

The Influence of Guided Inquiry, Discovery Learning Models and Learning Styles on Learning Outcomes

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ABSTRACT

This study was conducted with three objectives, namely: 1) to determine the difference in the influence of guided inquiry learning model and discovery model on student's learning outcomes in science subjects on the human excretory system in class VIII of SMP Negeri 1 Kualuh Selatan ; 2) to determine the difference in the influence of visual, auditory, and kinesthetic learning styles on student's learning outcomes in science subjects on the human excretory system in class VIII of SMP Negeri 1 Kualuh Selatan ; and 3) to determine the interaction between the two learning models and learning styles in influencing student's learning outcomes in science subjects on the human excretory system in class VIII of SMP Negeri 1 Kualuh Selatan. The approach used in this study was a quantitative approach with a nonequivalent pretest-posttest group design with a 2x3 factorial treatment level. The research sample consisted of all students in class VIII₁, totaling 28 students, and class VIII₄, totaling 30 students, with the sampling technique using Cluster Random Sampling. The results of the study indicate that, firstly, students who were taught using the guided inquiry learning model performed better or excelled compared to students taught using the discovery learning model. Secondly, students who were taught using the visual learning style performed better or excelled compared to students taught using the auditory or kinesthetic learning styles. Thirdly, there is an interaction between the two learning models and learning styles on students' learning outcomes in science subjects on the human excretory system.

KEYWORDS

learning model; guided inquiry; discovery model; learning style; learning outcomes.

INTRODUCTION

The learning outcomes of science students in Indonesia currently need to be improved. The fact shows that the science learning outcomes in Indonesia are currently categorized as low, according to the Programme for International Student Assessment (PISA) study. The PISA results from 2000 to 2018 indicate that Indonesia has a low ranking in science literacy, with a score of 403, which is below the average science score determined by the OECD, which is 493 (OECD, 2018). These results indicate that the quality of science education in Indonesia needs to be developed in order to improve science achievement among students.

One of the topics covered in science education is the human excretory system. According to the 2013 Curriculum in Indonesia, the main competency of the excretory system is included in the Basic Competence (Code 3.9.), which involves analyzing the interrelationship between the organ structures in the excretory system and their connection to the excretory processes in the human body. This is done to explain the possible

mechanisms and functions that occur in the human excretory system through literature study, observation, experimentation, and simulation. The indicators for this basic competence include explaining the functions of the excretory system, identifying the organs of the human excretory system, analyzing the relationship between the structure of nephron tissue in the kidneys and its bioprocesses, analyzing the relationship between the structure of liver tissue and its bioprocesses and functions, analyzing the interconnection between the structure of lung tissue and its biochemical processes, analyzing the interconnection between the structure of skin tissue and its biochemical processes, as well as analyzing abnormalities or disorders in the excretory system (Ristanto et al., 2021).

The reality faced is that students experience difficulties in analyzing the excretory system skills (Djamahar et al., 2020; Ristanto et al., 2020). The excretory system is abstract and complex, thus requiring a learning model that can visualize the excretory processes and enable students to understand the subject matter well (Panjaitan et al., 2021). The difficulties students face in learning about the human excretory system should align with constructivist learning theory. The challenges students encounter in learning about the human excretory system need to be addressed using constructivist learning theory, which will aid students in understanding the subject matter effectively. Constructivism is a significant learning approach used by teachers to assist students in acquiring knowledge. Constructivism is based on the idea that individuals actively construct or build their knowledge, and that reality is influenced by the role of the student as a learner (Miller, 2005).

Constructivist learning enables students to develop knowledge about the human excretory system through various activities. Experiences are built upon prior knowledge, and group discussions and activities foster the development of social skills in a collaborative setting. Students are tasked with reading materials, independently solving problems through text analysis, enhancing cooperation and motivation for achievement, and improving their mastery of concepts (Djamahar et al., 2020).

