Research Article

Improving Learning Outcomes of Class 5C Students in Mathematics Learning Using MATLAK Media (Mathematics Through Congklak) at State Elementary School 067240 Medan Tembung

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Abstract: This study investigates the use of MATLAK (Mathematics Through Congklak) media in improving mathematics learning for class 5C students at SDN 067240 Medan Tembung. The objectives are to: (1) describe the application of MATLAK in the classroom, (2) determine its impact on students' mathematics learning outcomes, (3) analyze its effect on student motivation and engagement, and (4) assess the effectiveness of the traditional congklak game as a learning tool. Conducted as Classroom Action Research (CAR), this study aims to address classroom learning challenges through reflective cycles that enhance both teaching processes and student outcomes. The findings reveal that the integration of the Problem-Based Learning (PBL) model with MATLAK media, rooted in constructivist principles, significantly increased student activity and understanding, especially when problems presented were closely related to daily life. Students were encouraged to collaborate, think critically, and articulate their ideas during discussions. Additionally, student responses toward the use of MATLAK media were overwhelmingly positive, demonstrating increased motivation and active participation. Teacher observations also showed improvement in classroom engagement and implementation effectiveness from cycle I to cycle II. Overall, the study concludes that using the traditional congklak game as a mathematics learning medium when combined with the PBL model effectively enhances learning outcomes and student involvement in class 5C.

Keywords: Mathematics; MATLAK media; Student learning outcomes

1. Introduction

The Independent Curriculum emphasizes the importance of student-centered learning and relevance to cultural and real-life contexts (Kemdikbudristek, 2022). According to Suyanto (2019), to achieve optimal results in mathematics learning, a varied approach is needed, one of which is by combining learning media that are appropriate to student development. In learning mathematics, students need direct experience that can strengthen their understanding.

Education at the elementary school level is the main foundation in instilling various basic skills, one of which is through mathematics subjects. MATLAK (Mathematics Through Congklak) media is a learning innovation that integrates congklak games into the mathematics learning process. Through this game, students can learn while playing, thus creating a more active, creative, and enjoyable learning atmosphere. Research by Rahmasari, Sutriyani, and Muhaimin (2023) shows that the use of congklak games as a learning medium is effective in improving the mathematics learning outcomes of elementary school students.

In addition to improving the understanding of mathematical concepts, the application of MATLAK media also supports the preservation of local Indonesian culture, in accordance with the spirit of the Merdeka Curriculum which encourages the use of local wisdom in learning (Wijaya, Sufa, & Restuningsih, 2023). Thus, students not only gain academic competence but also foster a sense of love for the nation's culture.

In SDN 067240 Medan Tembung, especially in class 5C, students' learning outcomes in mathematics are still not up to expectations. Based on the observation results, it is known that more than 50% of students get daily test scores below the Minimum Completion Criteria (KKM). Teachers still predominantly use conventional methods without involving concrete media that are interesting to students. This condition indicates the need for innovative efforts to improve mathematics learning in the class.

Through the application of MATLAK media, it is hoped that students will be more actively involved in the learning process, understand mathematical concepts more easily, and improve their learning outcomes.

2. Literature Review

In the Independent Curriculum implemented in Indonesia, mathematics learning is more focused on developing basic competencies related to logical, systematic, and analytical thinking skills. This learning must also be able to encourage students to be more actively involved in learning, one of which is by using relevant and interesting learning media. Student-centered learning emphasizes the importance of collaboration and interaction between students and students and students and teachers. As part of this approach, fun learning media such as traditional games are highly recommended.

According to Wijaya, Sufa, and Restuningsih (2023), mathematics learning using traditional games, such as congklak, can help students understand basic arithmetic operations such as addition and subtraction in a fun way. With media such as congklak, students can more easily apply mathematical concepts in everyday life.

In addition, in a study by Aulia and Jamaludin (2023), it was stated that the use of media that integrates game aspects can increase students' emotional involvement in learning mathematics. Intrinsic motivation that arises from the game has a positive impact on students' understanding of mathematics.

Traditional games such as congklak also help increase students' learning motivation. In a study by Aulia and Jamaludin (2023), it was found that students who learn mathematics through games tend to be more active and motivated to continue learning. This shows that games are not just entertainment, but also an effective means to achieve learning goals. Research by Sutrisno (2021) shows that the use of media containing game elements, such as

congklak, can create a fun learning experience for students, as well as make it easier for them to understand mathematical concepts.

