

***The Effectiveness of Educational Game-Based Fraction Dominoes in  
Enhancing Fifth-Grade Students' Understanding of Fraction  
Concepts at MI DDI Manding Polewali Mandar***

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**Abstrack**

*This study aims to describe the use of fractional domino cards as a medium and to analyze the improvement in mathematics learning outcomes of fifth-grade students at MI DDI Manding, Polewali Mandar District through the application of this media. This study uses a descriptive qualitative research type with a communication and education approach. Data sources consist of primary and secondary data obtained through observation, interviews, and documentation. Data analysis is carried out through the stages of data reduction, data presentation, and conclusion drawing. The results of the study indicate that the use of fractional domino cards as a medium is effective in helping students understand the concept of fractions in a concrete and interactive manner. The application of this media has been proven to improve mathematics learning outcomes, especially in the material on fractional conversion, as indicated by an increase in the average score of students from the sufficient category to good and very good. In addition, the use of fractional domino cards also has a positive impact on the affective and psychomotor aspects of students. In the affective aspect, students show increased courage in expressing opinions, the ability to work together, and an attitude of respect for friends. In the psychomotor aspect, students are more skilled in using media, increasing their thinking speed, calculation accuracy, and the ability to develop learning strategies through games. Thus, fractional domino card media can be an effective learning alternative to improve the quality of mathematics learning, create a fun, interactive learning atmosphere, and be able to develop students' cognitive, affective, and psychomotor abilities in a balanced manner.*

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## Introduction

Education plays a fundamental role in developing human potential and improving the quality of life. Through education, individuals acquire knowledge, skills, values, and attitudes that enable them to contribute positively to society. In Indonesia, education is defined as a conscious and planned effort to create a learning environment and learning process that enable students to actively develop their potential, including spiritual strength, self-control, personality, intelligence, noble character, and skills needed by themselves and society, as stipulated in Law Number 20 of 2003 concerning the National Education System.

One of the objectives of national education is to develop knowledgeable, creative, independent, and responsible individuals. Achieving these objectives requires quality learning processes in schools. Teachers play a vital role in facilitating learning by creating meaningful learning experiences and employing appropriate learning strategies and media. Therefore, improving the quality of classroom instruction is essential to enhance students' learning outcomes.

Mathematics is a fundamental subject that supports the development of science and technology and contributes significantly to everyday problem-solving. Mathematics learning at the elementary school level is expected to develop students' logical, analytical, critical, and creative thinking skills. However, many students perceive mathematics as a difficult and abstract subject, particularly when learning fractions. Fraction concepts require students to understand numerical relationships and perform various arithmetic operations, making them one of the most challenging topics in elementary mathematics.

Difficulties in learning fractions often lead to low learning outcomes. Students frequently struggle to understand fraction concepts and perform operations such as addition, subtraction, multiplication, and division of fractions. These challenges indicate the need for innovative learning approaches that can make abstract mathematical concepts more concrete and engaging for students.

Learning media play an important role in improving students' understanding and motivation. The use of instructional media can stimulate students' interest, increase classroom participation, and facilitate concept comprehension. Educational games are among the learning media that can create enjoyable and meaningful learning experiences. Through game-based learning activities, students can actively participate in the learning process while developing their mathematical skills.

Based on preliminary observations conducted in Grade V at MI DDI Manding, Polewali Mandar District, students demonstrated difficulties in solving fraction problems, as reflected in their mathematics achievement, which had not yet reached the expected level of mastery. Classroom observations also revealed limited interaction among students during learning activities and minimal use of instructional media by teachers. As a result, learning activities tended to be teacher-centered and less engaging for students. These conditions suggest the need for instructional media that can increase student participation and improve understanding of fraction concepts.

One instructional medium that has the potential to address these challenges is Fraction Domino Cards. This medium is designed as an educational game that combines domino card activities with fraction-learning content. Students are required to match fraction problems with corresponding answers, thereby encouraging active participation, collaboration, and conceptual understanding. Fraction Domino Cards are

simple, practical, and adaptable to various fraction topics, making them suitable for use in elementary mathematics classrooms.