Rooted in constructivist learning theory, student's learning outcomes on the topic of the human excretory system can be enhanced through appropriate learning models and styles (Miller, 2005). Several previous studies have examined the relationship between learning models and learning outcomes. For example, a study by Sukariasih et al. (2019) found that the implementation of guided inquiry learning assisted by an IPA kit can improve students' knowledge and inquiry skills in Class VIII of SMP Negeri 14 Kendari in the topic of light in the atmosphere. Another study by Saputra et al. (2020) revealed that guided inquiry learning model had a significant impact on improving science learning outcomes. Similarly, Mulyana et al. (2018) found that guided inquiry learning had a significant influence on students' learning outcomes, scientific performance, and there was an interaction between guided inquiry learning model and scientific performance on learning outcomes in the excretory system topic. The findings of Sari et al. (2022) showed that the use of free inquiry learning model significantly improved students' learning outcomes in the subject of motion.

Research conducted by Ariati & Yurnetti (2022); Irawan et al. (2019) found that the discovery learning model had a significant impact on improving the learning outcomes of junior high school students. A study by Anggraini et al. (2018) also showed differences in learning outcomes between students taught with the discovery learning model and conventional methods. However, conflicting results were found by Walo & Rahmawati (2021) who reported that the discovery learning model did not have a significant effect on learning outcomes.

Several studies have also linked learning styles to students' learning outcomes. For example, a study by Suciani et al. (2022) found that learning styles had a significant influence on students' learning outcomes. Munir (2021) also found a significant impact of

visual, auditory, and kinesthetic learning styles on learning outcomes. The research by Ha (2021) explained that different learning styles, when accompanied by appropriate instructional arrangements, can greatly contribute to students' academic achievement. A study by Yanuar et al. (2022) confirmed that students with an auditory learning style achieved moderate learning outcomes, while students with a kinesthetic learning style had the lowest learning outcomes. However, contradictory results were found by Adawiyah et al. (2020), who reported no significant differences in science learning outcomes among students with visual, auditory, and kinesthetic learning styles.

Previous research has also examined the relationship between learning models and learning styles on learning outcomes. For example, a study by Yuwanita et al. (2020) found that students' learning outcomes exposed to the expository learning model were higher compared to those taught conventionally. There was an interaction effect between the learning model and visual learning style. The learning outcomes of students with a high visual learning style who were exposed to the expository learning model were higher compared to those taught conventionally. However, the learning outcomes of students with a low visual learning style who were exposed to the expository learning model were lower compared to those taught conventionally.

Based on the above-mentioned research and the existing research gap, this study aims to re-examine the influence of guided inquiry and discovery learning models, as well as learning styles, on science learning outcomes in junior high school students. In contrast to previous studies, this research will use guided inquiry and discovery learning models as treatment variables, and visual, auditory, and kinesthetic learning styles as attribute variables.

The guided inquiry learning model provides opportunities for students to learn by discovering facts, concepts, and principles through their own direct experiences. Thus, students are not only learning by reading and memorizing subject matter but also have the opportunity to practice developing their thinking and scientific attitudes. This allows for a process of knowledge construction, enabling students to enhance their understanding of the material being studied. Guided inquiry is a type of inquiry that focuses on planning and guidance, starting from the teacher, to enhance students' life skills (Kuhlthau, 2007). In guided inquiry learning, the teacher's role is as a facilitator for students to independently discover their own ideas to be learned and developed in-depth. In guided inquiry learning, the teacher monitors class ideas and when students develop their ideas (Mulyana et al., 2018). On the other hand, discovery learning is a model that emphasizes active student engagement through self-discovery and investigation. The outcomes obtained through discovery learning are more likely to be retained in students' memories and are less likely to be forgotten (Susman, 2015).

Another difference is the focus of the research on the topic of the human excretory system with the research object being Class VIII of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023. The learning outcomes of students at SMP Negeri 1 Kualuh Selatan on the topic of the human excretory system still need improvement. Therefore, the solution to address this problem is to analyze the determining factors through appropriate learning models and learning styles to achieve optimal learning outcomes.