In addition, traditional games also provide opportunities for students to learn through direct experience. In this case, they can overcome the challenges in the game in creative and collaborative ways. This serves to develop critical thinking and problem-solving skills which are very important in mathematics learning. Therefore, the use of traditional games in mathematics learning not only improves learning outcomes but also provides a more enjoyable and beneficial learning experience for the development of students' social and cultural skills. Research by Wijaya et al. (2023) emphasizes the importance of developing game-based learning media to create a more interactive and enjoyable learning atmosphere.

3. Method

This research is a Classroom Action Research (CAR). CAR is conducted to solve learning problems that occur in the classroom systematically and reflectively, with the aim of improving the quality of the process and student learning outcomes. The subjects of this study were all 16 students of class VC of SD Negeri 067240 Medan Tembung in the even semester of the 2024/2025 academic year. The object of the study is student learning outcomes in Mathematics, especially in the material Multiples and Factors, which is a continuation of basic arithmetic operations. This material is important to master because it is the basis for learning subsequent topics such as LCM, FPB, and fractions. In this study, the object is studied through the application of Matlak media (Mathematics Through Congklak), which is designed to help students understand the concept of multiples and factors in a concrete and enjoyable way.

Figure 1. MATLAK media

The research procedure used is classroom action research, so this study has several stages in the form of cycles. Each cycle is carried out according to the changes to be achieved. In this study, if cycle I has not been successful, namely student learning outcomes have not reached completion, then cycle II is carried out and the cycle will stop if student learning outcomes increase to achieve classical completion. In this study, only two cycles are planned, and each cycle consists of two meetings.

4. Results and Discussion

This research was conducted at SDN 067240 Medan Tembung, in class 5C in the even semester of the 2024/2025 academic year. Before carrying out the actions in cycle I, the researcher gave an initial ability test to class 5C students. The initial ability test consisted of 5 Multiple Choice questions on the Least Common Multiple (LCM) and the Greatest Common Factor (FPB) which were completed for 20 minutes. This test aims to determine the initial ability of students' learning outcomes before being given the action and to determine the difficulties experienced by students in solving the questions.

Based on the results of the initial ability test given by the researcher to class 5C students, it can be concluded that student learning outcomes are relatively low. This can be seen from the level of student mastery in the Initial Ability Test presented in table 1.

Table 1. Description of Cycle I Research Results

Level Mastery	Criteria	Many Students	Percentage of Number of Students	Average Class
90%-100%	Very high ability	0	0%	40.00 (Low)
80%-89%	High ability	2	12.5%	
70%-79%	Sufficient ability	1	6.25%	
<70%	Low ability	13	81.25%	

The results of the research conducted by teachers from the beginning to the end of cycle II can be seen in Table 2.

Table 2. Description of Research Results for Each Cycle

Mastery Level	Criteria	Cycle I		Cycle II	
		THB I	THB II	THB III	THB IV
90%-100%	Very high capability	1	1	3	10
80%-89%	High ability	2	2	3	6
70%-79%	Sufficient ability	1	3	8	0
< 70%	Low ability	12	10	2	0
Classical completion		25%	37.5%	87.5%	100%
Average		45.6	62.3	76.87	90.68
Average N-Gain		0.286383929		0.6478125	
Student Response		75%		93.75%	
Observation Results		3.54		3.73	

4.1 Based on the data above, we can obtain a descriptive diagram of the research results as follows:
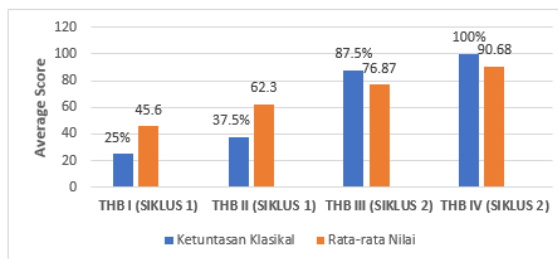

Figure 2. Description of Research Results for Each Cycle

Based on table 2., it is obtained that the level of mastery of class 5C students for the material of KPK and FPB in the Learning Outcome Test I in cycle I is 12 students have a low level of mastery, 1 student has a sufficient level of mastery, 2 students have a high level of mastery and 1 student has a very high level of mastery. Learning Outcome Test I consists of 10 multiple choice questions about KPK and FPB. Learning Outcome Test I is carried out at the end of the first meeting in cycle II. This test is carried out for 15 minutes and aims to measure the level of student understanding of the material that has been discussed.