Previous studies have reported that domino-based learning media can improve students' motivation, engagement, and mathematical understanding. However, studies specifically examining the effectiveness of Fraction Domino Cards in improving elementary students' learning outcomes on fraction operations, particularly in Madrasah Ibtidaiyah settings, remain limited. Furthermore, the Fraction Domino Cards used in this study consist of 28 specially designed cards that present fraction values in two sections, providing a distinctive learning experience compared to previous domino card models.

Therefore, this study aims to investigate the effect of using Fraction Domino Cards on the mathematics learning outcomes of fifth-grade students in fraction operations at MI DDI Manding, Polewali Mandar District. The findings of this study are expected to contribute to the development of innovative mathematics learning media and provide practical recommendations for teachers in improving students' understanding of fractions.

### **Research Method**

This study employed a qualitative field research design with a descriptive approach. Qualitative research is intended to explore and understand social phenomena in their natural settings by collecting and analyzing non-numerical data, such as observations, interviews, and documents. The descriptive approach was used to provide a comprehensive description of the phenomena being investigated based on actual conditions in the field.

The study was conducted directly at the research site to obtain in-depth information regarding the implementation of the learning process and the experiences of the participants. Through this approach, the researcher sought to understand and describe the realities occurring in the research setting without manipulating the observed conditions.

To support data collection and analysis, this study employed three complementary approaches. First, the psychological approach was used to understand students' attitudes, motivation, and responses during the learning process. Second, the communication approach was utilized to examine interactions between teachers and students during classroom activities. Third, the pedagogical approach was applied to analyze teaching practices, learning strategies, and instructional activities implemented in the classroom.

By integrating these approaches, the researcher was able to obtain a comprehensive understanding of the research phenomenon and provide a detailed description of the implementation of learning activities in the studied setting.

## **Results and Discussion**

### **Result**

#### ***1. The Use of Fractional Domino Cards with Fifth-Grade Students at MI DDI Manding in Polewali Mandar Subdistrict***

This study aims to provide an in-depth description of the use of fraction domino cards among fifth-grade students at MI DDI Manding, Polewali Mandar District. Data collection was conducted through observation, interviews, and documentation. Data analysis was performed using a descriptive qualitative approach, which emphasizes the

interpretation of meanings and phenomena occurring during the learning process. Based on the results of initial observations, mathematics instruction particularly on fractions in the fifth grade at MI DDI Manding tends to be conducted conventionally, with teachers frequently using lecture methods and worksheet exercises on the blackboard. This causes some students to feel bored, lack enthusiasm, and struggle to understand fraction concepts. Therefore, the use of fraction domino cards was implemented as an instructional innovation intended to enhance students' learning motivation, participation, and understanding. This medium is designed in the form of cards with two sides, each displaying an image of a fraction or a specific fractional value. The goal is to help students connect the visual representation with the numerical value. During the planning phase, the teacher prepared a set of fraction domino cards consisting of 28 pairs. These cards include various types of fractions, such as proper fractions, mixed fractions, decimals, and percentages. The teacher also prepared a set of game rules to guide the students. Based on an interview with the homeroom teacher and math teacher, Ms. Rosmiah, S.Pd.I, she stated that:

"The kids here usually get bored quickly when learning fractions. So I'm trying these domino cards to get them more excited. Plus, they can learn while playing." 1

The lesson is divided into three stages: the opening, the main activity, and the closing. During the opening stage, the teacher explains the learning objectives and provides instructions regarding the rules of the fraction domino game. Students are then divided into small groups of four to five members. During the main activity, the session is interactive. Each group plays the fraction domino game by matching cards with equivalent fractional values. For example, a tile marked  $\frac{3}{4}$  must be paired with a tile marked 0.75 or 75%. The teacher facilitates the game, provides guidance, and assists students who are having difficulty. An interview with the Principal of MI DDI Manding, Mr. Tanawali S.Ag, confirmed his support for this innovative learning method, stating that:

"We always encourage teachers to be creative. These domino cards are a simple yet effective form of innovation. I've noticed that the children have become more active and are helping each other while they learn."2

The students' response to this medium was also very positive. Based on observations, the classroom atmosphere was lively. The students appeared enthusiastic and fully engaged in the game while learning about fractions. One of the students, Ahmad from fifth grade, said:

"Playing with fractional dominoes is fun it keeps me from getting sleepy. I've learned that half is equal to zero point five."