Based on the overall explanation above, this article is written with three main objectives: 1) to determine the difference in the influence of guided inquiry learning model and discovery model on students' learning outcomes in science on the topic of the human excretory system in Class VIII of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023; 2) to determine the difference in the influence of visual, auditory, and kinesthetic learning styles on students' learning outcomes in science on the topic of the human excretory

system in Class VIII of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023; and 3) to determine the interaction between the two learning models and learning styles in influencing students' learning outcomes in science on the topic of the human excretory system in Class VIII of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023. Theoretically, this research is expected to contribute to knowledge and insights in the field of constructivist learning theory, particularly regarding the influence of guided inquiry and discovery learning models and learning styles on students' learning outcomes. Practically, the research findings are expected to contribute to schools in formulating policies and providing full facilities to implement the appropriate learning models that align with students' characteristics.

RESEARCH METHODS

This research utilizes a quasi-experimental design with a quantitative approach. The research design is a nonequivalent pretest-posttest group design with a 2x3 factorial treatment level. The study was conducted at SMP Negeri 1 Kualuh Selatan, Sidua-dua Village, Kualuh Selatan Sub-district, North Labuhanbatu Regency, North Sumatra Province, Indonesia. The population of the study consists of all eighth-grade students of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023, totaling 121 students, divided into four classes: VIII-1 (29 students), VIII-2 (32 students), VIII-3 (31 students), and VIII-4 (29 students). The research sample consists of all students from class VIII-1 (29 students) and class VIII-4 (29 students), using the Cluster Random Sampling technique.

The variables analyzed in this research consist of five independent variables and one dependent variable. The independent variables include Guided Inquiry Learning Model, Discovery Learning Model, Visual Learning Style, Auditory Learning Style, and Kinesthetic Learning Style, while the dependent variable is Learning Outcomes. The instrument used to measure students' learning outcomes is a multiple-choice test consisting of 30 items. This test is used to assess students' cognitive abilities (C1-C6) in science subjects, specifically on the topic of the human excretory system. The instrument used to measure learning styles in this research is the VAK Learning Styles Questionnaire. The questionnaire consists of 30 statements, and students are asked to choose one of the three options to complete it. If a student chooses option A, it indicates a visual learning style; if they choose option B, it indicates an auditory learning style, and if they choose option C, it indicates a kinesthetic learning style.

The data obtained in the research will be analyzed using inferential analysis. The inferential analysis used is hypothesis testing, specifically using a two-way ANOVA (2x3 factorial design) with a significance level of 0.05. Prior to that, the normality and homogeneity tests will be conducted using SPSS version 25. The two-way ANOVA test is used to test the three research hypotheses:

- H₁: There is a difference in the influence of the guided inquiry learning model and the discovery learning model on students' learning outcomes in science on the topic of the human excretory system in Class VIII of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023 (formulated as $\mu_A \neq \mu_B$).
- H₂: There is a difference in the influence of visual, auditory, and kinesthetic learning styles on students' learning outcomes in science on the topic of the human excretory system in Class VIII of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023 (formulated as $\mu_{B1} \neq \mu_{B2} \neq \mu_{B3}$).
- H₃: There is an interaction between the two learning models and learning styles in influencing students' learning outcomes in science on the topic of the human excretory

system in Class VIII of SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023 (formulated as $A \neq B \neq 0$).

RESULTS AND DISCUSSION

The data analysis requirements in this study include testing for normality and homogeneity. The normality test is conducted using the Liliefors test. In the normality test using the Liliefors formula, it can be determined whether the data follows a normal distribution or not by comparing the obtained L_o value with the critical value, L_t . According to the criteria, if $L_o < L_t$, then the data is normally distributed. Additionally, if the two-tailed significance value is less than 0.05, then the null hypothesis (H_0) is rejected, and the alternative hypothesis (H_a) is accepted. Conversely, if the two-tailed significance value is greater than H_0 , the null hypothesis is accepted, and H_a is rejected.

