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The Influence of *Flash Card* Media on Student Learning Outcomes in Learning Flat Building Materials in Grade IV Elementary School

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Abstract

The purpose of this research is to determine the effect of Flash Card media on the learning outcomes of students in the subject of mathematics regarding flat shapes in the 4th grade of SD Negeri 227 Palembang. The population in this study consists of all 4th-grade students, totaling 49 students, divided into two classes: class A experimental with 25 students and class B control with 24 students. This research is quantitative in nature with a quasi-experimental design approach, using data collection techniques through final test (Posttest), documentation, and data analysis techniques employing Normality Tests, Hypothesis Tests, and T-tests. The results of this study indicate that the learning outcomes of experimental class IV A students taught using Flash Card media are better compared to those without Flash Card media, as evidenced by the average posttest score of experimental class IV A students being 81,20, whereas the control class IV B scored 72,08. In addition, this is also supported by the results of the independent t-test. The sample t-test resulted in a significance of 0.000 < 0.05 and t calculated > t table or 2,532 > 1.678, which indicates that the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. Thus, based on statistical analysis, it is proven that there is an effect of Flash Card media on the mathematics learning outcomes of flat shapes for the fourth-grade students of SD Negeri 227 Palembang.

Keywords: Flash Card Media, Flat Shapes, Mathematics, Learning Outcome.

Pengaruh Media Flashcard terhadap Hasil Belajar Siswa dalam Pembelajaran Bangun Datar Kelas IV Sekolah Dasar

Abstrak

Tujuan penelitian ini adalah untuk mengetahui pengaruh media kartu flash terhadap hasil belajar siswa pada mata pelajaran Matematika mengenai bangun datar di kelas IV SD Negeri 227 Palembang. Populasi dalam penelitian ini terdiri dari seluruh siswa kelas IV yang berjumlah 49 siswa, terbagi ke dalam dua kelas, yaitu kelas A eksperimen dengan jumlah 25 siswa dan kelas B kontrol dengan jumlah 24 siswa. Penelitian ini bersifat kuantitatif dengan pendekatan desain eksperimen semu (quasi experimental design), menggunakan teknik pengumpulan data melalui tes akhir (posttest), dokumentasi, serta teknik analisis data dengan Uji Normalitas, Uji Hipotesis, dan Uji-t. Hasil penelitian menunjukkan bahwa hasil belajar siswa kelas IV A eksperimen yang diajarkan dengan menggunakan media kartu flash lebih baik dibandingkan dengan yang tidak menggunakan media kartu flash, hal ini dibuktikan dengan rata-rata nilai posttest siswa kelas IV A eksperimen sebesar 81,20, sedangkan kelas kontrol IV B memperoleh nilai 72,08. Selain itu, hasil ini juga didukung oleh uji t independen. Uji t sampel menghasilkan signifikansi sebesar 0,000 < 0,05 dan t hitung > t tabel atau 2,532 > 1,678, yang menunjukkan bahwa hipotesis nol (Ho) ditolak dan hipotesis alternatif (Ha) diterima. Dengan demikian, berdasarkan analisis statistik terbukti bahwa terdapat pengaruh media kartu flash terhadap hasil belajar Matematika bangun datar siswa kelas IV SD Negeri 227 Palembang.

Kata kunci: Media Kartu Flash, Bangun Datar, Matematika, Hasil Belajar

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INTRODUCTION

Education is a conscious and planned effort to create a learning atmosphere and a learning process that encourages students to develop their spiritual potential, self-control, intelligence, and skills that are useful for themselves and society (Pristiwanti et al., 2022). In the educational process, learning becomes an important component aimed at optimally enhancing student learning outcomes. Therefore, appropriate strategies are needed, including the use of learning media (Dishinta, 2020).

Mathematics is one of the important subjects in elementary school because it plays a role in training logical, systematic, and critical thinking skills. Mathematics also serves as a foundation for science and technology and is needed in everyday life (Hasanah, 2020). One important topic in mathematics is flat shapes, which includes basic concepts such as area, perimeter, as well as the shapes and properties of geometric figures. However, in reality, there are still many students who struggle to understand this material, especially in distinguishing the characteristics of each shape (Surya & Nafsiah, 2023). The difficulties may be caused by uninteresting learning methods and minimal use of visual media. In fact, learning media can be an effective tool to concretely explain abstract concepts, facilitate student understanding, and increase their engagement in the learning process (Audic, 2019). Media can also create a more enjoyable and interactive learning environment (Fauzan & Lubis, 2020).

