

## Relationship Between Learning Style with Biology Learning Outcomes of Grade X High School Students

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Received March 7, 2022; accepted March 21, 2022; published March 30, 2022

### ABSTRACT

The success or failure of students in the learning process can be seen from the learning outcomes received by students. In this case, educators play an important role in determining student learning outcomes. Educators who know students' learning styles will understand the diversity of students' learning styles in receiving and processing information. This study aims to determine student learning styles and to determine the relationship between student learning styles and biology learning outcomes for class X MIPA students at SMA Negeri 8 Padang. This type of research is quantitative. This research was carried out at SMA Negeri 8 Padang with a total sample of 45 students of class X MIPA in SMA who were registered in the odd semester of the 2021/2022 academic year. The sampling technique was simple random sampling using a questionnaire containing statements consisting of visual, auditory and kinesthetic learning styles. Each statement is 10 so that the total is 30 statements. The results of data analysis on the correlation test of 0.304 have a low correlation, meaning that there is a relationship between student learning styles and biology learning outcomes for class X MIPA students at SMA Negeri 8 Padang. The results of the t-test obtained t-test results of 2.048 indicating that there is a significant relationship. The result of the coefficient of determination of learning style is 55%, which means that learning style (X) contributes to students' biology learning outcomes (Y).

### KEYWORDS

Learning Style,  
Biology Learning  
Outcomes

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### 1. Introduction

Not all learning processes in the classroom are said to be successful, because there are several factors, namely internal factors and external factors, namely internal factors consisting of physiological and psychological factors. external consisting of environmental and instrumental factors. Even though students perform various kinds of activities, if the factors that influence learning outcomes are not supportive, then student learning outcomes will be less than optimal. Educators who know students' learning styles will understand the diversity of students' styles in receiving and processing information. Based on these internal and external factors, learning style is one of the causes of low learning outcomes. Student learning outcomes are important as a guide to academic ability in learning (Anggraini, Purwanto & Nugroho: 2020; Rohmatin, Suwanto & Nugroho: 2021).

In the teaching and learning process, the teacher has the task of encouraging, guiding and providing learning facilities for students to achieve goals. Teachers have a responsibility to see everything that happens in the classroom to help students develop. Submission of subject matter is only one of various learning activities as a dynamic process in all phases and processes of child development (Ahmadi & Widodo, 2013).

The success or failure of students can be seen from the learning outcomes obtained by students. Learning outcomes are abilities obtained by children after going through learning activities. In this case, one of the factors that influence student learning outcomes is learning style. This is reinforced by the opinion of Munif (2012) who said that the number of student failures in receiving information was due to the incompatibility of the teacher's teaching style with the student's learning style. Based on the author's observations, the learning outcomes of biology class X MIPA students at SMA Negeri 8 are low,

so it can be categorized as unsuccessful because only a few students have succeeded in achieving the KKM, while the KKM set at SMAN 8 for biology is 80.

Based on the results of previous research conducted earlier by Damayanti, (2016) at SDN Gugus Wibisono, the results showed the value of  $r$  arithmetic (0.605) >  $r$  table (0.202). This shows that there is a positive and significant relationship between learning styles and social studies learning outcomes for fifth grade students. The close relationship between learning styles and social studies learning outcomes is 36.6%.

Based on the results of observations that have been made at SMA Negeri 8 Padang, by asking directly the class X MIPA teacher, the teacher has not observed the learning styles of class X students, especially X MIPA because the face-to-face learning process is only implemented after UTS, and the author also finds that it is true There are differences in student learning styles from one another. This is evidenced when the author teaches directly in class X MIPA, the author finds that there are students who are able to capture lessons when the teacher explains the material with pictures, there are students who are able to capture lessons accompanied by video/sound and there are also students who are able to capture lessons when they touch directly. objects / objects related to the learning material.

In connection with this, research on the relationship between learning styles and learning outcomes is expected to later be able to help teachers to apply learning models that are in accordance with the more dominant learning styles of class X Mathematics and Natural Sciences students at SMA Negeri 8 Padang so that students' learning outcomes are not low anymore.

## 2. Method

This research was conducted at SMA Negeri 8 Padang, students of class X MIPA with a population of 175 students of class X MIPA enrolled in the odd semester of the academic year 2021/2022. The sampling technique was simple random sampling, which was done randomly, using an error rate of 5% with a sample of 45 students. In this study there are two kinds of variables, namely the independent variable and the dependent variable. The independent variable in this study consisted of learning style (X), while the dependent variable was biology learning outcomes (Y). Collecting data in this study used a questionnaire containing statements of student learning styles consisting of visual, auditorial and kinesthetic learning styles. Using a Likert scale, and documents on students' biology scores in the odd mid-semester exams for the 2021/2022 academic year. Collecting data using a student learning style questionnaire using a Likert scale with a score as follows (Table 1).