The results of the normality test using the Liliefors formula can be seen in Tables 1 below:

Table 1. N-Gain Normality Test of the Learning Model

		Tests of Normality					
		Kolmogorov-Smirnov^a			Shapiro-Wilk		
		Statisti			Statisti		
	Learning Model	c	df	Sig.	c	df	Sig.
Standardized	Inkuiri_Terbimbing	.136	28	.198	.969	28	.552
Residual for	Discovery	.108	30	.200*	.974	30	.644
	HB_Persen						

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on Table 1, the obtained significance value for the Liliefors (Kolmogorov-Smirnov) test of the Guided Inquiry Learning model is 0.198 (> 0.05), and the significance value for the Discovery Learning model is 0.200 (> 0.05). Therefore, it can be concluded that the data for both the Guided Inquiry Learning model and the Discovery Learning model are normally distributed.

Table 2. Learning Style N-Gain of Normality Test

		Kolmogorov-Smirnov^a			Shapiro-Wilk		
		Statistic	df	Sig.	Statistic	df	Sig.
	Learning Style						
Standardized	Visual	.168	22	.110	.926	22	.103
Residual for	Auditori	.133	21	.200*	.956	21	.433
HB_Persen	Kinestetik	.171	15	.200*	.960	15	.684

*. This is a lower bound of the true significance.

a. Lilliefors Significance Correction

Based on Table 2, the obtained significance value for the Liliefors (Kolmogorov-Smirnov) test of the visual learning style is 0.110 (> 0.05), the significance value for the auditory learning style is 0.200 (> 0.05), and the significance value for the kinesthetic learning style is 0.200 (> 0.05). Therefore, it can be concluded that the data for the visual, auditory, and kinesthetic learning styles are normally distributed.

After conducting the normality test, the next step is to test for homogeneity of the N-Gain data for the learning models and learning styles. The summary of the homogeneity test calculations can be seen in Table 3.

Table 3. Summary of Homogeneity Analysis

No	Sample Group	Sig.	Cut Value	Description
1	Learning Models	0.178	0.05	Homogen
2	Style Learning	0.051	0.05	Homogen

Based on Table 3, the obtained significance value for the Bartlett's test of the learning models is 0.178, and for the learning styles is 0.051. These significance values are greater than the significance level of 0.05. Therefore, it can be concluded that the data for both the learning models and learning styles come from groups with homogeneous variances.

The results of the calculation for the normalized N-Gain data using the Two-Way Factorial ANOVA analysis with a 2 x 3 design are presented in Table 4 below:

Table 4. Student Learning Outcomes Factorial 2 x 3

Dependent Variable: NGain Persen

Source	Type III Sum of Squares	df	Mean Square	F	Sig.	Partial Eta Squared
Corrected Model	2946.494 ^a	5	589.299	4.469	.002	.301
Intercept	272949.611	1	272949.611	2070.003	.000	.975
Model	699.064	1	699.064	5.302	.025	.093
GB	1147.123	2	573.561	4.350	.018	.143
Model * GB	1185.718	2	592.859	4.496	.016	.147
Error	6856.696	52	131.860			
Total	295299.657	58				
Corrected Total	9803.190	57				

a. R Squared = ,301 (Adjusted R Squared = ,233)

Based on Table 4 and the calculations of the Two-Way ANOVA test on the normalized gain scores, it can be observed that the frequency for guided inquiry learning and discovery learning models is 5.302, with a significance value of 0.025, which is smaller than the chosen significance level of 0.05. Therefore, the null hypothesis (H₀) is rejected. In other words, there is a significant difference in the effects on learning outcomes between students taught using the guided inquiry learning model and students taught using the discovery learning model. To determine which group has higher learning outcomes, the Scheffe post hoc test can be conducted. However, since there are only two categories of learning models, we can infer from the mean values. Based on the mean values, it is found that the guided inquiry learning model has a mean score of 73.3199, while the discovery learning model has a mean score of 67.2098. Consequently, it can be concluded that the implementation of the guided inquiry learning model is superior in improving students' learning outcomes compared to the implementation of the discovery learning model.

