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The Effectiveness of Domino Card Media on Mathematics Learning Outcomes on Equivalent Fraction Material in Elementary Schools

Efektivitas Media Kartu Domino Terhadap Hasil Belajar Matematika Pada Materi Pecahan Setara di Sekolah Dasar

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Abstract: The use of traditional methods, the absence of learning media, students' boredom because they think mathematics is too difficult, and low student learning outcomes in equivalent fraction material are the problems underlying this research. This fact is motivated by the fact that the learning process is still focused on the teacher and not the students. The aim of this research is to find out whether the domino card media at SD Negeri 2 Durajaya, Greged District, Cirebon Regency can improve mathematics learning outcomes regarding equivalent fractions. This research uses quantitative experimental research, Pre-Experiment Design, One-Group Pre-Test Post-Test Design. The instrument for testing used in this data collection method uses test questions. The data collection sample technique used Simple Random Sampling to select 33 class III students at SD Negeri 2 Durajaya, Greged District, Cirebon Regency as the population. Non-parametric statistics with prerequisite tests for normality, homogeneity, and hypothesis testing using the Wilcoxon test to analyze the collected research data. Class III mathematics students at SD Negeri 2 DURAJAYA, Greged District, Cirebon Regency obtained an average pretest score of 75.4545 which was said to be a satisfactory order before using the Mathematics Domino Card media. After using the Mathematics Domino Card media, class III students at

SD Negeri 2 DURAJAYA, Greged District, Cirebon Regency obtained an average post-test score of 92.4242 which was categorized as worthy of classification. The Sig (2-tailed) value is 0.000 which is smaller than 0.05, resulting from the Paired Sample test table or T-Test above. In Class III of SD Negeri 2 DURAJAYA, Greged District, Cirebon Regency, it was shown that H_a was approved, this shows that there was a high difference in student learning outcomes before and after the implementation of Domino Card Media. Therefore, it can be assumed that the Mathematics Domino Card Media can provide Effective Mathematics Learning Outcomes for Equivalent Fraction Material at SD NEGERI 2 DURAJAYA Cirebon .

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INTRODUCTION

Learning at the Elementary School/Madrasah Ibtidaiyah level determines the influence on students' ability levels at a more significant level. Providing knowledge and developing basic skills and abilities to students starting from Elementary School/Madrasah Ibtidaiyah, students receive mathematics learning to develop their ability to think logically, analytically, systematically, critically and collaboratively in learning activities.

Because it is an exact science, students must really understand and master mathematical material. Therefore, most students conclude that mathematics is a challenging subject. The majority of students view mathematics, regardless of its significance, as a challenging, saturated, uninteresting, and intangible subject that requires special abilities that are not always accessible to all students. (Marchi & Sapta, 2014 ; Kamsinah, 2022; Maryanto et al., 2023)

Another word "media" comes from the words "middle", "intermediary" or "introduction". In Arabic, media is a means of communication between sender and recipient. Media refers to the transmission of messages from sender to receiver in language. To be more specific the incorporation of media into educational and educational experiences energizes the interpretation of these materials as electronic, photographic or graphic tools in the collection, processing and reorganization of verbal or visual information.

Because education itself is a communication process, educational media is essentially a communication medium. Educational media and the meaning of education itself are more focused, namely educational media that is used specifically to achieve predetermined learning goals. All educational media contain educational media, although not all educational media are learning media. (Hayes et al., 2017 ; Hasan et al., 2021; Rohani, 2020)

In the era of globalization, technological progress is increasingly rapid. This is driving new efforts to incorporate technology outcomes into learning. Teachers are expected to be able to use and construct learning tools such as projectors. However, because it is only available in Madrasah Ibtidaiyah (MI) level schools and not all teachers are able to operate it, some teachers feel very challenged.

Students' understanding of the material taught by the teacher is assisted by learning media, which can later influence their learning outcomes. The approach to introducing learning materials, learning media, and performance techniques used by educators in educational performances and experiences all influence how well students learn. When learning material is presented. Many learning media are used. The use of domino card learning media is one method of introducing topics which is expected to improve learning achievement. (Arsyad A, 2011; Harsiwi & Arini, 2020; Nurseto, 2011)

Researchers found that learning achievement in class III was lacking in the use of learning media based on initial observations at SD Negeri 2 Durajaya. Students only learn by examining textbook illustrations of fraction forms that are of little interest to them. The contents of the book and the teacher's explanations are all that the students focus on. Students believe that learning is less interesting and causes them to become bored. So the students' mathematics learning outcomes are not good.

By using domino cards, the author tries to find a new way to convey equivalent fraction material in mathematics. Game-based learning using domino cards can encourage students' active participation in learning activities.

Therefore, the equivalent fraction content in the mathematics domino card learning media is intended to encourage students' critical thinking. Rather than being completely teacher-

centered, learning is conducted in an effort to foster student-focused learning. Students are expected to be able to think critically and demonstrate their understanding while playing this game. More than that, it can also convey a moral message to each student that is expected to instill a sense of sportsmanship and mutual respect in them by encouraging them to work together and compete simultaneously.

This research is interested in researching this problem by taking the title "EFFECTIVENESS OF DOMINO CARD MEDIA ON LEARNING OUTCOMES IN MATHEMATICS LEARNING MATTER BY FRACTIONS AT SDN 2 DURAJAYA CIREBON" after considering the background of the problem, namely that students at this school do not have access to learning materials for learning mathematics fractions worth so it is too monotonous and boring for them.

