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THE EFFECT OF THE MNEMONIC LEARNING MODEL ASSISTED BY PICTURE MEDIA ON THE SCIENCE LEARNING OUTCOMES OF FOURTH GRADE STUDENTS

PENGARUH MODEL PEMBELAJARAN MNEMONIK BERBANTUAN MEDIA GAMBAR TERHADAP HASIL BELAJAR SAINS SISWA KELAS EMPAT

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Abstrak

Proses pembelajaran dilaksanakan dengan menggunakan model pembelajaran yang bervariasi, namun hasil belajar siswa masih tergolong rendah. Penelitian ini bertujuan untuk mengetahui pengaruh model pembelajaran mnemonik berbantuan media gambar terhadap hasil belajar siswa kelas IV mata pelajaran IPA di SD IT Maryam Muraith Martapura Kabupaten OKU Timur. Jenis penelitian ini adalah kuantitatif dengan desain quasi eksperimen (post-test only control design). Subjek penelitian adalah siswa kelas IV. Instrumen yang digunakan adalah tes, sedangkan teknik analisis data menggunakan uji-t. Hasil uji normalitas menunjukkan nilai 0,113 dan 0,397 > 0,05 sehingga data berdistribusi normal. Uji homogenitas menghasilkan nilai 0,245 > 0,05 yang berarti data bersifat homogen. Uji hipotesis dengan uji-t sampel independen menunjukkan nilai 0,000 < 0,05 sehingga H0 ditolak dan Ha diterima. Dengan demikian, terdapat pengaruh yang signifikan antara penggunaan model pembelajaran mnemonik berbantuan media gambar terhadap hasil belajar siswa mata pelajaran IPA kelas IV di SD IT Maryam Muraith Martapura, Kabupaten OKU Timur.

Abstract

The learning process is carried out using various learning models, but student learning outcomes are still relatively low. This study aims to determine the effect of the mnemonic learning model assisted by image media on the learning outcomes of fourth-grade science students at SD IT Maryam Muraith Martapura, East OKU Regency. This type of research is quantitative with a quasi-experimental design (post-test only control design). The subjects of the study were fourth-grade students. The instrument used was a test, while the data analysis technique used a t-test. The results of the normality test showed a value of 0.113 and 0.397 > 0.05 so that the data were normally distributed. The homogeneity test produced a value of 0.245 > 0.05 which means the data are homogeneous. Hypothesis testing with an independent sample t-test showed a value of 0.000 < 0.05 so that H0 was rejected and Ha was accepted. Thus, there is a significant influence between the use of the mnemonic learning model assisted by image media on the learning outcomes of fourth-grade science students at SD IT Maryam Muraith Martapura, East OKU Regency.

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INTRODUCTION

A learning model is a framework or pattern designed based on learning principles and theories of knowledge to plan, organize, and implement learning activities so that learning objectives can be achieved effectively. In addition, Joyce and Weil, as cited in Rusman's book Model-Model Pembelajaran, emphasize that a learning model is a plan that can also be used to organize learning materials and implement the learning process in the classroom (Rusman, 2021).

Education plays a crucial role in shaping the nation's future through the improvement of human resource quality. Therefore, every individual needs education to enhance their quality of life. This is in line with the Law of the Republic of Indonesia Number 20 of 2003 concerning the National Education System, Chapter II, Article 3, which states that national education functions to develop capabilities, shape character, and build a dignified civilization. Its purpose is to develop the potential of learners to become individuals who are faithful and devoted to God Almighty, possess noble character, are healthy, knowledgeable, competent, creative, independent, and become democratic and responsible citizens (UURINo.20, 2003).

Primary education serves as the foundation for shaping students' character, skills, and knowledge. The IPAS subject in the Merdeka Curriculum integrates science and social studies to foster conceptual understanding, critical thinking, scientific attitudes, and exploratory skills (Ulva & Fitriyeni, 2025). Educators play an important role in directing and guiding students to ensure that the learning process runs effectively. Therefore, teachers need to prepare and utilize learning media that can greatly support the effectiveness of the learning process in delivering messages and lesson content (Nurfadhillah et al., 2021).

Picture media is one form of visual media that can combine facts and ideas through the presentation of images and text (Baunsele et al., 2023). The use of picture media can enhance students' learning outcomes while also strengthening memory retention, as the visualizations presented make the relationships between concepts more concrete (Sinaga et al., 2023) which emphasizes that the appropriate use of picture media can effectively support the optimal achievement of student learning outcomes.