Based on Table 4 and the calculations of the Two-Way ANOVA test on the normalized gain scores, it can be observed that the frequency for visual, auditory, and kinesthetic learning styles is 4.350, with a significance value of 0.018, which is smaller than the chosen significance level of 0.05. Therefore, the null hypothesis (H₀) is rejected. In other words,

there is a significant difference in the effects on learning outcomes among students with visual learning style, auditory learning style, and kinesthetic learning style. To determine which group is superior, further analysis using the Scheffe post hoc test can be conducted. With a significance value of 0.023, which is smaller than 0.05, it can be concluded that the improvement in learning outcomes for students with the visual learning style is better than for students with the auditory learning style or kinesthetic learning style.

Based on Table 4 and the calculations of the Two-Way ANOVA test on the normalized gain scores, it can be observed that the frequency for the interaction between the learning models and learning styles on the learning outcomes of students is 4.496, with a significance value of 0.016, which is smaller than the chosen significance level of 0.05. Based on these results, it can be concluded that there is an interaction between the learning models and learning styles on the learning outcomes of students in Grade VIII at SMP Negeri 1 Kualuh Selatan in the academic year 2022/2023.

Next, further analysis was conducted using the Scheffe post hoc test, as shown in Table 5 below:

Table 5. Summary of Scheffe Test Results

No	Test Results		Sig.	Description
1	A ₁ B ₁	A ₁ B ₂	0,627	Not Significant
2	A ₁ B ₁	A ₁ B ₃	0,926	Not Significant
3	A ₁ B ₁	A ₂ B ₁	0,287	Not Significant
4	A ₁ B ₁	A ₂ B ₂	0,125	Not Significant
5	A ₁ B ₁	A ₂ B ₃	0,003	Significant
6	A ₁ B ₂	A ₁ B ₃	0,602	Not Significant
7	A ₁ B ₂	A ₂ B ₁	0,577	Not Significant
8	A ₁ B ₂	A ₂ B ₂	0,050	Significant
9	A ₁ B ₂	A ₂ B ₃	0,001	Significant
10	A ₁ B ₃	A ₂ B ₁	0,302	Not Significant
11	A ₁ B ₃	A ₂ B ₂	0,206	Not Significant
12	A ₁ B ₃	A ₂ B ₃	0,008	Significant
13	A ₂ B ₁	A ₂ B ₂	0,011	Significant
14	A ₂ B ₁	A ₂ B ₃	0,000	Significant
15	A ₂ B ₂	A ₂ B ₃	0,090	Not Significant

Description: A₁ = Guided Inquiry, A₂ = Discovery, B₁ = Visual, B₂ = Auditory, B₃ = Kinesthetic

Based on Table 5, the overall results of the Scheffe test show 15 combinations of average student learning outcomes. The test results reveal six significant interaction combinations between the learning models and learning styles, while nine interaction combinations are not significant. The significant interaction combinations are as follows:

- a. Guided inquiry model and visual learning style (A₁B₁) with discovery model and kinesthetic learning style (A₂B₃).
- b. Guided inquiry model and auditory learning style (A₁B₂) with discovery model and auditory learning style (A₂B₂).
- c. Guided inquiry model and auditory learning style (A₁B₂) with discovery model and kinesthetic learning style (A₂B₃).
- d. Guided inquiry model and kinesthetic learning style (A₁B₃) with discovery model and kinesthetic learning style (A₂B₃).

