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The Impact of Flash Cards on Student Learning Outcomes in Science Education

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ABSTRAK

Peneltian ini bertujuan untuk mengetahui dampak penggunaan Media Flash Card pada hasil belajar IPA oleh siswa kelas V di SD Negeri 6 Jarai. Studi ini menggunakan metode eksperimental dengan rancangan pre-experimental, khususnya one group pretest-posttest design. Populasi meliputi seluruh murid dari kelas I hingga VI di sekolah yang sama, dengan sampel penelitian terdiri dari 25 siswa kelas V. Analisis data awal menunjukkan bahwa hanya 7 dari 25 siswa (29,16%) yang mencapai kriteria ketuntasan minimal (KKM) sebelum penerapan Flash Card, dengan nilai rata-rata klasikal 66,66%. Setelah penerapan, 20 dari 25 siswa (83,33%) berhasil memenuhi KKM dengan rata-rata nilai meningkat menjadi 83,12%. Hasil uji statistik t menghasilkan t-hitung sebesar 7,06, melebihi t-tabel 2,06, yang mengindikasikan penolakan H0 dan penerimaan Ha. Hal ini membuktikan bahwa penggunaan Media Flash Card efektif dalam meningkatkan hasil belajar IPA siswa tersebut.

KATA KUNCI

flash card; hasil belajar; ipa

ABSTRACT

This research investigates the influence of incorporating Flash Card Media on the academic achievements in science of fifth-grade students at SD Negeri 6 Jarai. The study utilised an experimental approach with a pre-experimental design, notably the one-group pretest-posttest design. The population comprised all students enrolled in grades I to VI at the same educational institution, while the research sample consisted of 25 kids in the fifth grade. Initial data analysis revealed that prior to applying Flash Cards, only 7 out of 25 students (29.16%) achieved the minimum mastery criteria (KKM), with an average classical score of 66.66%. Following the implementation, 83.33% of the students, namely 20 out of 25, reached the KKM (minimum passing grade), resulting in an average score improvement of 83.12%. The t-test returned a t-calculated value of 7.06, which surpasses the critical t-value of 2.06 from the t-table. This indicates that we can reject the null hypothesis (H0) and accept the alternative hypothesis (Ha). This demonstrates the efficacy of utilising Flash Card Media in improving the science learning results of these pupils.

KEYWORDS

flash card; learning outcomes; science

INTRODUCTION

Learning is a process of interaction with all the situations surrounding the individual student. Learning can be seen as a process directed towards achieving goals and acting through various experiences created by teachers. The quality of the learning activities depends on planning, implementing the learning process, and evaluating the learning undertaken by the teacher. The teacher's role is to teach (teacher-centred) and facilitate learning (child-centred). Learning is also a process of seeing, observing, and understanding what is around the student. (Rusman, 2016:11). From the learning process, the expected learning outcomes are obtained by the learning objectives to be achieved.

Formal education in schools is designed to systematically guide pupils in developing their knowledge, abilities, and attitudes. The learning process is influenced by its environment, which includes students, teachers, library staff, principals, learning materials (books, modules, leaflets, magazines, video or audio recordings, etc.), and various learning resources and facilities (overhead projectors, audio and video tape recorders, radios, televisions, computers, libraries, laboratories, learning resource centres, etc.). The interaction that occurs during this process is shaped by these factors. (Azhar Arsyad, 2020:1)

Learning outcomes refer to the skills and knowledge that students acquire as a result of their educational experiences. Learning outcomes are crucial in the process of learning. Evaluating learning outcomes allows teachers to gather data on students' advancement in attaining their learning objectives through educational tasks. Based on this information, teachers can arrange and cultivate additional student activities for both the entire class and individual students. (Rusman, 2016:67)

Natural Science or Science is a field that studies natural phenomena, including living and non-living creatures, or science about life and the physical world. Scientific knowledge is obtained and developed based on research by scientists seeking answers to what, why, and how of natural phenomena and their application in technology and everyday life. (Rahayu, Mulyani et al., 2021:64). Observations by researchers during the teaching and learning process, especially in Natural Science subjects, show that teachers use the lecture method with conventional media, which is almost always controlled by the teacher. This can negatively impact students, making them bored and disinterested in learning, causing the teaching and learning process to become monotonous, students busy

talking to their desk mates, students less enthusiastic when teachers engage in question and answer, not paying attention to the ongoing learning, and the desired learning objectives not being achieved well. In the teaching and learning activities, the teacher plays a role in determining the students' success. In this regard, one way that teachers can do is to create interaction between students and teachers in a conducive learning environment so that students become active.

Based on the Basic Competencies (KD) in the Natural Science subject and based on observations when the researcher participated in the learning activities in class V at SD Negeri 6 Jarai, it shows that students are less active. The focus of the learning process on the teacher leads to a lack of mastery of concepts and boredom in students, resulting in learning outcomes of students in the Natural Science subject still being below the KKM, which is below 75.