Based on the results of the preliminary survey, it was found that teachers had already implemented learning models; however, the models used were not well suited to the students' conditions, resulting in low learning outcomes. From the interview results, it was revealed that there were several weaknesses in the science learning process that affected students' achievement. The identified problems include: (1) Low student learning outcomes, particularly in science subjects, (2) Limited use of picture media in learning, (3) Lack of appropriate learning models, (4) Teachers have not yet varied the learning models used, causing students to struggle with long-term retention of the material, and (5) Students being less conducive during the learning process.Therefore, it is necessary to strengthen and adjust the use of a more suitable and engaging mnemonic learning model that aligns with the characteristics of the students.

The use of creative and contextual mnemonic learning models such as abbreviations, acronyms, rhymes, stories, or visualizations is expected to improve students' memory retention of the learning material and make the learning process more enjoyable and meaningful (Darusman & Herwina, 2018). According to Michael Pressley et al., as cited in Miftahul Huda's book, the mnemonic learning model has several syntax or steps that need to be considered in its implementation. First, preparing the material, where students use techniques such as underlining, making lists, and reflecting. Second, developing connections, in which students try to understand the material by linking concepts through techniques such as keywords, substitutes, or connecting words. Third, enhancing sensory imagery,

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by using unique or exaggerated associations to strengthen memory retention. Fourth, recalling, which involves the process of remembering the material until all learning content is fully mastered (Miftahul, 2017). By improving the learning conditions, it is expected that students' learning outcomes can be significantly enhanced. The science learning outcomes at SD IT Maryam Muraith are still considered low.

The preliminary research results show that most fourth-grade students at SD IT Maryam Muraith have not yet achieved the Learning Objectives Achievement Criteria (KKTP) for Science, which is set at 74. Out of a total of 43 students, 30 scored below the passing standard, while only 13 students met or exceeded the KKTP. This condition indicates that there are still obstacles in understanding science material; therefore, a more effective learning model is needed to improve students' learning outcomes.

One effort to enhance students' science learning outcomes is by using a variety of learning models. Such models can help store the material in long-term memory (Darusman & Herwina, 2018). This mnemonic model can enhance students' ability to visualize the problems they encounter by identifying key objects, word pairs, and images through positive suggestions provided by the teacher. By taking into account the students' cognitive ability levels, the implementation of the mnemonic learning model can serve as an effective alternative to improve students' learning outcomes (Juniah & Zinnurain, 2019).

The Mnemonic Model is a learning model designed to help students more easily remember information they receive by using cues or associations to aid in memorizing knowledge, making the learning process easier and more effective. There are several benefits of learning through the mnemonic model, including making it easier to remember, facilitating learning, supporting learning programs, and increasing motivation. The explanations of these benefits are as follows: Easier to Remember: It helps students recall learning material more easily and enables them to remember information more quickly, accurately, and for a longer period of time, Easier Learning Process: It automatically encourages students to become more interested in learning, as they are trained to create stories, imagine, use rhythm and imagery, allowing them to maximize study time and reach their learning goals more efficiently, Supports Learning Programs: It supports engaging learning programs that can and should be practiced in the classroom, making students feel happy and comfortable during the learning process, Increases Motivation: It enhances students' motivation to study harder, which helps them achieve optimal learning outcomes and ultimately overcome learning difficulties (Darusman & Herwina, 2018).

This study is in line with the research conducted by Destriani, Fadhilah Triastuti Nawir, and Cikal Yayang Kara, titled "The Application of the Mnemonic Memorization Technique to Improve the Memory Ability of Psychology Students at Makassar State University." The study showed that the mnemonic technique, particularly the acronym method, had a significant effect on memory ability. The hypothesis test results obtained a sig. (2-tailed) value of 0,000 ($p < 0,05$), indicating that the application of the mnemonic technique was effective in improving students' memory retention. Therefore, the acronym technique can be used as a strategy to help individuals better understand and remember concepts (Destriani et al., 2024).

Based on these various problems, this study aims to determine the effect of the mnemonic learning model assisted by picture media on the learning outcomes of fourth-grade students in the Science subject at SD IT Maryam Muraith Martapura, Oku Timur Regency. The use of this model is expected to improve students' learning outcomes.

