

ANALYSIS OF VAK LEARNING STYLES (VISUAL, AUDITORIAL, KINESTHETIC) AND BIOLOGY LEARNING OUTCOMES ON PLANT TISSUE MATERIAL IN CLASS XI SCIENCE SMA NEGERI 1 BERINGIN TP 2023/2024

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ABSTRACT

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This research aims to determine the relationship between students' visual, auditory and kinesthetic learning styles with students' biology learning outcomes. The type of research used is descriptive research with a quantitative approach. In this study there were 71 people using a sampling technique, namely random sampling. The instruments used in data collection were questionnaires and tests. The research results showed that students in class XI Science at SMA Negeri 1 Beringin consisting of classes XI IPA 1 and IPA 2 tend to have a visual learning style with 41 students (57.75%), while students who have an auditory learning style are 16 people (22.54%), and students who have a kinesthetic learning style are 14 people (19.71%). This research shows that the visual learning style variable (X1) has $r_{count} = 0.601 > r_{table} = 0.308$, the auditory learning style variable (X2) having $r_{count} = 0.536 > r_{table} = 0.497$ and the kinesthetic learning style variable (X3) has $r_{count} = 0.547 > r_{table} = 0.533$. Based on the research results, it was concluded that student learning styles greatly influence students' biology learning outcomes.

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INTRODUCTION

Each individual's learning style tends to be different. This is due to differences in the ability of each individual to understand and absorb information. Because of these differences, students end up using different techniques in understanding the information or lessons they receive. Differences in individual techniques in capturing this information are called learning styles (Hanifah, 2021). An appropriate learning style is the key to student success in learning. By realizing this, students are able to absorb and process information and make learning easier according to the student's own learning style (Papilaya, 2016).

Based on research conducted by Nurlia (2017), it is stated that if students are able to learn using their learning style during the learning process, they will obtain satisfactory learning results. Because learning activities that suit the type of learning style will of course gain more knowledge which of the course can also have a good influence on learning outcomes.

Barbara Prashnig (2007) stated that if students' learning styles are in line with the learning process being carried out, it will have a good influence on them, not only providing quick improvements, but will be a long-term remedy for students who always try to excel in school. Good academic achievement is usually shown by grades above the minimum learning achievement limit for each student. And learning style is one of the factors that makes students successful in achieving their learning achievements (Aziz, 2020).

Learning outcomes are the main thing in the learning process, because they are reject measuring For see How-how levels success students in learning activities has done. Results Study can seen through evaluation For measure and appear is students has understand learning Which accepted under the guidance of a teacher in accordance with the objectives has been established (Chania, 2016).

In the learning process, individuals tend to use varied learning styles. Likewise, a teacher must be able to apply different learning styles while carrying out learning activities in class. These learning styles include: Visual learning style (a learning style where students tend to focus on the sense of sight), Auditorial learning style (a learning style where students tend to focus on the sense of hearing) and the last is the kinesthetic learning style (a learning style where students usually focus on movement, physical activity and direct involvement). All students

have these three learning styles, but only one style dominates.

Learning styles cannot be controlled by teachers and only students can control them. This is because the learning style is inherent in the student and becomes a comfort for him to carry out the learning process. However, current educational problems occur in the classroom. It is still common to find students who experience difficulties in following lessons which ultimately impacts their learning outcomes. Students also often have difficulty adapting their way of learning to the way teachers teach at school. This can happen because educators apply the lecture method too much in teaching so that students are more advanced with the auditory learning style. In fact, learning style has a big influence on student learning outcomes (Rahman, 2016).

Based on previous research, according to Syafitri (2017), the learning style tendencies of male and female students differ significantly, where male students tend to use a visual style and female students tend to use an auditory style. According to Halpern in Santrock (2009: 187) male students have higher visual-spatial skills than female students. These skills include sensitivity to color, line, shape, space and the relationship between these elements. So male students will understand material displayed more quickly through images or other visual media. However, the results of this research are different from the research of Andia Kusuma Damayanti and Niken Titi Pratitis (2012) with the title Learning Styles in terms of Personality Type and Gender, which states that there are no differences in student learning styles whether in terms of personality type or gender. In general, students show the same tendencies in visual, auditory and kinesthetic learning styles even though they have different personality types and genders. Several studies have also found that the differences between men and women, especially in terms of academic ability, have been increasing in recent years. increase. shrinking. In other words, boys and girls are increasingly equal in their academic performance. In addition, pupils and students have different learning environments and experiences.