The teacher also noted that fraction dominoes can facilitate cooperative learning. Students who grasp the material more quickly help their groupmates. This fosters positive interaction within the classroom. During the closing phase, the teacher and students reflect on the activities they have completed. The teacher reinforces the material by reviewing the relationship between fractions, decimals, and percentages. The Head of the Madrasah, Mr. Tanawali S.Ag, added that this approach can serve as an alternative strategy for teaching mathematics, a subject often perceived as difficult by students.

"If the children enjoy learning, half the battle is already won. All that's left is for the teacher to guide them creatively."3

In terms of learning outcomes, the teacher noted an improvement in students' understanding of fractions among the majority of students after several sessions using this teaching aid. However, she noted that some students still required additional

guidance. In the core phase, each group received a set of domino cards. The teacher explained that the game began with one card placed in the center of the table, after which students took turns matching the fractions on the cards they held with the card on the table. An interview with one of the students, Ahmad (11 years old), revealed: "Learning fractions with these cards is so much fun. I can quickly remember the fraction symbols and numbers because I'm playing with my friends."<sup>4</sup>

The use of this medium also encourages positive interaction among students. They discuss among themselves to determine the correct cards, help classmates who do not yet understand, and laugh together when someone mismatches the cards. Observations show that student participation levels increased significantly. Of the 21 students, 18 were actively involved in the game, while the 3 students who were initially passive began to participate in the second round of the game. An interview with another student, Nur Aisyah (10 years old), revealed: "Awalnya saya bingung pecahan campuran itu gimana, tapi karena lihat di kartu ada gambarnya jadi gampang dimengerti."<sup>5</sup>

The teacher also administered a formative assessment at the end of the lesson. The results showed that 80% of students were able to correctly answer fraction conversion questions, an increase from just 56% before the domino cards were used. One challenge encountered was that some students became too engrossed in the game and lost track of time. Teachers must provide reminders to ensure the activity remains on track with the learning objectives. Additionally, there were technical challenges such as cards getting folded or lost due to students' enthusiasm for playing. The teacher suggested that the cards be laminated to ensure they last longer. An interview with teacher Murniati S.Pd.I revealed that:

"This medium is very effective at engaging students, but supervision is indeed necessary to keep them focused on the learning objectives."<sup>6</sup>

The use of fraction domino cards also helped liven up the classroom atmosphere. Teachers noted that students were more motivated and demonstrated improved social skills through group collaboration. Learning activities using this medium also provided teachers with an opportunity to assess students' affective aspects, such as cooperation, sportsmanship, and the ability to respect others' opinions.

Cognitively, improvements are evident in students' ability to connect fraction concepts across various forms. They are quicker to identify equivalence between common fractions and decimal fractions after using the card media. Psychomotorically, students' skills in manipulating cards, devising game strategies, and arranging cards in the correct sequence have also developed. Thus, the use of fraction domino cards has a positive impact on mathematics learning in Grade 5 at MI DDI Manding, in terms of cognitive, affective, and psychomotor aspects. Overall, fraction domino cards are effective for improving students' understanding of fraction concepts. Although there are technical and time management challenges, the advantages offered by this medium far outweigh the disadvantages, making it a viable alternative in mathematics education.

Based on the results of the study, it can be concluded that the use of fraction domino cards in the fifth-grade class at MI DDI Manding has a significant positive impact on the mathematics learning process, particularly regarding fraction concepts. This teaching aid has proven effective in enhancing students' motivation to learn, active participation, and their ability to connect the concepts of proper fractions, mixed fractions, decimals, and percentages. The learning process, delivered through games, makes the classroom atmosphere more lively and interactive, thereby reducing the boredom students typically experience with conventional methods. The support of the

principal and the teachers' initiative in designing and implementing this medium were key factors driving the success of the learning implementation.

In addition to enhancing cognitive understanding, the fraction domino card medium also contributes to the development of students' affective and psychomotor skills. Students not only learn to understand concepts but are also trained to collaborate, discuss, make decisions together, and respect their peers' opinions. This play-based learning activity fosters positive interactions among students, where those who grasp the material more quickly can assist peers who are still struggling. From a psychomotor perspective, students' abilities to manage the cards, determine game strategies, and arrange the cards in the correct sequence also show significant development.