The study uses visual media, namely Flash Cards. Flash Cards are visual learning media in the form of cards containing images or text that can direct students about the material being studied, thus speeding up understanding and strengthening their memory. Using this media can foster students' interest in understanding what is depicted in the images. It can provide ease in connecting the content of the lesson material with the natural world in everyday life.

Using visual media, such as Flash Cards, the researcher hopes to improve the learning outcomes of SDN 6 Jarai students, especially in the Natural Science subject of Ecosystems. Additionally, the researcher hopes that students can learn to be more active because, in class V, children still play while learning. If the media used are Flash Cards, the students will be happy and curious about what will be done with them.

METHOD

This study employs a quantitative research approach that relies on statistical data. This research employs the quantitative pre-experimental method. This study utilises a pre-experimental research design, notably employing the One-Group Pretest-Posttest Design. The researcher utilised the Purposive Sampling technique in this study, which entails collecting data based on certain criteria. Hence, the sample extracted from the entire population comprises 25 fifth-grade kids from SD Negeri 6 Jarai.

The data collection process involved several steps to ensure accuracy and reliability. Initially, a pretest was administered to the students to assess their baseline knowledge and skills in the Natural Science subject. This pretest provided a benchmark against which post-intervention results could be compared. Following the pretest, the intervention using Flash Cards was implemented over a specified period, during which students engaged with the Flash Cards as part of their regular learning activities.

Throughout the intervention, observations were conducted to monitor student engagement and interactions with the Flash Cards. These observations aimed to gather qualitative insights into how students responded to the visual aids and to identify any immediate changes in their learning behaviors.

After the intervention period, a posttest was administered to the same group of students. The posttest was designed to measure any improvements in their understanding and retention of the Natural Science concepts covered during the intervention. The results of the pretest and posttest were then compared using statistical analysis to determine the effectiveness of the Flash Cards in enhancing student learning outcomes.

RESULTS AND DISCUSSION

Description of the Science Pre-test Outcomes for Fifth Grade Students at SD Negeri 6 Jarai, Tertap Village, Jarai Subdistrict, Lahat District. The pre-test is the initial stage of this experimental study. The material used in this research focuses on the Science topic of Ecosystems. After undergoing stages of validity testing, reliability checks, and trials at the school, the researcher conducted the Pre-test in the classroom. The results of the Pre-test were processed and used as a guideline for conducting subsequent stages of the research.

The descriptive analysis of the Science Pre-test results for the fifth-grade students at SD Negeri 6 Jarai can be seen in the following table 1:

Table 1 Science Learning Outcomes Score Statistics for Students Before Treatment (Pre-test)

Number	Statistic	Mean	
		Pre-test	Post-test
1	Sample size	25	25
2	Ideal Score	100	100
3	Max	95	100

4	Min	40	65
5	Range	55	35
	Avr	**67**	**83,6**

If the students' test results are grouped into a five-category scale, then the frequency distribution is obtained.

Table 2 Distribution and Percentage of Science Learning Outcomes Scores for Students Before Treatment (Pre-test)

Number	Interval	Categories	Pre-test	
			Frequency	Percentage
1	90-100	Very high	2	8%
2	80-89	High	-	-
3	65-78	Medium	17	68%
4	55-64	Low	4	16%
5	0-54	Very Low	2	8%
	Total		**25**	**100%**

According to Table 2, the pretest results for fifth-grade students' Science learning outcomes show that 8% of students fell into the very low category, 16% fell into the low category, 68% fell into the medium category, 0% fell into the high category, and 8% fell into the very high category. This suggests that the Science learning outcomes, prior to the implementation of the teaching paradigm, are primarily classified as being in the medium group.

Table 3 Descriptive Analysis of Science Learning Mastery Among Students Before Treatment (Pre-test)

Score	Categories	Frequency	Percentage
0-74	Achieved Mastery	18	72%
75-100	Not Achieved Mastery	7	28%
Total		**25**	**100%**

According to Table 3, out of the 25 students who are the study's subjects, 7 (28%) achieved mastery, while 18 (72%) did not achieve individual mastery. This indicates that the fifth-grade students at SD Negeri 6 Jarai have not reached classical mastery, which is achieved when at least 75% of the students in the class have attained the set score.

During the study, there were changes in the students' outcomes after they received treatment (Treatment). These changes, in the form of learning outcomes, were evident after conducting the post-test. From the data gathered the post-test scores of the fifth-grade students at SD Negeri 6 Jarai showed an average score of 83.6. This average score of 83.6 falls within the "good" (mastery) category, with the highest score 100 and the lowest 75. The descriptive analysis of the Science subject for the fifth-grade students at SD Negeri 6 Jarai, based on the pre-test and post-test results, can be seen in the following table:

Table 4. Post-Treatment Science Learning Outcomes Score Statistics for Students (Post-test)

Number	Statistic	Mean	
		Pre-test	Post-test
1	Sample size	25	25
2	Ideal Score	100	100
3	Max	95	100
4	Min	40	65
5	Range	55	35
	Avr	**67**	**83,6**

The frequency distribution is obtained if the student's test results are grouped into a five-category scale.