Based on the results of observations made on biology teachers at SMA Negeri 1 Beringin, it is known that some students did not get the maximum score due to several internal and external factors. One of the factors that influences student learning outcomes is learning

style. From the interviews that have been conducted, it was concluded that the cause of differences in biology learning outcomes is because there are still many students who do not know what learning style they have when studying. Apart from that, it is necessary to know whether there are differences in learning styles between male and female students. For this reason, it is necessary to conduct research on the Analysis of VAK Learning Styles (Visual, Auditory, Kinesthetic) and Biology Learning Outcomes on Plant Tissue Material in Class XI Science at SMA Negeri 1 Beringin TP 2023/2024. To determine the learning styles and learning outcomes of class XI IPA students.

METHOD

The data collection location for this research was carried out at SMA Negeri 1 Beringin which is located at Emplasmen Kuala Namu, Jl. Labu Beach, Beringin District, Deli Serdang Regency, North Sumatra. The population in this study were all students of class 2. In this study, 2 variables are used, namely the independent variable (X). In this study, the visual learning style is X_1 , the auditory learning style is X_2 , and the kinesthetic learning style is X_3 . And the dependent variable (Y) is biology learning outcomes.

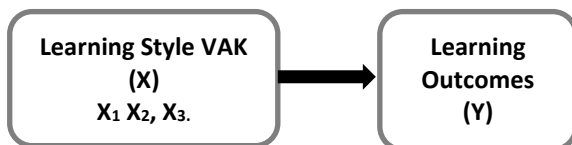


Figure 3.1 Research Design Results

Learning style data collection in this research used a questionnaire. Where this learning styles questionnaire is a closed questionnaire, that is, alternative answers to the questions are available, so that respondents simply answer the questions by selecting using checklist marks in the option column that is deemed appropriate. The scale used is a Likert scale with four answer choices. Respondents answered by choosing one of the four alternative answers according to the actual situation. Scoring of student learning style questionnaire statements can be seen in (Table 3.1).

Table 3.1. Conditions for Learning Style Questionnaire Scores

No	Answer Choices	Score	Explanation
1	Always	4	Things that are done or happen every time are in accordance with what is stated in the statement.
2	Often	3	Things that are done almost all the time or often happen are in accordance with what is stated in the statement.
3	Sometimes	2	Things that are done several times or occur several times are in accordance with what is stated in the statement.
4	Never	1	Things that have never been done or never happened according to what is stated in the statement.

Meanwhile, the results of learning data collection in this lesson used Biology learning results tests on Plant Tissue material given directly by the author.

RESULTS AND DISCUSSION

Student Learning Style

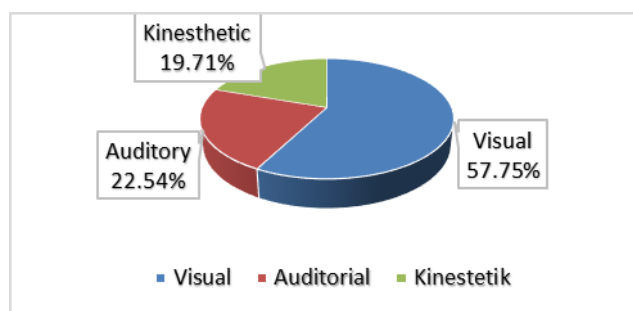
Learning style data in this research was obtained from the results of a questionnaire consisting of 60 visual, auditory and kinesthetic learning style questionnaires. From the research results, it can be seen that the most dominant learning style among students is the visual learning style. This can be seen from the learning styles questionnaire which shows that the characteristics of students' learning styles in biology lessons tend to be easier to receive or absorb information by seeing it directly. For example, displaying learning using pictures or learning videos that are rich in visual images, using graphs or diagrams to make it easier for students to absorb information and so on.

According to Hanifah (2021), students at SMA N 1 Godong tend to have a visual learning style, this can be seen during learning activities in class, students will focus their attention when the teacher explains the material, and when working on discussion assignments, students are more focused on looking at notes in books compared to asking his friend to provide an explanation.

Table 4.1. Results of the Learning Style Questionnaire for Class XI Science Students at SMA Negeri 1 Beringin

Learning Style	The number of students	Percentage
Visual	41	57.75%
Auditory	16	22.54%
Kinesthetic	14	19.71%
Amount	71 students	100%

For more details, student learning styles can be seen in the form of a pie chart as in **Figure 4.1**.

**Figure 4.1 Percentage Diagram of Student Learning Styles**

An appropriate learning style is the key to a person's success in learning. Therefore, in learning activities, students really need to be helped and directed to recognize the learning style that suits them so that learning goals can be achieved effectively. Pramesti (2020) states that the better the visual learning style, the more important a person can take important steps to learn more quickly and easily so that they can gain the desired understanding. This is supported by cognitive theory which explains that thought processes and differences in mental conditions as well as the influence of internal and external factors in producing an individual's learning, apart from that internal factors include one of them, namely the visual learning style. This shows that someone who has a visual learning style is usually more likely to have a deep understanding of the material they receive.