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METHOD

This study employed a quantitative approach with a Quasi-Experimental Design. The experimental design used was the post-test only control design (Abraham & Supriyati, 2022). In this study, the sample was selected using the probability sampling technique. The researcher selected two groups as samples, with one class serving as the experimental group and the other as the control group. The samples obtained through probability sampling were class IVA and class IVB. Class IVA served as the control group, which used the learning model applied by the teacher, while class IVB served as the experimental group, which used the mnemonic learning model. The instrument used in this study was a test consisting of multiple-choice questions. Before being administered, the test instrument was first examined for validity, reliability, difficulty level, and discrimination power to ensure data reliability. The prerequisite tests for analysis included the normality test and homogeneity test, while the hypothesis was tested using the t-test.

RESULTS AND DISCUSSION

Results

This research was conducted at SD IT Maryam Muraith and aimed to examine the effect of the mnemonic learning model assisted by picture media on students' science learning outcomes. The study involved two classes with different treatments: Class IVA served as the control group, which used the Auditory Intellectually Repetition (AIR) learning model assisted by picture media, while Class IVB served as the experimental group, which implemented the mnemonic learning model assisted by picture media. The material on the five senses was taught over five meetings in each class. A post-test was administered after the learning sessions. Students' learning outcomes were assessed based on the average test scores, using multiple-choice questions in the post-test. The post-test results are presented as follows.

Table 1. Analysis Results

Group	N	Minimum	Maxsimum	Mean	Std. Deviation
Experimen Class	28	65	95	79,64	8.270
Control Class	15	45	80	61,33	10.933

Based on the data in Table 1 above, the average post-test score of the experimental class was 79,64, which was higher than the post-test score of the control class, which was 61,33. The post-test results indicate that the mnemonic learning model assisted by picture media had a positive effect on students' learning outcomes in the science subject at SD IT Maryam Muraith compared to the Auditory Intellectually Repetition (AIR) learning model assisted by picture media. The AIR model assisted by picture media showed lower results, while the mnemonic learning model assisted by picture media produced higher learning outcomes.

Prerequisite Test Results

1) Normality Test

The normality test was conducted to ensure that the collected data were normally distributed. The data are considered normally distributed if the obtained significance value (sig.) is greater than 0,05. The results of the normality test for the fourth-grade students' science learning outcomes are presented in Table 2.

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Table 2. Test Of Normality

Class	Kolmogorov-Smirnov[a]			Shapiro-Wilk		
	Statistic	df	Sig.	Statistic	df	Sig.
Post Test Class Eksperimen	.117	28	.025	.940	28	.113
Post Test Class Control	.132	15	.200*	.941	15	.397

Based on the results in Table 2 above, the Shapiro–Wilk significance values obtained for the control and experimental classes were 0,397 and 0,113, respectively. Both values are greater than 0,05, indicating that the data from the control and experimental classes are normally distributed.

2) Homogeneity Test

The homogeneity test was conducted to determine whether the data variance was uniform (homogeneous) or varied (non-homogeneous). The data are considered homogeneous if the obtained significance value (sig.) is greater than 0,05. The results of the homogeneity test for the fourth-grade students' science learning outcomes are presented in Table 3.

Table 3. Test Of Homogeneity

Test of Homogeneity of Variances

		Levene Statistic	df1	df2	Sig.
Result	Based on Mean	1.414	1	41	.241
	Based on Median	1.249	1	41	.270
	Based on Median and with adjusted df	1.249	1	36.615	.271
	Based on trimmed mean	1.389	1	41	.245

Based on the data in Table 3, the homogeneity test produced a significance value of 0,241, which is greater than 0,05. Therefore, it can be concluded that the learning outcome data of the fourth-grade students in the science subject at SD IT Maryam Muraith Martapura are homogeneous, as supported by the sig. (2-tailed) value of 0,241 > 0,05.

3) Hypothesis Test

In this hypothesis test, an Independent Sample T-Test was used. The T-test aims to determine whether the independent variable has an effect on the dependent variable. The results of the T-test on the fourth-grade students' science learning outcomes are presented in Table 4.

