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The Effect of Visual, Auditory, Kinestic Learning Styles on Student Learning Outcomes in Science Subjects

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ABSTRACT

This study was conducted with the aim to evaluate and determine the effect of visual, auditory, kinesthetic learning styles on student learning outcomes in science learning at SD Negeri 244 Palembang. This study is a quantitative research that uses an experimental method with a type of Quasi-Experimental experimental design. The variables to be studied consisted of visual, auditory, kinesthetic learning styles (X), and student learning outcomes which became the dependent variable (Y). All students in grades I - VI of SD Negeri 244 Palembang are the research population and there are 40 students who are the samples in this study. Information collection methods applied questionnaires and documentation. Questionnaire was used as a tool to identify visual, auditory, and kinesthetic learning styles. Based on the results of the t test with a significance level of 0.000 which is lower than the t table value of 2.023, it can be concluded that there is a significant effect of visual, auditory, kinesthetic learning styles on student learning outcomes in science learning at SD Negeri 244 Palembang.

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INTRODUCTION

Learning is a process that is well organized, implemented, and evaluated to ensure that students achieve the desired learning objectives (Damayanti & Ina, 2021). Thobroni (Panggabean, dkk., 2021, p. 3) learning is a process by which individuals is taught and expected to become more knowledgeable and skillful. In an interesting learning process, the use of different media, models, and learning strategies will make the classroom atmosphere more fun and animated. In addition, a calm, comfortable, and bright atmosphere also needs to be considered in supporting the learning process. Learning that occurs in a school is the core of the learning process activities and is carried out through communication and message delivery.

learning is a process by which individuals carries out activities with the aim of teaching and changing the person who is learning (Arni, et al.,2022) To make learning more interesting, different media, models and learning strategies can be used to make the classroom atmosphere more exciting and dynamic. In addition, for learning to be effective, a calming, comfortable and bright environment must also be presented. The lessons given at school are the most important thing in the teaching and learning process and it happens when there is interaction and delivery of information.

Students are often said to be lazy learners due to the difficulty of the learning process. Students' psychological state can be negatively affected by learning difficulties, which can affect self-concept, self-esteem and motivation in the learning process. When a person has a negative view of themselves, motivation to learn decreases and opportunities to overcome learning difficulties are minimal. This situation exposes children to an unfavorable future, such as depression, discontinuation of education and long-term mental disorders. Therefore, this shows how important it is for teachers to understand how students learn (Abdurrahman & Asriana, 2021).

The results of an interview with a teacher at SD Negeri 244 Palembang showed that the learning process at the school was still not optimal. This can be observed from student behavior where when the teacher teaches, some students are not focused, some are seen taking notes on the blackboard but cannot answer the teacher's questions when asked, there are students who do not pay much attention to the teacher's explanation but can complete the task well, and some other students seem less focused and easily bored during learning so that the classroom atmosphere becomes inactive. In addition, the lack of learning media causes teachers to tend to use teaching methods in the form of lectures and question and answer. The result is a lack of interest and enthusiasm for learning from students, and some students face difficulties in adjusting their learning styles to the teaching methods used by teachers.

Based on the description above, to deal with learning difficulties experienced by students, there is a solution, namely by applying visual, auditory, and kinesthetic learning styles during the teaching and learning process. Learning style is a stage of activity, understanding, and preference of a student in understanding or achieving knowledge with a unique approach. The importance of meaningful learning comes not from pressure, but from self-drive. Students who are often forced to learn with unsuitable and unfavorable methods may experience disruptions in their learning process especially when trying to concentrate on absorbing the information provided (Wahyuni, 2017).

Learning style refers to an individual's tendency to adapt specific learning strategies through experimentation and exploration. This method shows the difference between one student and another. The key to success for a student in learning and overcoming learning difficulties is to find a suitable learning style. In the learning process, it is crucial that students to get help and assistance in recognizing the learning style that suits them. This will enable the achievement of learning objectives to occur effectively. The task of a professional teacher is to understand the individual traits of students, recognize differences in their potential, recognize variations in learning styles and respect the uniqueness and integrity of each student. According to Nasution, learning styles include the methods used by a student routinely to understand information, remember it, think logically, and solve problems. Identifying students' learning styles will allow them to recognize their individual strengths and limitations as well as their learning process. Teachers can integrate learning methods in their classrooms by understanding the learning preferences of each student, matching teaching styles with appropriate learning styles, emphasizing the understanding of less developed learning styles through simpler tasks, and teaching students to choose appropriate learning strategies.