One of the media suitable for mathematics learning is flash cards, which are picture cards containing visual and textual information. Flash cards can be used individually or in groups, and are designed to help students understand concepts through simple and engaging images and symbols (Bakhtiar, 2021). Activities using flash cards are usually packaged in the form of games that can motivate students and foster an interest in learning (Felbrianto et al., 2020). This media has several important functions, such as attention function (capturing attention), affective function (enhancing learning comfort), cognitive function (facilitating information recall), and compensatory function (assisting slow learners in understanding the material) (Nurdiniawati, 2020). Thus, the use of flash cards is believed to help students understand flat shapes material more easily and pleasantly (Anisa & Attamini, 2023).

Previous research also shows that the use of flash card media has a positive effect on learning outcomes. (Khasanah, 2023)proved that interactive multimedia-based flash card media effectively improves learning outcomes in flat geometry topics. (Suhartati, 2022) found that the use of this media enhances students' cognitive learning abilities. (Dora, 2021) concluded that flash card media influences students' arithmetic skills, and (Octariya, 2023) stated that the use of flash cards can enhance students' learning outcomes. The material on flat shapes includes various forms such as squares, rectangles, triangles, parallelograms, trapezoids, kites, rhombuses, and circles. Each shape has special properties that students must understand, and this understanding will be easier to achieve if assisted by visualization and concrete media (Milkhaturrohman et al., 2022).

However, the initial observation results at SD Negeri 227 Palembang show that students still have difficulties in understanding flat shapes concepts. Teachers tend to only use textbooks without additional learning media. As a result, students feel bored and less interested in participating in the lessons (Riekel & Ambiyar, 2020). Based on this description, this study was conducted to determine the effect of flash card media on student learning outcomes in the flat shapes material for fourth-grade students at SD Negeri 227 Palembang.

METHODS

This research employs a quantitative approach using a quasi-experimental method, as it is not feasible for the researchers to fully randomize subjects from the existing population.

The research design used is a posttest only control group design, which involves two groups: the experimental group and the control group, where measurements are only conducted after the treatment is administered (Sugiyono, 2019). The experimental group in this study consists of the fourth grade students of SD Negeri 227 Palembang who were treated using flash cards in mathematics learning on flat shapes, while the control group is the fourth grade students of class IV B who were not given the media treatment. The total number of participants from both classes is 49 students, consisting of 25 students in the experimental class and 24 students in the control class.

The independent variable in this study is the flash card learning media, while the dependent variable is the students' learning outcomes measured through a posttest. The data collection instrument used is a written test in the form of multiple choice and essay questions, which has been validated by subject matter experts and tested for validity and reliability before being used in the study. The results of the validity test indicate that out of 20 questions prepared, 10 questions were declared valid and used in the posttest. Meanwhile, the reliability test using SPSS version 25 shows that the instrument has a Cronbach's Alpha value of 0.750, which means it is classified as reliable (Wahyudi, 2020). Data collection techniques were conducted through learning outcome tests and documentation. The tests were administered after treatment to measure students' achievement in relation to flat shape material. Meanwhile, documentation was used to obtain supporting data such as the number of students, attendance lists, and previous grades.

The data obtained were analyzed using inferential statistical tests. Before hypothesis testing was conducted, prerequisite analysis tests were performed, namely normality tests using the Kolmogorov-Smirnov method and homogeneity tests using Levene's Test. The results of both tests indicated that the data were normally distributed and had homogeneous variances. Next, an independent t-test was used to test the hypothesis to determine whether there were differences in learning outcomes between the experimental class and the control class. The criteria for hypothesis testing were determined based on the significance value (sig. < 0.05), which indicates that there was a significant effect of using flash card media on students' learning outcomes (Basrowi et al., 2018). This research was conducted in the even semester of the 2024/2025 academic year, located at SD Negeri 227 Palembang on Jalan Telaga Binangun, Plaju District, Palembang City. During the research implementation, the researcher played a direct role as the teacher in the experimental class and conducted observations and evaluations of student learning outcomes according to the established design.

FINDINGS AND DISCUSSION

This research was conducted to determine the effect of using flash card media on the learning outcomes of students on flat shapes material in grade IV at SD Negeri 227 Palembang. This study used two classes, namely class IV A as the experimental class and class IV B as the control class. The experimental class (IV A) was given instruction using flash card media. This media was presented in the form of colored cards that displayed images and characteristics of flat shapes such as squares, rectangles, and triangles. During two meetings, the lesson began with an explanation of the material using this media, followed by group discussions using flash cards containing puzzles of flat shapes. Each

group presented the results of their discussion and received feedback from the teacher. At the end of the session, students completed a post-test to measure their learning outcomes.