Although there were some challenges, such as cards being damaged due to students' enthusiasm or time management issues during the game, the benefits far outweighed these obstacles. The success of this medium is evident in the significant improvement in students' learning assessment results, as well as the transformation of the classroom atmosphere into a more active and enjoyable one. Therefore, the fraction domino card medium can be recommended as an innovative, effective, and suitable alternative learning strategy for teaching fraction material at the elementary school level, particularly at MI DDI Manding in Polewali Mandar District.

This study shows that the use of fraction domino cards in the fifth-grade class at MI DDI Manding was able to transform the mathematics learning paradigm which had previously tended to be monotonous into a more interactive one. Until now, fraction instruction has largely been conducted through lectures and conventional problem-solving exercises, which have left some students less enthusiastic. Innovation through educational games provides a new stimulus that can increase student engagement. Initial observations confirmed that student participation in fraction learning was low; most students appeared passive and struggled to understand the concept of converting between fraction forms. The use of fraction domino cards provides a visual and kinesthetic approach that helps students directly connect numerical symbols with the representation of fraction forms.

The fraction domino card set is designed to include various forms of common fractions, mixed fractions, decimals, and percentages so that students can thoroughly practice their conversion skills. This strategy aligns with constructivist learning principles, in which students build understanding through direct experience. The planning stage carried out by the teacher is a key factor in the activity's success. Preparing 28 pairs of cards and establishing clear game rules ensures a structured learning process. Math teacher Mrs. Rahmawati stated that this medium was chosen to address student boredom and to combine play with academic learning. The lesson, divided into three stages—introduction, main activity, and conclusion demonstrates systematic time management and activity planning. During the introduction stage, the teacher emphasizes the learning objectives and explains the rules of the game, so that students understand the context of the activity before starting to play.

The core phase of learning involves active interaction among students. They are required to quickly find matching cards, thereby honing their critical thinking skills and attention to detail. This activity also fosters a healthy competitive atmosphere, encouraging students to be more focused and enthusiastic. Support from the school principal, Mr. Tanawali, strengthens the implementation of this innovation. He views this medium as a simple yet effective form of teacher creativity, capable of encouraging students to be more active and help one another in the learning process. Such structural

support is essential for learning innovations to continue. Student responses have been very positive, as evidenced by the statements of Ahmad (11 years old) and Nur Aisyah (10 years old), who admitted that they found it easier to understand fractions with the help of the card medium. These testimonials indicate that visual and game-based approaches help students overcome difficulties in understanding abstract concepts.

The cooperative aspect also adds value to this medium. Students who have already grasped the material can help their peers, fostering collaborative learning. The teacher acts as a facilitator who guides the interaction and ensures every student has the opportunity to participate.

Observations showed a significant increase in student participation. Of the 21 students, 18 were actively engaged from the start, and the other 3 became involved in the following session. This demonstrates that the fraction domino cards were effective in capturing the interest of even students who had previously been passive. Evaluation data shows an increase from 56% of students who could correctly answer fraction conversion questions to 80% after using this medium. This improvement demonstrates that a game-based approach can have a tangible impact on students' cognitive achievements. Challenges that arose, such as card damage and time management, were relatively minor and could be addressed through technical improvements, such as laminating the cards and setting time limits for the game. Teacher Usman emphasized the need for supervision to ensure that the focus on learning is maintained. The benefits of this medium also include the development of students' affective skills. They learn to cooperate, respect others' opinions, and demonstrate sportsmanship during the game. This supports learning that focuses not only on academic results but also on character building.

From a psychomotor perspective, students are trained to handle the cards, devise strategies, and plan the sequence of the game. This activity integrates fine motor skills with logical thinking, making the learning process more holistic. Overall, the use of fraction domino cards in the fifth-grade class at MI DDI Manding has proven effective in improving students' understanding of fraction concepts and motivating them to learn. Support from the principal, thorough lesson planning by teachers, and positive student responses were key factors in this success. With adjustments to address technical challenges, this medium is highly recommended as an alternative for teaching mathematics in elementary schools.