There are various factors that can affect learners' academic achievement, and one of them is learning activities. If the lesson is adapted to the learning style of the child or student, understanding the lesson will become easier. In schools, there are many teachers who teach with a monotonous learning style. They do not understand the learning styles of their students, which can have an impact on their academic performance (Supit et al., 2023). According to DePorter (Wahyuni, 2017), there are three distinct groups of learning styles. First, visual learning styles that rely on vision as a source of information, are not distracted by noise, and prefer to read diligently. Second, the auditory learning style that prioritizes hearing, reads out loud so that it can be heard, and tends to prefer discussions. Third, kinesthetic learning style that involves body movements such as speaking slowly, memorizing while walking and seeing, uncomfortable to sit for a long time, and prefer to move the body (Astuti et al., 2023).

Based on previous relevant research. First Nurohmah, Yudhie & Yuli (2022) stated that there is “a positive and significant influence between learning styles on mathematics learning outcomes in grade V students of Sukaharja 01 State Elementary School, Cijeruk District, Bogor Regency Odd Semester 2021/2022” with the result that a positive relationship between learning styles and mathematics learning outcomes can be observed through a comparison of the tcount value (2.996) which is greater than the t table (2.131). This shows that

learning style has a positive influence in influencing math learning performance in fifth grade students at Sukaharja 01 State Elementary School. In addition, it can be seen from the regression equation Ŷ=1.7934 + 0.102 (x), which means that every one unit increase in the learning style variable will result in an increase of 0.102 units in math learning outcomes. A person's courage can be measured by the extent to which they try to overcome obstacles and face their fears.

Second Putri, et al (2020) stated that there is "an influence of learning styles on elementary school student learning" with the results that first, students' learning styles have three types of learning styles in general, namely visual, auditory and kinesthetic. Second, how to find out the learning style that students have can be by observation or conducting a survey or learning style test. Third, strategies to facilitate the learning process according to the learning style can be done by using visual materials such as pictures, encouraging students to read the material aloud, and inviting children to learn while exploring the environment.

And Falah (2019) states that there is "an effect of learning styles and students' interest in learning mathematics on student math learning outcomes" with the results The constant coefficient, learning style regression, and learning interest regression are positive, stating that if learning styles and learning interests increase, then learning outcomes tend to increase. Conversely, if learning styles decrease, then learning outcomes tend to decrease.

Based on the introduction that has been conveyed earlier, the researcher feels interested in conducting a study entitled: "The Effect of Visual, Auditory, Kinestic Learning Styles on Student Learning Outcomes in Science Learning at SD Negeri 244 Palembang".

RESEARCH METHODE

This research is a quantitative type study conducted through an experimental method approach. This study involved students of SD Negeri 244 Palembang, using a population and sample of 40 students. The experimental research method is a method used to understand the impact of intentional treatment. This study involved one class, the experimental class. The experimental class used a learning approach through visual, auditory, and kinesthetic. The data collection method that has been used is a questionnaire form containing questions (questionnaires) and documentation. In obtaining data using a questionnaire sheet containing questions about learning styles. Documentation is a method to obtain data directly at the research site. Documents refer to events that have already occurred which can be in the form of notes, illustrations, or individual works. In this study, the documentation

media used were images in the form of photographs taken while conducting research at SD Negeri 244 Palembang.