Student learning outcomes

Data on student learning outcomes obtained from the plant tissue material test instrument obtained the highest score of 92 and the lowest score of 50 with an average of 73.44 and included in the good category.

Table 4.2 Results of the Student Learning Outcomes Questionnaire for class XI Science at SMA Negeri 1 Beringin

NO	Criteria	Explanation	The number of students
1	>80	Very Well	26
2	66-79	Good	22
3	60-65	Enough	19
4	46-59	Not enough	4
5	<45	Bad	0

On the learning outcomes of class Then for the criteria scores between 66 and 79 with good information there were 22 students. For the criteria between 60-65 with sufficient information there were 19 students. And for criteria between 46-59 with less information, there were 4 students. Meanwhile, for the criteria below 45, there were 0 students (Table 4.2). Data on student learning outcomes shows that the highest score is 92 and the lowest score is 50 with an average of 73.44 and is included in the good category.

Student Learning Outcomes Based on Learning Style

The results of the analysis of learning styles and biology learning outcomes for class The average biology learning outcomes for each type of student learning style are presented in Table 4.3 below.

Table 4.3 Average Learning Outcomes for Each Learning Style

Types of Learning Styles	Amount students	Average Results Study
Visual	41	71.07
Auditory	16	75.85
Kinesthetic	14	77.00

The results of the analysis of learning styles and biology learning outcomes for class with an average value of 77.00. Then for the auditory learning style, the average score was 75.85. Meanwhile, the lowest average student learning outcomes were in the visual learning style with an average score of 71.07. So it can be said that the average learning outcomes of class XI Science students at SMA Negeri 1

Beringin for the 2023/2024 learning year for each learning style are different.

Differences in the Percentage of Learning Styles of Male and Female Students

The number of students in class XI IPA 1 and class XI IPA 2 is 71 students consisting of 27 male students and 44 female students. The percentage of learning styles found between male and female students in class 10 students (37.03%) tend to have an auditory learning style, and 4 students (14.81%) tend to have a kinesthetic learning style. Meanwhile, 28 female students tend to have a visual learning style (63.63%), 6 male students tend to have an auditory learning style (13.63%), and male students tend to have a kinesthetic learning style. a total of 10 students (22.72%). For more details, see Table 4.4 below.

Table 4.4 Percentage of Learning Styles for Male Students and Female Students

Gender	Style Study					
	Visual		Auditory		Kinesthetic	
	%	The number of students	%	The number of students	%	The number of students
Man	48.14%	13	37.03%	10	14.81%	4
Woman	63.63%	28	13.63%	6	22.72%	10

The results of this study show that the learning style tendencies of male and female students are significantly the same (Table 4.5), where both tend to have a visual style. This is because during teaching teachers apply more teaching methods that are more visual, such as the lecture method and more often ask students to read books to understand the lesson. So in this learning the students with a visual style stand out and benefit more. Because the role of memory in seeing becomes more important. Another thing that causes a tendency towards a visual learning style is the process of observing through learning media such as PPT, learning videos, books/modules and others.

According to Syafitri (2017) the learning experience obtained by students can be through the process of doing or personally experiencing what is being learned, the process of observing and listening through certain media. Edgar Dale dalam Ricky Arnold (2016) explains through his experience cone theory that the learning process by doing it

yourself and seeing has more influence than the process of hearing. The more concretely students learn the teaching material, for example through direct experience, the more experience students will gain. On the other hand, the more abstract the experience students gain, for example relying only on verbal language, the less experience the students will gain. This is what makes the visual learning style dominate the learning style of both male and female students as in this study.

Correlation Test and Hypothesis Test

1. The correlation coefficient of visual learning style with learning outcomes (r_{xy}) = 0.601. With an r_{xy} value of 0.601, it can be said that "there is" a moderate or sufficient relationship between the visual learning style and the biology learning outcomes of class XI IPA students at SMA Negeri 1 Beringin for the 2023/2024 academic year.
2. Correlation coefficient of auditory learning style with learning outcomes (r_{xy}) = 0.536. With an r_{xy} value of 0.536, it can be said that "there is" a moderate or sufficient relationship between the auditory learning style and the biology learning outcomes of class XI IPA students at SMA Negeri 1 Beringin for the 2023/2024 academic year.
3. The correlation coefficient between kinesthetic learning style and learning outcomes (r_{xy}) = 0.547. With an r_{xy} value of 0.547, it can be said that "there is" a moderate or sufficient relationship between the kinesthetic learning style and the biology learning outcomes of class XI IPA students at SMA Negeri 1 Beringin for the 2023/2024 academic year.