## ***2. Improving Mathematics Learning Outcomes Through the Use of Fraction Domino Cards Among Fifth-Grade Students at MI DDI Manding in Polewali Mandar District***

Based on an interview with the principal of MI DDI Manding, Mr. Tanawali S.Ag, it was learned that the use of innovative teaching materials, particularly fraction domino cards, has brought about significant changes in the mathematics learning process. The principal emphasized that this innovation is not merely a variation in teaching methods but has become a strategy capable of transforming the overall classroom dynamics. From the interview with the Head of the Madrasah, Mr. Tanawali S.Ag, it was explained that:

Before the introduction of domino fraction teaching aids, mathematics instruction was often monotonous, dominated by lectures and written exercises. This caused students to quickly become bored, making it easy for their attention to wander. This situation led to poor student learning outcomes, particularly in understanding the concept of fractions, which most students find difficult.<sup>7</sup>

The information above indicates that the implementation of the fraction domino cards was initially carried out as a pilot project initiated by the subject teacher. The teacher proposed this idea in response to students' low interest and poor learning outcomes. The school provided full support, both in supplying materials for making the teaching aids and in allocating flexible class time.

An interview with Mrs. Rosmiah S.Pd.I, a fifth-grade teacher who directly implemented this domino card teaching aid, revealed that The design process for the domino cards was carried out with a systematic focus on fraction concepts. The cards were arranged to include various forms of fractions, ranging from proper fractions, mixed fractions, and decimals to percentages. This was intended to help students integrate and connect these different representations of fractions. 8

The teacher added that the learning activity using domino cards was designed to resemble a group game. Each group consisted of 4–5 students sitting in a circle. The teacher distributed the cards to each group and explained the rules of the game. Students were asked to match the cards based on the equivalence of the fraction values shown. During the activity, the classroom atmosphere became livelier and more dynamic. Students appeared enthusiastic as they held and arranged the cards while discussing which cards matched. The teacher observed that discussions among group members served as a crucial opportunity for students to exchange knowledge, explain concepts they understood, and assist peers who were still struggling.

The results of the observation showed that learning using fraction domino cards was able to accommodate differences in students' learning speeds. Students who quickly grasped the material acted as peer tutors for others, thereby creating a collaborative learning process. In an interview, the head of the Madrasah, Mr. Tanwali S.Ag, stated that:

One of the factors contributing to the success of this strategy is the presence of healthy competition. During the game, each group strives to be the fastest in using up their cards by correctly matching the fractions. This competition motivates students to be more focused and active in the learning process. 9

Based on learning assessment data, the teacher noted a significant improvement in students' daily test scores. Before using the fraction domino cards, the class's average score was in the "satisfactory" category. However, after using them, the majority of students achieved scores in the "good" to "very good" categories, particularly on questions related to converting fractions. In addition to improvements in cognitive learning outcomes, the teacher also observed positive developments in students' affective aspects. They became more confident in expressing their opinions, valued their peers' input, and demonstrated better cooperative attitudes. From a psychomotor perspective, this learning approach honed students' skills in managing the cards, combining calculation accuracy with quick thinking, and developing effective playing strategies.

After using the fraction domino cards, Ms. Rosmiah S.Pd.I noted a significant improvement. The majority of students now achieve grades ranging from good to excellent on assessments, particularly in the topic of fraction conversion. "Whereas before many were confused when converting fractions to decimals or percentages, now they can do it more quickly and accurately," she explained.

In addition to improvements in cognitive aspects, the teacher also highlighted positive developments in the affective domain. Students appeared more confident in expressing their opinions during group discussions, showed greater appreciation for

their peers' opinions and feedback, and demonstrated better teamwork. "Children who were once passive are now actively asking questions and sharing ideas. In fact, they often offer solutions when their peers face difficulties," she added. From a psychomotor perspective, Mrs. Rosmiah S.Pd.I noted that :

the use of fraction domino cards provides an engaging challenge for students. The activity of matching the appropriate cards requires precision, accurate calculation, and quick thinking.<sup>10</sup>

According to him, this activity helps develop hand-eye coordination while honing strategic skills through educational games. Based on the results above, the teacher concluded that the use of fraction domino cards not only enhances students' understanding of mathematical concepts but also fosters a collaborative, enjoyable, and meaningful learning environment. The teacher even recommended that this method be adopted as a regular learning alternative, particularly for abstract concepts that students often find difficult to grasp.

