alternative instructional approach that accommodates the availability of school facilities and infrastructure while maintaining students' active engagement.

3. The Role of Reflection in Improving Instruction

Reflection at the end of Cycle I played an important role in improving the implementation of the intervention in Cycle II. Problems such as a less conducive classroom environment, students' difficulties in finding matching cards, their limited confidence in expressing opinions, and their lack of familiarity with two-digit addition indicated that the implementation of an instructional strategy cannot be separated from actual classroom conditions. Therefore, instructional improvements need to consider classroom management, reinforcement of learning materials, the provision of problem-solving examples, and the creation of a learning environment that encourages students to participate confidently.

The importance of continuous reflection is also evident in the classroom action research conducted by Zulsadiah et al. (2026). Their study showed that improving educational game activities through cycles of action and reflection was accompanied by increases in elementary school students' learning outcomes, participation, collaboration, and self-confidence. This similarity indicates that the success of game-based instructional strategies is determined not only by the selection of a learning model but also by teachers' ability to identify weaknesses and make continuous instructional adjustments. In this study, reflection served as the basis for improving the implementation of Make a Match to better accommodate students' initial abilities and learning needs.

Furthermore, Chasanah et al. (2025) demonstrated that the use of flashcards based on Game-Based Learning can support improvements in elementary school students' mathematics learning outcomes. Pratiwi et al. (2025) also found that the Tepuk Kartu (Tukar) card game can be used to teach addition and subtraction in Grade II. Both studies are relevant to the use of cards as instructional media that integrate game-based activities with arithmetic practice. The difference is that the present study does not focus on developing an instructional media product but rather on implementing the Make a Match strategy through classroom action research accompanied by reflection to improve the learning process.

4. Implications, Contributions, and Limitations of the Study

Practically, this study illustrates that the Make a Match strategy can be implemented as an alternative approach to teaching addition by using simple media that teachers can easily prepare. The use of cards enables interactive learning activities without requiring digital technology. The findings also reinforce the importance of adapting instructional strategies to students' characteristics and the conditions of the school environment. These findings are consistent with Ugwude and Ikeokoro (2026), who demonstrated that game-based learning can support elementary school students' mathematics achievement. Meanwhile, Nguyen's (2026) meta-

analysis identified that the effectiveness of game-based learning is associated with the suitability of the game type, student characteristics, and instructional implementation.

The contribution of this study lies in the implementation of the Make a Match strategy for teaching addition to Grade II elementary school students using card-based media in a school context with limited facilities. Nevertheless, this study has several limitations because it involved only five students in one classroom; therefore, its findings cannot be widely generalized. The study also did not use a comparison group, meaning that the improvement in scores cannot be attributed entirely to the Make a Match strategy. Furthermore, the classical learning mastery rate in Cycle II was 80%, which did not meet the predetermined success criterion of 81%. Therefore, further research involving a larger number of participants, more in-depth observations, and additional intervention cycles is needed to examine the sustainability of improvements in students' addition skills. In addition, the small cohort means that the mastery percentage is sensitive to the achievement of a single student; consequently, the 80% result should be reported together with the actual number of students (four of five), rather than interpreted as a precise estimate for a wider population.

CONCLUSION

Main Findings: This study found that implementing the Make a Match strategy was accompanied by improvements in second-grade students' addition skills at SD Negeri 012 Sialang Panjang. The class average increased from 55 in Cycle I to 71 in Cycle II. Learning mastery also improved from 40% (two students) in Cycle I to 80% (four students) in Cycle II, while the number of students who did not achieve the minimum learning criterion decreased from three to one. Although these results indicate improvement, the final mastery rate of 80% did not reach the predetermined success criterion of 81%. **Research Contribution:** This study contributes to elementary mathematics education by providing classroom-based evidence of the implementation of the Make a Match strategy in teaching addition. The strategy engages students in matching question cards with corresponding answer cards, encouraging active participation, interaction, and discussion during the learning process. It also provides an alternative learning activity for introducing and practicing addition concepts in elementary classrooms. **Theoretical and Practical Implications:** The findings highlight the importance of active participation, peer interaction, and enjoyable learning activities in supporting elementary students' mathematical understanding. Practically, teachers can implement the Make a Match strategy by preparing questions and answer cards appropriate to students' abilities, providing clear instructions, facilitating group interactions, and encouraging students to explain their answers and present learning conclusions. Adequate classroom facilities and teacher guidance are also important to support effective implementation. **Research Limitations:** This study was limited to five second-grade students at one elementary school and involved only two classroom action research cycles. The small number of participants and the absence of a comparison group limit the generalizability of the findings. Furthermore, the study did not achieve the predetermined success criterion of

81%, indicating that the improvement observed had not fully met the research target. **Future Research Directions:** Future studies should involve larger and more diverse student populations and examine the implementation of Make a Match across different mathematical topics and grade levels. Further research may also compare Make a Match with other cooperative learning strategies and investigate its relationship with students' mathematical problem-solving abilities, learning motivation, classroom participation, and conceptual understanding. For classroom practice, the findings suggest that teachers may use Make a Match as a low-cost, nondigital activity, while providing additional individual support and follow-up assessment for students who have not yet achieved the learning criterion.

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