Tabel 4. Independent Sample T Test

Independent Sample Test

		Levene's Test for Equality of Variances		t-test for Equality of Means					
		f	Sig.	t	df	Sig(2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference
									Lower Upper
Score	Equal variances assumed	1.414	.241	6.176	41	.000	18.310	2.965	12.322 24.297

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	Equal variances not assumed	5.675	22.788	.000	18.310	3.227	11.631	24.988

Based on the data presented in Table 4, the obtained significance value (sig.) was 0,000, which is smaller than the probability value of 0,05. Therefore, it can be concluded that H_0 is rejected and H_a is accepted. This indicates that there is an effect of the mnemonic learning model assisted by picture media (X) on learning outcomes (Y). The improvement in students' learning outcomes can be seen more clearly in the graph below:

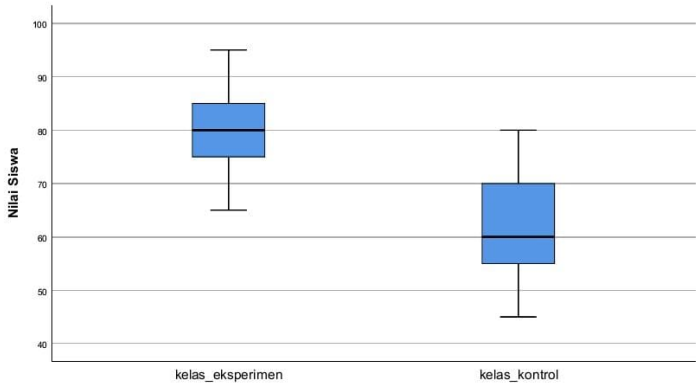

Figure 1. Graph of the Improvement in Fourth-Grade Students' Learning Outcomes

Discussion

The results of the study show that the average learning outcome score of the experimental class 79,64 was higher than that of the control class 61,33. The t-test also showed a significance value of 0,000 < 0,05, which means that there is a significant effect of applying the mnemonic learning model assisted by picture media on the science learning outcomes of fourth-grade students. These findings reinforce the view that the mnemonic learning model is effective in improving students' memory retention because it helps them connect new information through easily understood visual representations. The study by Atimi, Ogbeba, and Achor (Atimi et al., 2023) also showed that mnemonic methods significantly enhance students' retention and learning outcomes in biology, thereby supporting the results of this research..

These results are consistent with the findings of the study conducted by Destriani, Nawir, and Kara (Destriani et al., 2024), which showed that the acronym method had a significant effect on the memory ability of psychology students at Makassar State University, demonstrating that mnemonic techniques help students remember learning information more easily. Similarly, research conducted by Jacky Lou M. et al. (Lanaban et al., 2025) revealed that the application of the mnemonic keyword method in elementary science learning significantly improved students' learning achievement compared to the control class. This aligns with the present study, as both utilized mnemonic approaches to strengthen students' long-term memory. Furthermore, a systematic review by Fung and Oyibo (Fung & Oyibo, 2024) stated that the use of serious games with mnemonic techniques yielded positive effects on retention and learning outcomes in the majority of studies 9 out of 12 reviewed. This evidence reinforces that mnemonic strategies, especially when combined with visualization, are effective across various educational levels. Most previous mnemonic studies have focused on language-related fields such as vocabulary and foreign characters or on specific areas of

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science like biology. The novelty of this research lies in the combination of mnemonic techniques assisted by picture media, which provides practical contributions for elementary school teachers, as this learning model not only relies on verbal strategies but also strengthens students' visual understanding. Therefore, this study confirms that mnemonic learning assisted by picture media is effective in improving students' learning outcomes in science subjects IPAS and enriches the existing literature with new empirical evidence at the elementary school level.

CONCLUSION AND RECOMMENDATIONS

Conclusion

Based on the research conducted at SD IT Maryam Muraith Martapura, OKU Timur Regency, the data analysis and discussion results indicate that there is a significant effect of the mnemonic learning model assisted by picture media on science (IPAS) learning about the five senses among fourth-grade students at SD IT Maryam Muraith Martapura. This conclusion is supported by the results of the t-test, which showed a posttest significance value of 0.000 < 0.05, meaning that H1 is accepted. Therefore, it can be concluded that the mnemonic learning model assisted by picture media has a significant effect on the learning outcomes of fourth-grade students in the science (IPAS) subject at SD IT Maryam Muraith Martapura, OKU Timur Regency.

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