METHOD

This research uses quantitative experimental research, Pre-Experiment Design, One-Group Pre-Test Post-Test Design.

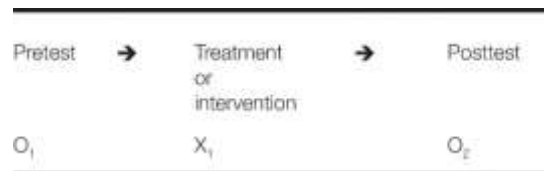


Figure 1. One-Group Pre-Test Post-Test Design

The data collection instrument uses 20 multiple choice test questions. For the sampling technique used, Simple Random Sampling Technique was used to select 33 class III students at SD Negeri 2 Durajaya, Greged District, Cirebon Regency as the population. The data analysis technique used is non-parametric statistics with the prerequisite tests for normality, homogeneity, and hypothesis testing using the Wilcoxon test.

RESULTS AND DISCUSSION

Normality test

The aim of knowing whether the data is regularly distributed or not, a normality test is used. The *pre-test* and *post-test* results data for class III students at SDN 2 DURAJAYA and the *pre-test* and *post-test results data* were calculated using *IBM SPSS Version 25* to produce a normality test as follows:

Table 1. Output of Normality Test Results
Tests of Normality

		Kolmogorov-Smirnov ^a			Shapiro-Wilk		
	class	Statistics	df	Sig.	Statistics	df	Sig.
mark	pre-test	,198	33	,002	,912	33	,061
	post test	,304	33	,000	,758	33	,070

a. Lilliefors Significance Correction

.002 and 0.000 respectively, which is smaller than 0.05, meaning that H_0 is rejected and H_a is accepted. This shows that the data distribution is not normal.

Homogeneity test

To find out whether the data is homogeneous (the same) or not, a homogeneity test is carried out. The researchers in this study used *IBM SPSS Statistics version 25* and the Anova test. The output display can be seen in the table below after processing the data using the Anova test with the help of *IBM SPSS Statistics version 25*:

Table 2. Output of Homogeneity Test Results
Test of Homogeneity of Variance

		Levene			
		Statistics	df1	df2	Sig.
mark	Based on Mean	1,911	1	64	,172
	Based on Median	1,049	1	64	,310
	Based on Median and with adjusted df	1,049	1	46,787	,311
	Based on trimmed mean	1,882	1	64	,175

Based on the table above, a significance value of 0.172 is obtained, which is greater than 0.05, meaning that H_0 is accepted and H_a is rejected. shows identical (homogeneous) data.

Hypothesis Test (Wilcoxon test)

Based on the test requirements, where the data is not normal and homogeneous, non-parametric statistical testing is carried out with hypothesis testing using the Wilcoxon test. The testing process is assisted by an application *IBM SPSS Statistics version 25*.

- H_0 : There is not yet sufficient use of Domino Cards in mathematics learning on equivalent fraction material in class III at SDN 2 DURAJAYA.
- H_a : There is effectiveness in using domino card media in learning mathematics on equal fraction material in class III at SDN 2 DURAJAYA.

The table below shows the output display data after data processing using *IBM SPSS Statistics version 25* :

Table 3. Output of Wilcoxon Test Results

Test Statistics ^a	
	posttest - pretest
Z	-4,758 ^b
Asymp. Sig. (2-tailed)	,000

a. Wilcoxon Signed Ranks Test

b. Based on negative ranks.

Wilcoxon test table above, there is a significant difference between student learning outcomes before and after the implementation of Domino Card Media in Class III of SD Negeri 2

Durajaya because the sig value, (2-tailed) 0.000 is 0.05 smaller and tends to indicate that H_a is accepted and H_o was rejected .

Using math domino cards as a fast and cheap alternative method for learning mathematics. When using math domino cards to teach mathematics, efficient planning and time management are very important. The implementation of this innovation must focus on time management because if it is not directed well it will result in the learning process being slow, resulting in the estimated time for the lesson plan being inaccurate. (Herawati, 2017 ; Adawiyah & Kowiyah, 2021; Setiawan et al., 2020)

From the discussion above, it can be assumed that the Mathematics Domino Card Media is worthy of being effective in terms of Mathematics learning outcomes. Equivalent Fraction Material at SD NEGERI 2 DURAJAYA, Greded District, Cirebon Regency.

CONCLUSION

Class III students at SD Negeri 2 DURAJAYA, Greded District, Cirebon Regency, obtained an average pretest score of 75.4545, which is said to be a satisfactory order before using the Mathematical Domino Card media for Equivalent Fraction Material. After using the Mathematical Domino Card media for Equivalent Fraction Material, class III students at SD Negeri 2 DURAJAYA, Greded District, Cirebon Regency obtained an average post-test score of 92.4242 which was categorized as worthy of classification. The Sig (2-tailed) value is 0.000 which is smaller than 0.05, resulting from the Paired Sample test table or T-Test above. In Class III of SD Negeri 2 DURAJAYA, Greded District, Cirebon Regency, it was shown that H_a was approved, this shows that there was a high difference in student learning outcomes before and after the implementation of Mathematical Domino Card Media with Equivalent Fraction Material.

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