Table 1. Learning Style Statements on a Likert Scale

Alternatif Answers	Total Scores Given
SS (Sangat Setuju)	5
S (Setuju)	4
KS (Kurang Setuju)	3
TS (Tidak Setuju)	2
STS (Sangat Tidak Setuju)	1

Before the questionnaire was tested on students, validity and reliability were first tested so that the data obtained from the questionnaire was valid and reliable data. To find out if the data is normally distributed or not, a normality test is carried out using the Kolmogrov Smirnov test. Then the homogeneity test was conducted to determine whether the data obtained were homogeneous or not.

To find out the relationship between student learning styles and biology learning outcomes, it can be known through the correlation test data analysis technique using the Pearson Product Moment Model correlation technique.

$$r_{xy} = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

Description:

- $r_{XY}$  = correlation coefficient
- $\sum X^2$  = the sum of the squares of the respondents instrument scores
- $\sum Y^2$  = sum of squares of Uts sample value
- $\sum XY$  = the sum of the products of X and Y  
(Sugiyono, 2017:183)

The price of  $r$  will be consulted with the table of interpretation of the value of  $r$  as follows (Table 2):

Table 2. Correlation Coefficient Interpretation

Coefficient Interval	Relationship Level
0,800 – 1,000	Verry Strong
0,600 – 0,799	Strong
0,400 – 0,599	Moderately
0,200 – 0,399	Low
0,000 – 0,199	Verry Low

(Sugiyono, 2017:184)

To test the significance of the product moment correlation, it can be tested using the t test and to find out how much influence the independent variable (X) has on the dependent variable (Y) using the coefficient of determination formula.

### 3. Results and Discussion

The research entitled The Relationship of Student Learning Styles with Biology Learning Outcomes of Class X Mathematics and Natural Sciences at SMA Negeri 8 Padang by distributing questionnaires to 45 students of SMA Negeri 8 Padang who became the sample with 9 representatives from class MIPA 1 to MIPA 5 each. student. Each student (respondent) filled out a Learning Style questionnaire (X) with a total of 30 question items consisting of 10 statement items for visual learning style, 10 statement items for auditory learning style and 10 statement items for kinesthetic learning style. Data on student Biology learning outcomes (Y) are obtained from odd Mid-Semester Examination (UTS) scores in 2021/2022.

Sampling was carried out on each 9 students of class X SMA Negeri 8 Padang from MIPA 1 to MIPA 5 so that the total number of samples was 45 students, this was obtained based on a simple random sampling system. Before the data is tested for correlation, the validity test is first carried out with the results of the validity test. The validity test of this questionnaire aims to produce a valid instrument by consulting directly with the validator. The results of this validity test obtained an average assessment result of 3.61 so that the questionnaire used was valid. After conducting the validity of the questionnaire, the researcher conducted an analysis of the reliability of the questionnaire. The reliability of the instrument is determined by Cronbach's Alpha, then the Cronbach's Alpha value is 0.77 while the reliable value that has been determined is 0.60, so it can be concluded that the Cronbach's Alpha value is greater than the predetermined reliable value ( $0.77 > 0.60$ ).

Furthermore, data analysis was carried out with the first step, namely descriptive analysis so that the following results were obtained (Table 3).

Table 3. Student Learnin Style

Gaya Belajar Siswa	Skor Jawaban	Rata-rata%
Visual	1768	34%
Auditorial	1769	34%
Kinestetik	1647	32%
Total		100%

Based on the table 3, it can be explained that from a total of 45 samples, the visual type of student learning style with a total answer score of 1768 with an average of 34%, the audiotorial type of student

learning style with a total answer score of 1769 also received an average of 34% while the student learning style the kinesthetic type got a total answer score of 1647 with an average of 32%. So that the three types get a total percentage of 100%.

In the correlation test, the correlation coefficient of learning styles was obtained to determine the relationship between learning styles and student biology learning outcomes. The following are the results of the person correlation test.

Table 4. Correlation Coefficient Test Results

Variable	Correlation Coefficient	r table	Category	Description
Learning Style	0,304	0,294	Rendah	Hi Accepted

From table 4. From the table it can be seen that the correlation coefficient of variable X (learning style) is greater than r table, which is  $0.304 > 0.294$ , therefore in this study it can be stated that  $H_1$  is accepted and  $H_0$  is rejected. This means that there is a relationship between Student Learning Style and Biology Learning Outcomes of Class X Mathematics and Natural Sciences at SMA Negeri 8 Padang with a low correlation coefficient criterion of only 0.304.