- e. Discovery model and visual learning style (A₂B₁) with discovery model and kinesthetic learning style (A₂B₃).
- f. Discovery model and auditory learning style (A₂B₂) with discovery model and kinesthetic learning style (A₂B₃).

The interaction of learning models and learning styles is shown in the following picture:

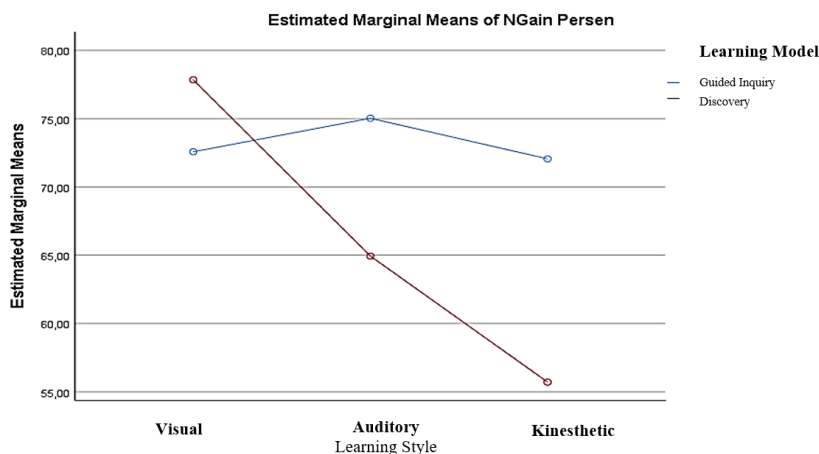


Figure 1. interaction of Learning Models and Learning Styles

Summary of the hypothesis testing results obtained through the testing of Normalized N-Gain for the influence of guided inquiry and discovery learning models, as well as learning styles, on student learning outcomes are as follows:

Table 6. Summary of Hypothesis Test Results

No.	Hypothesis	Description	Research Findings
1.	There is a difference in the influence of guided inquiry and discovery learning models on students' learning outcomes in the topic of the human excretory system	H ₁ is accepted Auditory Learning Style	There's a distinction within the impact on learning results between understudies instructed utilizing guided request learning and understudies instructed utilizing disclosure learning. This infers that the advancement in learning results is superior for understudies instructed utilizing guided request learning compared to understudies instructed utilizing disclosure learning.
2.	There's a contrast within the impact of guided request and discovery learning models on students' learning results within the subject of the human excretory system	H ₂ is accepted	There's a distinction within the impact on learning results between understudies with visual learning fashion and understudies with sound-related or kinesthetic learning styles. This infers that the advancement in learning results is superior for understudies with visual learning fashion compared to understudies with sound-related or kinesthetic learning styles.
3.	There's an interaction between the two	H ₃ is accepted	There's an interaction between the two instructing models and learning styles in

No.	Hypothesis	Description	Research Findings
	instructing models and learning styles in impacting the learning outcomes of understudies within the subject of the human excretory framework		affecting the learning outcomes of understudies within the subject of the human excretory framework in Course VIII of SMP Negeri 1 Kualuh Selatan, Scholarly Year 2022/2023.

In this section, the results of the analysis will be discussed in accordance with the three research objectives.

The Impact of Guided Request Learning Models and Revelation Models on Understudy Learning Results

The inquire about discoveries show that there's a contrast within the impact on learning results between understudies who were instructed utilizing the guided request learning demonstrate and those who were instructed utilizing the disclosure learning show. It can be translated that understudies who were instructed utilizing the guided request learning show appeared superior learning results compared to those who were instructed utilizing the revelation learning demonstrate.

Agreeing to Kuhlthau (2007) Guided request is based on the premise that profound and maintained learning could be a useful handle that requires understudy engagement and reflection. Inquiry-based learning strategies are planned to motivate understudies to create their possess thoughts and create something significant to them. Within the guided request learning demonstrate, understudies are stimulated to memorize from an early age by invigorating their intrinsic interest, in center childhood by empowering their rummage around for freedom, and proceeding into puberty as they create self-awareness through the procurement of information and aptitudes. This prepares students to confront the challenges of work and existence as grown-ups.