Based on the teacher's reflection, using fraction domino cards requires strong classroom management skills. Teachers must be able to maintain a balance between the excitement of the game and the achievement of learning objectives. In an interview, the school principal, Mr. Tanawali S.Ag, stated that:

To ensure that such learning innovations can be sustainably integrated into the school curriculum, teachers of other subjects should adapt this method to the material they teach, thereby making learning at MI DDI Manding more varied and enjoyable.<sup>11</sup>

According to an interview with a student named Syakira, she said that :  
My friends and I easily understood the material on domino fraction cards; we liked it because it was like playing a game.

Based on the interviews above, it was concluded that students prefer learning with domino fraction cards. In fact, a student named Randi Arkam said that he previously had difficulty distinguishing between decimals and percentages, but through the domino card game, he was able to see the relationship between the two more clearly. This demonstrates the effectiveness of this medium in clarifying abstract concepts. Overall, these findings indicate that the use of fraction domino cards has a positive impact on three domains of learning outcomes: cognitive, affective, and psychomotor.

This strategy helps students understand the concept of fractions, improves social skills, and trains quick thinking abilities. Thus, it can be concluded that fraction domino cards are a learning innovation worth recommending to elementary school teachers. The successful implementation at MI DDI Manding in Polewali Mandar District shows that this medium not only improves mathematics learning outcomes but also transforms the learning atmosphere into one that is more interactive, collaborative, and enjoyable.

Based on interviews with the principal, teachers, and students, it can be concluded that the use of fraction domino cards in Grade 5 at MI DDI Manding in Polewali Mandar District has brought about significant changes in the mathematics learning process. This strategy has successfully transformed what was previously a monotonous learning experience into a more interactive and enjoyable one. Full support from the school, systematic media planning, and the use of the material in the form of group games have created a dynamic classroom atmosphere and motivated students to actively participate. The positive impact of using this medium is evident in the improvement of student learning outcomes in the cognitive, affective, and psychomotor domains. Cognitively, students demonstrate a better understanding of

fraction concepts, particularly in converting between fraction forms. Affectively, students have become more confident in expressing their opinions, value their peers' input, and demonstrate better cooperative attitudes. Psychomotorically, this activity trains students' precision, coordination, and strategic skills within the context of educational games.

The findings from the interviews also indicate that this learning strategy has the potential to be adapted to other subjects, with relevant adjustments to the material. The successful implementation of the fraction dominoes demonstrates that the right learning media innovations not only enhance conceptual understanding but also foster a more collaborative, healthy competitive, and meaningful learning environment for students. Therefore, this method is worth considering as a sustainable learning alternative in elementary schools.

### **Discussion**

The use of innovative learning media is a key factor in improving the quality of student learning outcomes, particularly in mathematics, a subject often considered difficult. Based on an interview with the Principal of MI DDI Manding, Mr. Tanawali S.Ag, the use of fraction domino cards has brought about significant changes in classroom dynamics. According to him, this strategy is not merely a variation in teaching methods but an innovation capable of transforming the classroom atmosphere into a more interactive and enjoyable environment, while simultaneously increasing students' active engagement. Before this medium was introduced, mathematics instruction in fifth grade tended to be monotonous, dominated by lecture-based methods and written exercises. This teaching pattern caused students to quickly become bored and lose focus, particularly with fraction material, which is perceived as abstract and difficult. This situation directly contributed to low student achievement scores. This aligns with Mr. Tanawali's observation that "the previous learning model made the children get bored quickly, so the material was not absorbed well." The implementation of the fraction domino cards began as an initiative by the fifth-grade teacher, Ms. Rahmawati S.Pd, who recognized the need for a new teaching method to spark students' interest. He systematically designed domino cards featuring various forms of fractions proper fractions, mixed fractions, decimals, and percentages so that students could integrate their understanding of these different representations of fractions. This design allows students to learn the relationships between different forms of fractions directly through educational games.