The test results in cycle I have not met the cycle success indicators. Therefore, corrective actions need to be taken in cycle II. Based on data on the level of student mastery in the Learning Outcome Test III in cycle II, there were 2 students who had a low level of mastery, 8 students had a sufficient level of mastery, 3 students had a high level of mastery and there were 3 students who had a very high level of ability. Learning Outcome Test III consists of 10 multiple choice questions about KPK and FPB. The time given to class 5C students to work on Learning Outcome Test III is 15 minutes. This test is given at the end of the first meeting in cycle II. Thus, students' memory of the material to be tested is still good and this certainly helps students in answering the Learning Outcome Test III questions.

In the Learning Outcome Test IV, it was found that no students had a low level of mastery, and no students had a medium level of mastery, 6 students had a high level of mastery, and 10 students had a very high level of mastery. This test consisted of 10 multiple-choice questions about LCM and FPB. The Learning Outcome Test IV was given to students after cycle II ended, namely at the same meeting .

Overall, the results of the Learning Outcome Test III and Learning Outcome Test IV show that students' ability to solve problems has improved. This is because 85% of the students have completed individual learning, so that classical learning completion in cycle II has been achieved.

This increase occurred because in cycle II the activity and cooperation in the group were higher, so that students were able to solve the problems given well and showed good group cooperation. Student learning outcomes are influenced by several factors, one of which is the

teacher's ability to teach in class. The average observation result of the observer on the researcher in the first cycle was 3.54 . This value increased to 3.73 in cycle II with a very good value. In ideal learning there will always be interaction between teachers and students. Because teachers and students are two elements that are in the learning environment and utilize learning resources.

Related to the interaction between teachers and students, students' perceptions of teachers' ability to teach and utilize learning resources, such as learning media, can be used as feedback on the quality of teachers' teaching and their ability to use learning media. Teachers in their teaching activities need the help of teaching aids such as learning media that can support their success in teaching.

The use of media in learning is not limited to its use in the learning process alone but also has a specific purpose, namely achieving effective learning. The use of learning media that is adapted and specifically designed can contribute to effective teaching for all students and can help them reach their highest potential.

Figure 3. Use of MATLAK Media

6. Conclusion

Based on the research results, the conclusions obtained are:

a. Learning factors that cause increased learning outcomes are student activity in cycle II and presentation of questions that are more related to daily life. The application of the Problem Based Learning model using MATLAK media is based on the constructivism concept, so that it requires students to actively participate in discussions with their group members, because students are required to find their own concepts. This model also allows students to work together and exchange ideas and dare to express their opinions. Student learning outcomes in class 5C of SDN 067240 Medan Tembung increased from cycle I to cycle II after the implementation of the Problem Based Learning learning model using MATLAK media. Based on the results of the learning outcome test in cycle I, data obtained on the Learning Outcome Test I, the average class score was 45.6 with a classical completeness of 25%. While on the Learning Outcome Test II, the average class score

was 62.3 with a classical completeness of 37.5%. In cycle I, the average student increased by 16.7 . Then in cycle II, the data obtained on the Learning Outcome Test III, the average class value was 78.87 with classical completeness of 87.5%. While in the Learning Outcome Test IV, the average class value was 90.68 with classical completeness of 100%. In cycle II, the average student increased by 13.81 .

b. Students' responses to the implementation of the Problem Based Learning model using MATLAK media in class 5C showed positive results. Based on students' answers, the average percentage of students' answers in cycle I was 75% and the average percentage of students' answers in cycle II increased to 93.75 % . This means that almost all students gave a positive assessment of the implementation of this activity.

c. The results of teacher observations of researchers who implemented the Problem Based Learning model using MATLAK media in class 5C increased from cycle I to cycle II. Observations in cycle I obtained an average of 3.54 and increased to 3.73 in cycle II with a very good value. This increase occurred because:

- In cycle I, the apperception given by the researcher to the students was not well understood by the students, and in cycle II the researcher conducted a reflection for improvement.

- When planning the investigation, the time used by the researcher exceeded the specified time and in cycle II the time used was appropriate.

- During class management in cycle I, the researcher did not have sufficient control over the class, so the class was less conducive, but in cycle II, the researcher was able to fully control the class.

- In cycle I, the researcher was less firm during learning and in cycle II, the researcher was firmer in the learning process.

d. Student and teacher activities during the learning process have increased. Students become more active, enthusiastic, and involved in the learning process. Teachers are also more creative and innovative in utilizing contextual learning media.

e. Matlak media has proven to be effective as a fun and meaningful learning tool, because it is able to change the learning atmosphere to be more interactive and facilitate the understanding of abstract concepts in mathematics in a more concrete and visual way .

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