In this setting, understudies have the opportunity to build their possess information or concepts through dynamic cooperation within the learning handle, counting bunch dialogs and hands-on tests, guided by the instructor. Guided request learning can maximize students' capacities, empowering them to define their discoveries certainly whereas investigating and examining something methodically, consistently, basically, and systematically (Saputra et al., 2020).

Usually in understanding with inquire about conducted by Sukariasih (2019) which appears that students instructed utilizing guided request learning have superior learning results in science (IPA) compared to understudies instructed utilizing conventional instructing strategies. Mulyana et al. (2018) moreover expressed in his investigate that understudies who apply guided request learning have way better learning results compared to understudies who apply conventional educating strategies. Typically, because understudies have the opportunity to effectively take an interest in learning, looking for concepts based on the issues in their environment. The learning handle gets to be important, and the understanding they pick up is less demanding to keep in mind. When data is recalled, it certainly impacts students' learning results.

Inquire about by Saputra et al. (2020) too uncovered that guided request learning contains a noteworthy impact on making strides science learning results. Through this explanation, it

shows that this show maximally trains students' basic considering or higher-order considering abilities, coming about in way better understanding of the instructed substance and emphatically affecting students' science learning results.

The impact of visual, sound-related, and kinesthetic learning styles on learning results

The inquire about discoveries demonstrate that there are contrasts within the impact on learning results between understudies with visual learning fashion and understudies with sound-related or kinesthetic learning styles. It is interpreted that there's distant better; a much better; a higher; a stronger; an improved">a distant better enhancement in student learning results when utilizing the visual learning fashion compared to the sound-related or kinesthetic learning styles. Usually supported by the Scheffe test, which yielded a noteworthiness esteem of 0.023, littler than 0.05. In this manner, it can be concluded that there's distant better; a much better; a higher; a stronger; an improved">a stronger or prevalent enhancement in understudy learning results when utilizing the visual learning fashion compared to the sound-related or kinesthetic learning styles.

Concurring to Adawiyah et al. (2020), visual learning fashion alludes to learning by utilizing the sense of locate to obtain data. Sound-related learning fashion alludes to learning by utilizing the sense of hearing to obtain information. Kinesthetic learning fashion alludes to learning by utilizing development or touch to procure data.

The visual learning style's advantage in upgrading learning results is likely since understudies with a visual learning fashion are more locked in within the learning prepare. They can audit the instructed materials more than once, visualize engaging pictures, and accomplish superior learning results within the subject of science. This adjusts with the visual learning fashion, which includes learning through what is seen, holding data through the utilize of visuals such as pictures or charts in instructional media, and way better understanding through watching the teacher's body dialect and facial expressions (DePorter dan Hernacki, 2015).

Concurring to Ha (2021), the distinctive learning styles, accompanied by fitting guidelines approaches, can essentially contribute to students' scholarly accomplishment. This finding is steady with research within the field. Munir (2021), Suciani et al. (2022) which states that learning styles have a noteworthy impact on moving forward students' learning results. In any case, these discoveries don't back the comes about of the inquire about. Adawiyah et al. (2020) which found no critical distinction within the learning results of understudies with visual, sound-related, and kinesthetic learning styles.

The interaction between learning models and learning styles in impacting understudy learning results

Based on the discoveries from the inquire about, it was watched that the gather of understudies with sound-related learning fashion accomplished higher normal scores in learning results when instructed utilizing guided request learning show. This will be clarified by the truth that understudies with sound-related learning fashion tend to appear more dynamic engagement in learning, appreciate hands-on exercises, and have an intrigued in finding unused things. These characteristics adjust well with the guided request learning show. On the other hand, understudies with visual learning fashion tend to be reluctant in communicating their opinions and are less dynamic within the learning prepare. This may be due to their inclination for tuning in to the teacher amid the lesson, as they feel less

included within the learning handle. In this case, utilizing the discovery learning demonstrate can offer assistance move forward their learning results.