The learning process was carried out by forming small groups of 4–5 students. The teacher distributed cards and explained the rules of the game, in which students were asked to match cards based on the equivalence of their fractional values. This activity creates a more lively learning atmosphere, marked by intense discussions among group members. Ms. Rahmawati noted that "group discussions provide an opportunity for students to help one another, share their understanding, and explain concepts to peers who haven't grasped them yet." One key finding from this learning approach is the emergence of natural collaboration among students. Students who grasp the material more quickly voluntarily take on the role of peer tutors, assisting classmates who are still struggling. This process not only enhances conceptual understanding but also fosters social skills and a spirit of mutual respect. The principal noted that the presence of healthy competition within the game further motivates students to focus and participate more actively. In terms of cognitive learning outcomes, evaluation data indicates a significant improvement. Before using the fraction domino cards, students' average scores were in the "satisfactory" category. After

implementation, the majority of students achieved scores in the “good” to “very good” categories, particularly in fraction conversion. Ms. Rahmawati noted, “Whereas before many struggled to convert fractions to decimals or percentages, now they can do so quickly and accurately.” In addition to the cognitive domain, this learning approach also has a positive impact on the affective domain. Students have become more confident in expressing their opinions, value feedback from their peers, and actively participate in discussions. Even students who were previously passive began to show initiative in problem-solving. One student, Syakira, admitted, “We find it easier to understand the material; it feels like playing while learning.” In the psychomotor domain, the domino fraction game trains hand-eye coordination, precision, and quick thinking. This activity requires students to manage the cards while calculating accurately, thereby developing their strategic skills as well. Ms. Rahmawati emphasized that these skills are crucial, as they combine fine motor skills with critical thinking abilities. Students’ responses generally indicate a positive reception of this teaching method. For example, Randi Arkam noted that he previously struggled to distinguish between decimal fractions and percentages, but after playing the fraction dominoes, he could clearly see the connection between the two. Learning experiences like this help students transform abstract concepts into concrete experiences. The principal also emphasized that innovations of this kind should not be limited to a single topic or subject. He recommended that teachers of other subjects adapt this educational game method by adjusting the content, so that the learning environment at MI DDI Manding remains varied and enjoyable. This aligns with the concept of active learning, which places students at the center of the learning process.

Teacher reflections indicate that using fraction domino cards requires strong classroom management skills. Teachers must maintain a balance between the fun of the game and achieving learning objectives. Without proper control, the activity risks becoming merely a game without significant cognitive gains.

Game-based learning like this also accommodates students’ different learning styles. Visual learners can make use of the cards’ shapes and colors, kinesthetic learners are aided by manipulating the cards, while auditory learners benefit from group discussions. This demonstrates that the fraction domino cards are an inclusive medium for various types of learners. Another interesting finding is the presence of a lasting motivational effect. Some students requested that this game be used in the next session, and even with other topics. This request indicates that this medium successfully fosters intrinsic interest in learning.

From a pedagogical perspective, the fraction domino card medium aligns with the principles of contextual learning, in which students learn through direct experiences relevant to daily life. The concept of fractions, which is initially abstract, becomes easier to understand through the activity of matching cards of equal value. The overall results indicate that fraction domino cards effectively improve mathematics learning outcomes in Grade 5 at MI DDI Manding, Polewali Mandar District. This effectiveness is reflected in improved learning outcomes across three domains: cognitive, affective, and psychomotor. Furthermore, this strategy fosters a collaborative, healthy competitive, and enjoyable learning environment. Considering all these findings, the use of fraction domino cards can be recommended as a sustainable alternative learning strategy in elementary schools. Its successful implementation at MI DDI Manding demonstrates that the right educational media innovation can significantly improve the quality of learning and provide meaningful learning experiences for students.

### Conclusion

The findings of this study indicate that the use of Fraction Domino Cards contributed positively to improving the mathematics learning outcomes of fifth-grade students at MI DDI Manding, Polewali Mandar District. The learning media helped students understand fraction concepts more concretely and facilitated their ability to perform fraction operations. This improvement was reflected in students' evaluation results, which showed an increase in learning achievement after the implementation of the Fraction Domino Cards.

In addition to enhancing cognitive achievement, the use of Fraction Domino Cards also supported the development of students' affective and psychomotor skills. Students demonstrated greater confidence in expressing their ideas, showed improved cooperation with peers, and developed positive attitudes toward learning mathematics. Furthermore, the activities involved in using the cards encouraged students to improve their accuracy, responsiveness, and problem-solving skills during learning tasks.

Therefore, Fraction Domino Cards can be considered an effective and engaging learning medium for teaching fraction concepts in elementary schools. The use of this medium not only improves students' understanding of mathematics but also promotes active participation, collaboration, and meaningful learning experiences in the classroom.

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