Instrument validation techniques are content validity, construct validity and reliability. According to Sugiyono, validity is the use of a measuring device to evaluate what you want to measure and validation has been carried out at SD Negeri 244 Palembang, namely with 40 respondents with the results of 9 valid questionnaires and 3 invalid questionnaires. To determine whether a question is valid or not, it can be done by comparing the calculated r value with the r value contained in the table. If the calculated r value exceeds the t table value, the question is considered valid. However, if the calculated r value is smaller than the t table value, then the question is considered invalid, while reliability can be measured by looking at the consistency of the measurement results which are always the same when repeated. Reliability is used to ensure that test measurements remain consistent and reliable, even when the test is taken in different situations. In general, in the data analysis method, a normality test is used to determine whether the data that has been collected has a normal distribution pattern or not. In addition, a homogeneity test is also carried out to determine whether the data has the same level of uniformity or not, and a hypothesis test to see whether this research has an influence or not.

RESULT AND DISCUSSION

The research was conducted at SD Negeri 244 Palembang, which is located on Col. Sulaiman Amin Street, Karya Baru, Alang-Alang Lebar Sub-district, Palembang City, South Sumatra Province. South Sumatra. This study aims to determine the effect of visual, auditory, kinestic learning styles on student learning outcomes in science learning at SD Negeri 244 Palembang. The data used is a questionnaire sheet (questionnaire) with valid results totaling 9 questions that have been validated by lecturers and teachers and have been tested. The data obtained is processed with the help of IBM SPSS Statistics version 25. The following are the validity results using the Pearson Product Moment test:

Table 1.
Validity Test

Number	r Count	r Table	Description
1	0.518	0.4227	Valid
2	0.580	0.4227	Valid
3	0.461	0.4227	Valid
4	-0.099	0.4227	Invalid
5	0.674	0.4227	Valid

6	0.403	0.4227	Invalid
7	0.557	0.4227	Valid
8	0.704	0.4227	Valid
9	0.692	0.4227	Valid
10	0.500	0.4227	Valid
11	0.738	0.4227	Valid
12	0.156	0.4227	Invalid
13	0.224	0.4227	Invalid

Based on the above data that has been carried out at SD Negeri 244 Palembang using 22 respondents as a questionnaire test, 9 questionnaires with valid results and 4 questionnaires with invalid results were obtained. Then the following are the results of the reliability test that has been tested with the help of IBM SPSS Statistics version 25:

Table 2.
Reliability Test

Correlation Value	r Table	Description	Conclusion
0.787	0. 4227	r count > r table	Reliable Instrument

When testing reliability, the instrument will be considered reliable if the Cronbach's Alpha value exceeds 0.6. However, if the Alpha Cronbach value is less than 0.6, then the instrument is considered unreliable. In the reliability test that has been carried out, the Cronbach Alpha value is 0.787 which exceeds 0.6. meaning that the questionnaire sheet (questionnaire) is declared reliable.

The following are student learning outcomes using visual, auditory, and kinesthetic learning styles:

Table 3.
Normality Test

Class	Statistic	df	Sig. Value	Description
Experiment	0.162	20	0.181	Normally Berdistributed

To find out whether the data has a normal distribution or not, a normality test is performed. If the α value for significance is greater than 0.05 or 5%, then the conclusion can be drawn that the normality test indicates that the data follows a normal distribution (Amalia et al., 2023). And when the normality test

is carried out, a significant value of 0.181 is obtained, whose value is greater than 0.05. meaning that the normality test can be declared normal.

Table 4.
Homogeneity Test

Test of Homogeneity of Variance					
		Levene Statistic	df1	df2	Sig.
Learning Outcome	Based on Mean	.037	1	39	.849
	Based on Median	.001	1	39	.982
	Based on Median and with adjusted df	.001	1	38.325	.982
	Based on trimmed mean	.006	1	39	.939

Homogeneity testing is carried out to obtain information about the similarity of data variants. If the significance level α is more than 0.05 (5%), then the homogeneity test can be considered homogeneous (Amalia et al., 2023). When homogeneity testing is carried out, a significant level of 0.849 is obtained which is greater than 0.05. meaning that the homogeneity test can be declared homogeneous.