It is conceivable that within the disclosure learning show, understudies with sound-related learning fashion may not completely retain data concurring to their favored learning fashion. The data displayed by the instructor may not be seen as curiously for understudies with sound-related learning fashion, who intensely depend on the instructor as the most source of learning. As a result, they may not effectively look for data from different other sources. This can be credited to the constrained adequacy of classroom discussions and a need of concentration amid educator clarifications, which in turn influences their inspiration and eventually their learning results.

Within the execution of guided request learning demonstrate, understudies can peruse the materials to be talked about amid face-to-face sessions through online media or other learning materials. This permits understudies to come to school prepared with questions and to directly listen clarifications from the instructor. Understudies with sound-related learning fashion will tune in to articulations made by other understudies in talks and tune in to clarifications from the educator, which spurs them to effectively take part within the learning prepare. This is often in line with the characteristics of sound-related learners concurring to DePorter and Hernacki (2015), those who learn more viably through verbal dialogs and tuning in to what the instructor says.

Meanwhile, the bunch of understudies with a visual learning fashion accomplished higher normal learning scores when instructed utilizing the revelation learning show. This may be clarified by the truth that understudies with a visual learning fashion tend to be more effectively locked in in learning, appreciate partaking in learning exercises, and are curious about finding unused things. These characteristics adjust well with the inquiry-based learning demonstrate. On the other hand, understudies with an sound-related learning fashion tend to be more reluctant in communicating their conclusions and are less dynamic in course. This may be due to their inclination for tuning in to the instructor amid instruction, which can be superior obliged within the guided request learning show.

Agreeing to DePorter and Hernacki (2015), understudies with a visual learning fashion are more likely to be inquisitive about learning since they can over and overstudied the think about materials displayed in course and they can see locks in visuals and pictures. This upgrades their inspiration to memorize and eventually influences their learning results. This adjusts with the characteristics of visual learners, who learn through what they see, keep in mind data using visuals or design in guidelines media, and discover it less demanding to get it through watching the teacher's body dialect and facial expressions.

CONCLUSION

Based on the conducted discussions, three conclusions can be drawn in accordance with the objectives of this research. First, the learning outcomes of students taught using the guided inquiry learning model are better or superior compared to the learning outcomes of students taught using the discovery learning model. Second, the learning outcomes of students taught using the visual learning style are better or superior compared to the learning outcomes of students taught using the auditory or kinesthetic learning styles. Third, there is an interaction between the two learning models and learning styles in relation to the learning outcomes in IPA (Science) among the students in Class VIII of SMP Negeri 1 Kualuh Selatan for the academic year 2022/2023. The group of students with an auditory learning style obtained higher average learning scores when taught using the guided inquiry learning model, while the group of students with a visual learning style obtained higher average learning scores when taught using the discovery learning model.

In line with the research conclusions, the author presents several suggestions for the science teachers at the research site, future research endeavors, and relevant institutions. For the science teachers in Class VIII of SMP Negeri 1 Kualuh Selatan, it is recommended to consider the guided inquiry learning model as an alternative to enhance student learning outcomes. In implementing the guided inquiry learning model, the preparation of teaching materials and supporting facilities such as interactive learning media, audio recordings, video recordings, and adequate internet access is essential. Furthermore, it is suggested for future researchers to conduct similar studies with a larger population. Additionally, they can consider combining the guided inquiry learning model with cooperative learning models based on blended learning strategies. Lastly, relevant institutions should provide facilities and promote awareness among educators regarding the guided inquiry learning model for Class VIII students, particularly in science subjects. This is expected to foster improved student learning outcomes and cultivate students' interest in learning science.

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