Furthermore, hypothesis testing using the T test is used to determine the effect of the independent variable on the dependent variable partially. The hypothesis proposed is  $H_1$  where there is a relationship between student learning styles and student biology learning outcomes. If  $t_{count} > t_{table}$  then  $H_1$  is accepted and  $H_0$  is rejected. From the results of the calculation of the T test, the  $t_{count}$  value of the variable X is greater than  $t_{table}$  ( $t_{count} > t_{table}$ ) which is  $2,048 > 1,679$ . This means that there is a significant relationship between Student Learning Style and Biology Learning Outcomes for Class X Mathematics and Natural Sciences at SMA Negeri 8 Padang. It can be seen in table 5 below.

Table 5. Coefficient Of Determination Test Results

Variable	T count	T table	Description
Learning Style	2,048	1,679	There is a significant relationship

Next, the coefficient of determination was tested. With the aim of knowing how big the contribution of the independent variable (X) to the dependent variable (Y) and knowing the percentage level of influence or contribution of each variable, the coefficient of determination formula is used. Based on the results of data calculations, the percentage of X variable to Y variable is obtained, which is 55%. So it can be concluded that 55% of students' learning outcomes in biology at SMA Negeri 8 Padang are influenced by students' learning styles, while another 45% is influenced by other factors not examined.

So it can be concluded that 55% of students' learning outcomes in biology at SMA Negeri 8 Padang are influenced by students' learning styles, while another 45% is influenced by other factors not examined. Quoting the opinion of Marton (in Ghufroon, 2014:12) the phenomenographic study found and confirmed a conclusion about the relationship between individual learning concepts as efforts made by individuals to learn, and the results of individual efforts to learn. The existence of this relationship is specifically in the form of learning styles and measurement of learning outcomes and academic achievement. Thus, students need to know their learning styles, as well as teachers. The teacher must recognize every learning style that his students have, because student learning success can be achieved well if he knows his learning style.

The opinions of other experts regarding learning styles affect the learning outcomes of Dunn Opal in Sopiatin and Sahrani (2011: 4), explaining that in learning, each individual has a tendency to one particular way or style. This tendency of a person is called a learning style. Characteristics of students describe aspects of the background experience of students that affect the effectiveness of the learning process. One of the characteristics of students that should be considered by the teacher in designing the learning to be managed is the learning style.

This research is in line with previous research, namely Damayanti's research (2016) that the majority of fifth grade elementary school students in the Wibisono cluster, Jati sub-district have a visual learning style, (2) there is a positive and significant relationship between student learning styles and social studies learning outcomes of fifth grade elementary school students in The Wibisono Cluster, Jati District, Kudus Regency with a correlation coefficient of 0.605, and the level of closeness of the relationship is 36.6%.

Based on the results of research conducted at SMA Negeri 8 Padang, students of class X MIPA at SMA Negeri 8 Padang tend to have visual and auditory learning styles with the same presentation, namely 34% while kinesthetic learning styles are only 32%. This visual and auditory learning style is more dominant because the students of SMA Negeri 8 Padang only study Biology through theory so that students feel that what is written and delivered by the teacher is sufficient without the need for more practicum. For this reason, it is hoped that the teacher can apply a learning model that is in accordance with the dominant learning style of class X MIPA SMA Negeri 8 Padang, namely visual and auditory, for example with a direct learning model.

In line with that Mahajani (2013) said that visual learning style refers to the way students prefer to absorb and process subject matter easily through learning with pictures, paying attention, learning with words and self-study while auditory learning style is the way students choose. to absorb and process material through group study and listening to teacher explanations. According to Killen in the Ministry of National Education (2010: 23) direct learning or Direct Instruction refers to expository learning techniques (transfer of knowledge from teachers to students directly such as through lectures, demonstrations and questions and answers) which involves the whole class.

#### 4. Conclusion

Based on the analysis of data from the results of research on the relationship between student learning styles and learning outcomes for biology class X MIPA students at SMA Negeri 8 Padang, it can be concluded that based on the results of the descriptive analysis obtained, the visual type of student learning style gets a percentage of 78% degree of achievement, the auditory type student learning style also gets a percentage of 78% while the kinesthetic type of learning style gets a percentage of 73%. So that the dominant learning style of class X MIPA students at SMA Negeri 8 Padang is visual and auditory. While the percentage of learning styles as a whole is 0.304, meaning that the relationship between student learning styles and student biology learning outcomes has a low correlation

There is a significant relationship between learning style and biology learning outcomes for students of class X MIPA SMA Negeri 8 Padang with a learning style correlation coefficient (X) of 0.304. The results of the t-test obtained the results of  $t_{count} = 2,048 > t_{table} 1,664$  with a level of influence or contribution of 55%.

#### Acknowledgment

The authors would like to thank the Biology Education Study Program, Faculty of Teacher Training and Education, Bung Hatta University and the research school, SMA Negeri 8 Padang, which has facilitated the author in carrying out this research.

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