Table 5.
Hypothesis Test

Group Statistics					
	Class	N	Mean	Std. Deviation	Std. Error Mean
Learning Outcome	Experiment	20	88.8889	11.07597	2.47666

Table 6.
One Sample t-Test

		Levene's Test for Equality of Variances		t-test for Equality of Means						
									95% Confidence Interval of the Difference	
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	Lower	Upper
Learning Outcome	Equal variances assumed	.037	.849	4.038	39	.000	13.65079	3.38059	6.81290	20.48869

Equal variances not assumed	4.033	38.639	.000	13.65079	3.38454	6.80288	20.49871

Hypothesis testing uses the t test (parametric statistical test) with the One Sample t-Test type. If the significance value in the t test exceeds 0.05, the null hypothesis will be accepted while the alternative hypothesis will be rejected. However, if the significance value is less than 0.05, the null hypothesis will be rejected and the alternative hypothesis will be accepted. in the table shows the significance value. The significance level (2-tailed) of 0.000 is less than 0.05, so it can be concluded that it rejects the null hypothesis (Ho) and accepts the alternative hypothesis (Ha). From the results of the study it can be seen that when testing normality obtained a significant value of 0.181 which is greater than 0.05 (5%). Then when testing homogeneity, a significant value of 0.849 is also greater than the significant level of 0.05 (5%), finally when testing the hypothesis, a significant value of 0.000 is obtained which has a value smaller than 0.05 with the result that there is an "effect of visual, auditory, kinestic learning styles on student learning outcomes in science learning at SD Negeri 244 Palembang".

Research has been carried out precisely at SD Negeri 244 Palembang with the aim of knowing and understanding the effect of visual, auditory, kinesthetic learning styles on student learning outcomes in science learning. The research was conducted for three meetings by applying visual, auditory, and kinesthetic learning styles in the experimental class. Students fill out a questionnaire (questionnaire) that researchers prepare to see students' learning styles.

Learning styles can overcome student learning outcomes. Students who learn according to their learning style are likely to have more positive learning outcomes than those who do not match their learning style. Using only one method suitable for one learning style can have a negative impact on the teaching and learning process. The impacts include decreased student motivation, low participation in learning activities, and effects on student learning outcomes (Widharyanto, 2017). The relationship between the way a person learns and the learning process makes learning style a significant element in achieving optimal learning outcomes. Knowledge of learners' learning preferences can be used to recognize learners' interests (Sumarah & dkk., 2023).

For teachers who have knowledge of students' learning styles, they can accommodate the learning needs of each student by structuring learning

according to their chosen learning style (Wiedarti, 2018). The utilization of learning styles also plays a role in designing appropriate learning activities. Teachers use their attention to determine the most optimal, productive and efficient learning style. This shows how important it is for teachers to understand learning styles in order to design learning well and use various supporting media available. Teachers need to apply visual and audio aspects consistently in the learning process. In designing learning media, teachers need to organize or use sound elements, such as podcasts, and use visual elements, such as stories with pictures or educational comics (Sumarah & dkk., 2023).

The results of this study are supported by previous research, namely first Falah & Fatimah (2019) in this study have differences in variable X, namely learning styles and learning interests, learning mathematics, and at the junior high school level. Research by Astuti et al., (2023) differences in math learning and. While in research (Nurnaifah et al., 2022) has differences in mathematics learning. While in this study student learning outcomes, while in previous studies had variable X visual, auditory, and kinesthetic learning styles and took science.

Based on the study findings, there is a significant difference between student learning outcomes in science learning carried out at SD Negeri 244 Palembang, by applying visual, auditory, kinestic learning styles can contribute to student learning outcomes in science learning at SD Negeri 244 Palembang.

CONCLUSION

Based on data analysis and hypothesis testing that has been done, it can be concluded that science learning at SD Negeri 244 Palembang is influenced by visual, auditory, and kinesthetic learning styles, which affect student learning outcomes. This evidence is found in the t-test analysis which shows a significant value. At a significance level of 0.05, the results of this test show that the p value (2-tailed) is 0.000, which is smaller than the significance limit value. Therefore, the null hypothesis (Ho) is rejected and the alternative hypothesis (Ha) is accepted. Furthermore, the calculated t value is 4.038 while the t table value is 2.023. So it can be stated that with a calculated t value of 4.038 which is greater than the t table value of 2.023, it can be concluded that the alternative hypothesis is accepted and the null hypothesis is rejected.

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