Table 5 Distribution and Percentage of Science Learning Outcomes Scores for Students After Treatment (Post-test)

Number	Interval	Categories	Pretest	
			Frequency	Percentage
1	90-100	Very high	7	28%
2	80-89	High	12	48%
3	65-78	Medium	6	24%
4	55-64	Low	-	-
5	0-54	Very Low	-	-
	Total		**25**	**100%**

According to Table 5, the post-test results indicate that no fifth-grade children scored in the very low or low categories for science. Out of the total number of pupils,

six students (24%) fall into the medium category, 12 students (48%) fall into the high category, and seven students (28%) go into the extremely high category. This indicates a substantial enhancement in the kids' Science educational achievements.

Table 6 Descriptive Analysis of Science Learning Mastery Among Students After Treatment (Post-test)

Score	Categories	Frequency	Percentage
0-74	Achieved Mastery	4	16%
75-100	Not Achieved Mastery	21	84%
Total		**25**	**100%**

According to Table 6, out of the 25 student subjects of the study, four students (16%) did not achieve mastery, while 21 students (84%) achieved individual mastery. This indicates that the fifth-grade students at SD Negeri 6 Jarai have achieved classical mastery, with 75% of the class reaching or surpassing the set mastery criteria.

In line with the research hypothesis, "Flash Card Learning Media has an influence on the learning outcomes of fifth-grade students in Science at SD Negeri 6 Jarai, Tertap Village, Jarai Subdistrict, Lahat District," the technique used to test this hypothesis is differential statistics utilising the t-test.

The calculation results show that the t-value obtained is 7.06, whereas the t-value from the table is 2.06. This indicates that the computed t-value is more than the table t-value, or 7.06 > 2.06. Thus, it can be inferred that the null hypothesis (H0) is refuted, while the alternative hypothesis (H1) is affirmed. According to these calculations, it can be concluded that the Flash Card Learning Media model has a significant impact on the science learning outcomes of fifth-grade students at SD Negeri 6 Jarai.

Lahat. The research findings indicate a significant change in the students, which can be observed from the pre-test results. Initially, the average learning outcome was 67%, categorised as follows: very low with two students at 8%, low with four students at 16%, medium with 17 students at 68%, high with 0% of the students, and very high with two students at 8%. Before implementing Flash Card learning media, 18 students did not meet the mastery criteria, and seven students achieved mastery, indicating that the student's learning level was moderately below the classical mastery standard of 75%.

After the introduction of Flash Card learning media, the average score in the post-test improved to 83.6, suggesting a significant improvement in learning outcomes compared to before the implementation. Additionally, the category distribution also enhanced with seven students (28%) in the very high category, 12 students (48%) in the high category, and six students (24%) in the medium category, with no students falling into the low and very low categories, which both stood at 0%.

The inferential statistical analysis using the t-test formula shows that the calculated t-value is 7.06, with a degree of freedom (df) of 23 at a significance level of 0.05, where the table t-value is 2.06. Therefore, with t-calculated > t_-able at a significance level of 0.05, the null hypothesis (H0) is rejected, and the alternative hypothesis (Ha) is accepted, confirming that the use of Flash Card learning media has a significant impact.

The engaging learning process facilitated by Flash Card media helped the students focus during lessons, reducing boredom or stress during classroom learning. This enjoyable educational experience enhanced concentration and improved the overall classroom dynamics.

Based on the descriptive and inferential statistical analysis of the observed results, it can be concluded that the Flash Card learning media significantly influences the Science learning outcomes of fifth-grade students at SD Negeri 6 Jarai, Desa Tertap, Kecamatan Jarai, Kabupaten Lahat.

CONCLUSIONS

Based on the research and discussion conducted in class V of SD Negeri 6 Jarai, Desa Tertap, Kecamatan Jarai, Kabupaten Lahat, which examined the use of Flash Card learning media and student learning outcomes, it is concluded that the learning outcomes of class V at SD Negeri 6 Jarai, Desa Tertap, before implementing Flash Card learning media, were categorised as sufficient (low). The average pre-test score was 67 using the test instrument, with categories distributed as very high 8%, high 0%, medium 68%, low 16%, and very low 8%. After implementing the Flash Card learning media, the outcomes were categorised as good (high). The average post-test score was 83.6, with the categories distributed as very high 28%, high 48%, medium 24%, and low 0%. The calculated t-value of 7.06, which is greater than the table t-value of 2.06, indicates that the Flash Card

learning media significantly influenced the Science learning outcomes of the fifth-grade students at SD Negeri 6 Jarai, Desa Tertap, Kecamatan Jarai, Kabupaten Lahat.

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