Table 4.5 Correlation Coefficients and Hypotheses for Learning Styles and Learning Outcomes

Type Learning Styles	r count	r table	Correlation	Hypothesis
Visual	0.601	0.308	Moderate or sufficient	H_0 rejected and H_a accepted
Auditory	0.536	0.497	Moderate or sufficient	H_0 rejected and H_a accepted

Kinesthetic	0.547	0.533	Moderate or sufficient	H ₀ rejected and H _a accepted
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Based on the table above, it is known that the hypothesis test of the relationship between learning styles and learning outcomes of class To test the hypothesis in this research, it was done by comparing the rcount value with rtable. If rcount > rtable, then H₀ is rejected and H_a is accepted and vice versa. The results of hypothesis testing are as follows:

1. Visual learning styles

In the correlation test calculation, the visual learning style rcount = 0.601. If the rcount value is compared with the rtable value, then rcount > rtable (0.601>0.308). This means that H₀ is rejected and H_a is accepted. So it is said that there is a relationship between the visual learning style and the biology learning outcomes of class XI IPA students at SMA Negeri 1 Beringin for the 2023/2024 academic year.

2. Auditory learning style

In calculating the correlation test, the rcount for auditory learning style = 0.536. If the rcount value is compared with the rtable value, then rcount > rtable (0.536>0.497). This means that H₀ is rejected and H_a is accepted. So it is said that there is a relationship between the auditory learning style and the biology learning outcomes of class XI IPA students at SMA Negeri 1 Beringin for the 2023/2024 academic year.

3. Kinesthetic learning style

In the correlation test calculation, the kinesthetic learning style obtained rcount = 0.547. If the rcount value is compared with the rtable value, then rcount > rtable (0.547>0.533). This means that H₀ is rejected and H_a is accepted. So it is said that there is a relationship between the kinesthetic learning style and the biology learning outcomes of class XI IPA students at SMA Negeri 1 Beringin for the 2023/2024 academic year.

The existence of a relationship between learning styles and student learning outcomes in this research is supported by previous researchers, namely according to Ningrat (2018) in his research on the Contribution of Learning Styles and Learning Motivation to Indonesian Language Learning Outcomes. The results of the research show that there is a significant contribution of learning style and learning motivation together to students' Indonesian language learning outcomes with a contribution of 62.8% and a correlation coefficient of $r = 0.792$. Then according to Hasanah (2018) in her research regarding the influence of learning styles on the learning outcomes of class The results of the research show that there is a significant influence

of learning style on student learning outcomes by 80.8%, and the influence of each learning style is for visual learning style at 35.00%, auditory learning style at 20.38%, kinesthetic learning style at 25.32%.

Meanwhile, according to Bire (2014) in his research on the Influence of Visual, Auditory and Kinesthetic Learning Styles on Student Learning Achievement in the Building Department of State Vocational School 5 for the 2013/2014 Academic Year. The results of the research show that there is a positive and significant influence on the student learning achievement variable (Y). with a percentage of 62.91% Then according to Nurlia (2017) in her research on the Relationship between Learning Style, Learning Independence, and Learning Interest and Student Biology Learning Outcomes. The results of the research show that there is a very strong relationship between learning style, learning independence and interest in learning together with students' Biology learning outcomes which obtained a correlation coefficient (r) of 0.849 with a significance value of 0.000.

CONCLUSION

Based on the results of the research and discussion that has been explained, Students in class XI Science at SMA Negeri 1 Beringin for the 2023/2024 learning year have varied learning styles, including the visual learning style of 41 students (57.75%), the auditory learning style of 16 (22.54%), and kinesthetic learning style was 14 (19.71%). The most dominant learning style is the visual learning style. Meanwhile, the biology learning outcomes of students in class As for student learning outcomes in the visual learning style, it has an average value of 67.90, in the auditory learning style it has an average value of 71.12, and in the kinesthetic learning style it has an average value of 75. There is a relationship between the styles. learning VAK (visual, auditory, kinesthetic) with biology learning results for class XI IPA students at SMA Negeri 1 Beringin for the 2023/2024 learning year. With a correlation coefficient reaching 0.40-0.70, it shows that students' learning styles and biology learning outcomes have a moderate or sufficient correlation. Differences in student learning styles based on gender, namely 48.14% of male students have a visual learning style and 63.63% of female students, then 37.03% of male students have an auditory learning style and 13.63% of female students. while 14.81% of male students have a kinesthetic learning style and 22.72% of female students.

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