Meanwhile, the control class (IV B) was given instruction without using flash card media, but rather using conventional methods in the form of lectures and ordinary discussions. The teacher explained the material on flat shapes directly using textbooks and a blackboard. Students took notes and worked on practice exercises without the help of additional visual media. After two meetings, the students were also given a postest that was the same as the experimental class. The results of the posttest from both classes are presented in the table below:

Table 1. Results of Posttest for Experimental and Control Classes

Class	Number of student	Highest Score	Lowest Score	Average
Eksperiment (IV A)	25	100	40	75,6
Control (IVB)	24	90	40	63,3

That the experimental class achieved a higher average learning outcome compared to the control class. The maximum score in the experimental class reached 100, while in the control class it was only 90. This indicates that the flash card media has a positive impact on improving students' learning outcomes. To ensure the validity of the testing, prerequisite analysis tests were conducted first, namely normality and homogeneity tests.

Table 2. Normality Test

Tests of Normality

		Kolmogorov-Smirnov		
	Class	Statistic	df	Sig.
Result	Postest A (Eksperiment)	.137	25	.200*
	Postest B (Control)	.164	24	.092

a. Lilliefors Significance Correction

According to the basis of decision-making in the Kolmogorov-Smirnov normality test, the result for the experimental class is 0.200 > 0.05 and for the control class is 0.092 > 0.05, it can be concluded that the data is normally distributed.

Table 3. Homogeneity Test

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Learning outcomes	Based on Mean	1.664	1	47	.203
	Based on Median	1.418	1	47	.240
	Based on Median and with adjusted df	1.418	1	43,884	.240
	Based on trimmed mean	1.701	1	47	.198

Based on the output table of the Test of Homogeneity of Variances above, along with the decision-making basis in the homogeneity test with the significance value (Sig) results

from both classes of 0.203 > 0.05, it can be concluded that the samples come from the same population or can be said to be homogeneous. The result of the independent sample t-test with a significant value of 0.002 < α (α = 0.05) leads to the rejection of Ho, and from the aforementioned table, it can be seen that t_hitung = 3.366 with degrees of freedom (nx1 + nx2 – 2) = (25 + (24 – 2) = 47 while t_table = t(0.05, 47) = 1.678. It is evident that t_hitung > t_table or 3.366 > 1.678, hence Ho is rejected and Ha is accepted. Thus, based on statistical analysis, it is proven that there is an influence of Flash Card media on the mathematics learning outcomes of shape material for fourth-grade students at SD Negeri 227 Palembang.

Based on the results of the posttest, the experimental class students who were taught using flash card media showed higher learning outcomes compared to the control class. The average posttest score for the experimental class was 75.6, while the control class only reached 63.3. This proves that the use of engaging and visual learning media can improve students' understanding of flat shapes material. This finding supports (Bakhtiar, 2021) opinion that flash card media is an effective visual medium to help students understand abstract concepts in mathematics. Flash cards present information through images and text that can stimulate memory and student engagement in learning.

In addition, the results of this study are also in line with (Khasanah, 2023)which states that interactive multimedia-based flash card media effectively improves learning outcomes in flat shapes material. (Suhartati, 2022) also shows that this media can enhance students' cognitive abilities in mathematics learning. In the cognitive theory approach, the use of visual media such as flashcards can stimulate attention, facilitate information encoding, and enhance students' memory (Hasan et al., 2021). As a result, students find it easier to absorb and understand the subject matter presented. Based on the research findings and statistical testing, it can be concluded that the use of flashcards has a significant and positive impact on students' math learning outcomes in flat shape material.

CONCLUSION

Based on the results of the research conducted at SD Negeri 227 Palembang, it can be concluded that flash card media has a significant effect on student learning outcomes in flat shapes material in the fourth grade. This is evidenced by the difference in posttest results between the experimental class and the control class, where students who learned using flash card media achieved a higher average score of 75.6 compared to the control class, which obtained an average of 63.3. The results of the statistical test using independent sample t-test showed a significance value of 0.002 (< 0.05), indicating a significant difference between the two groups. This shows that learning using flash card media is more effective in improving students' understanding of flat geometry concepts. The use of flash cards can attract students' attention, present material visually, and enhance student engagement in learning. Thus, this media is worthy of being used as an enjoyable alternative for mathematics learning and helps improve students' learning outcomes.

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